Draft Environmental Impact Report

Application for Authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, December 2014, as amended March 2017.

DENC Ref: NC/EIA/04/ZFM/KAI!/KAK1/2018

PROPOSED CONSTRUCTION OF AGRICULTURAL AREAS, PIPELINES AND ASSOCIATED INFRASTRUCTURE ON KAKAMAS SOUTH SETTLEMENT NO 2193 AND 2185, AUGRABIES, NORTHERN CAPE

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EXECUTIVE SUMMARY

Locality:

The proposed properties on which the expansion of agricultural activities, pipelines and associated infrastructure will take place are situated on two properties namely Kakamas South Settlement no 2193 and 2185, Augrabies. The farms are situated on the left side of the R64 approximately 2km before you enter the small town of Augrabies in the Northern Cape Province, see Figure 1. The site lies north of the R64 (MR 359) and south and west of Renosterkop Peak, a prominent inselberg in an otherwise flat landscape, and south of the Orange/Gariep River. Small ephemeral streams cross the site. See Figure 2. Accesses to the farms are via existing gravel roads that gain access off the R64. The property is currently zoned Agriculture. The owner of the properties is Oseiland Eiendomme (PTY) Ltd/Burger Du Plessis Familie Trust and has appointed PBPS as the independent consultant to undertake the EIA process.

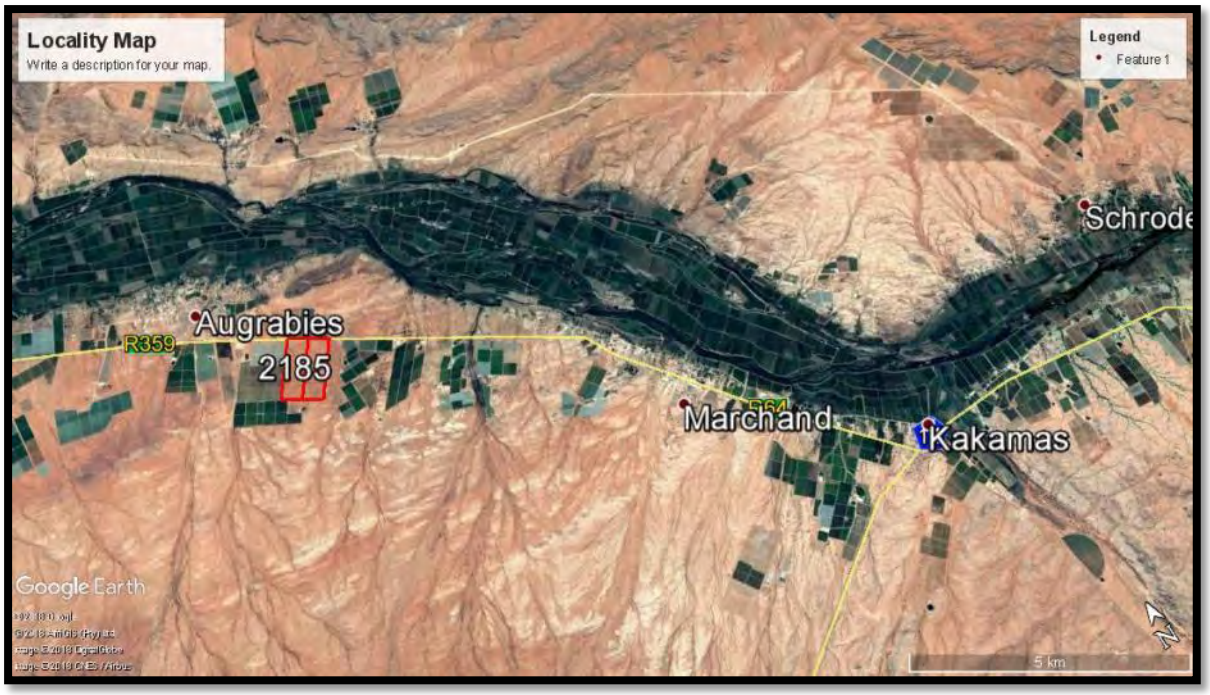

Figure 1: Locality

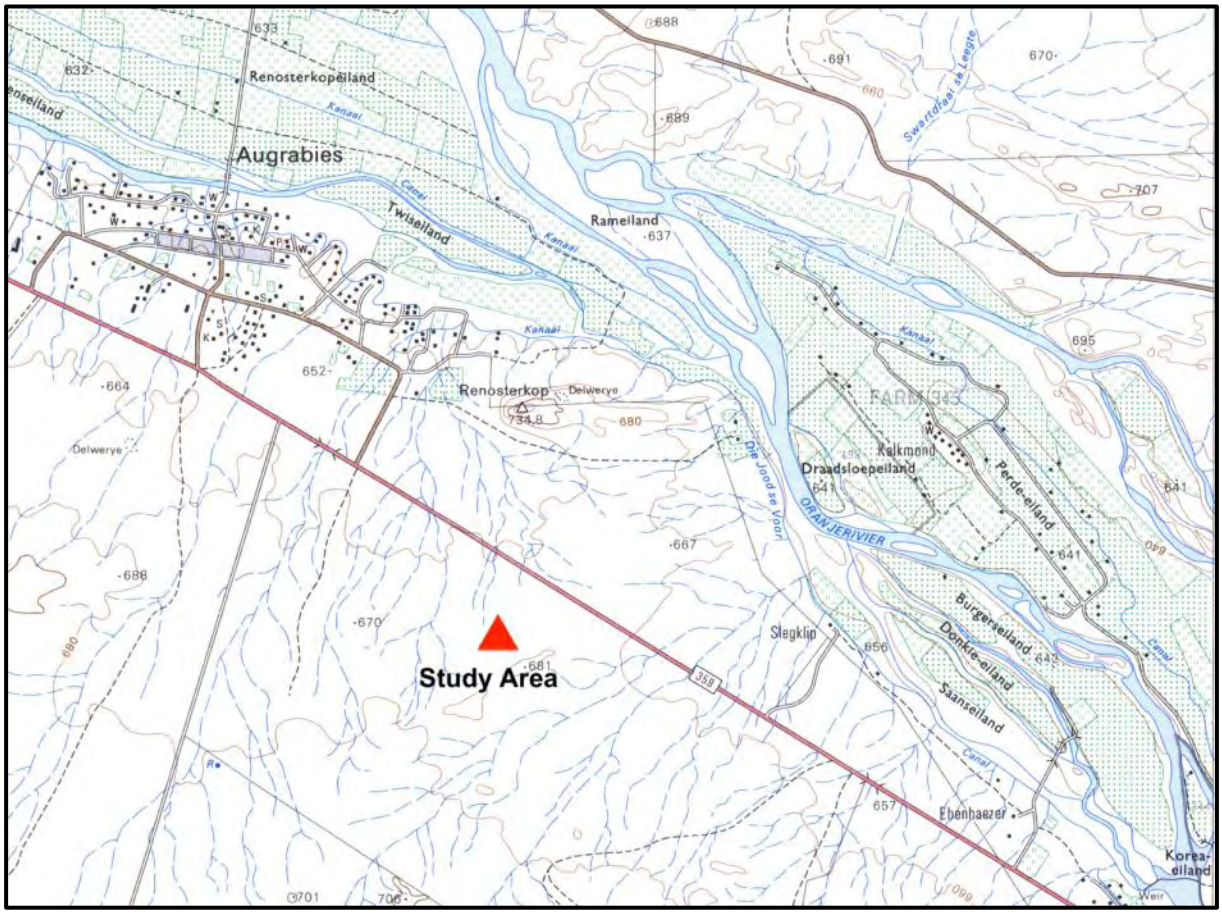

Figure 2: 1:50 000 Topographical Map.

Proposed development:

The proposed development is to establish additional agricultural areas for the cultivation of vineyards and orchards on areas with indigenous vegetation and across small streams. It is also proposed to construct additional pipelines, which will cross streams. The farm is also approximately 2km from the Orange/Gariep River, it is separated from the Orange River via agricultural areas, the inselberg Renosterkop, the canal and the R64. The proposed agricultural areas and pipelines are shown in the Figure 3.

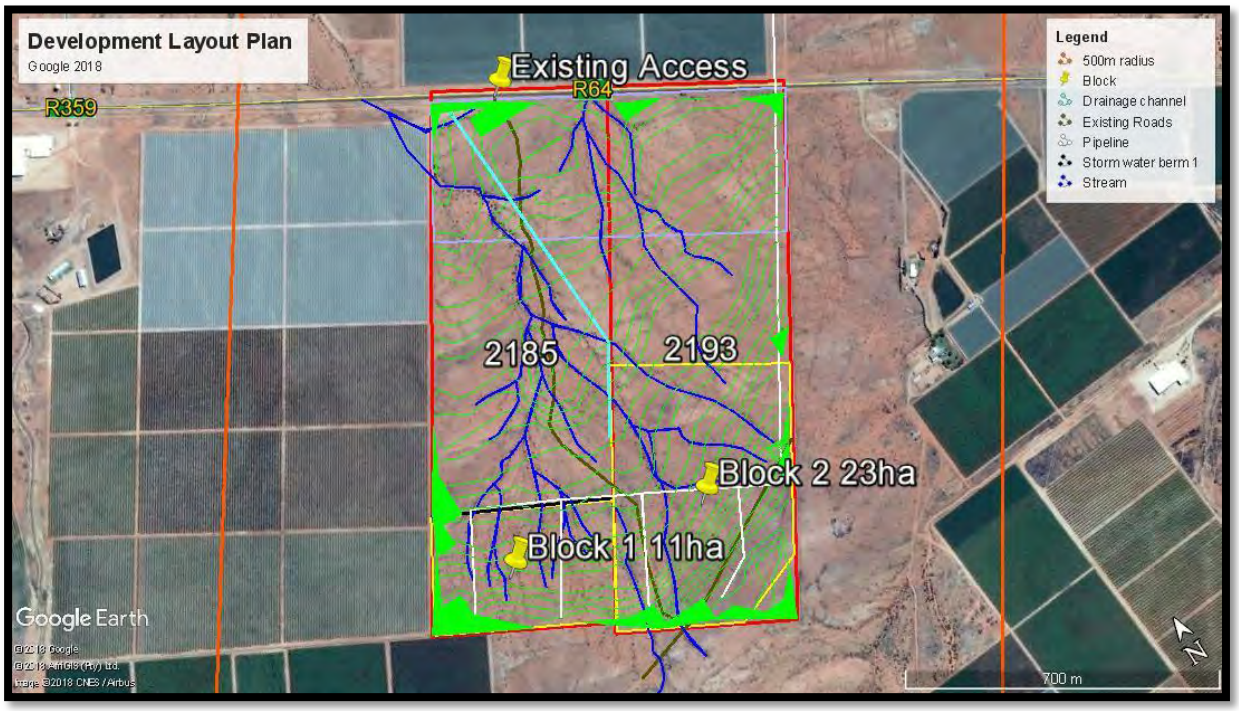

Figure 3: Proposed Agricultural areas.

As per the above Figure 3, the proposed development is for the following:

1. Transformation of approximately 34ha of indigenous vegetation to vineyards,
2. Construction of approximately 3km of new pipelines, a small drainage channel and berm, within internal pipelines.

Baseline information

- Vegetation:

A Botanical specialist Dr Dave McDonald was appointed to conduct an assessment of the site and the Botanical Assessment Report is attached at Appendix 11.3.2. The proposed development area falls within the Bushmanland Arid Grassland, see summary below:

"The natural vegetation type found in the study area at Kakamas South Settlement no 2185 and 2193 Augrabies as mapped by Mucina et al. 2005 and SANBI (2012) is Bushmanland Arid Grassland. According to the National Biodiversity Assessment (Driver et al. 2001) and the List of Threatened Terrestrial Ecosystems (Government Gazette, 2011), this vegetation type (ecosystem) is Least Threatened.

The impact of the proposed agricultural development on the 'open plains' Bushmanland Arid Grassland would be Low Negative without mitigation and Very Low Negative with mitigation. The impact on the seasonal watercourses would be High Negative without mitigation and Medium Negative with mitigation.

No plant species of conservation concern were recorded apart from protected *Boscia albitrunca* (witgatboom) and *Aloe claviflora* (kraalaalwyn).

It is recommended that to mitigate the loss of Bushmanland Arid Grassland in the study area, the northern area of Kakamas South Settlement no 2185 and 2193 should be set aside and conserved in perpetuity (effectively an 'on-site offset').

It would be necessary to apply for a permit for the removal of *Boscia albitrunca* that fall within the 34 ha area earmarked for cultivation.

No constraints were identified from a botanical perspective that would prevent the agricultural development from proceeding as along as suitable mitigation is implemented.

The proposed agricultural development is therefore acceptable and supported from a botanical viewpoint. "

- Heritage, Archaeology and Palaeontology

A Heritage/Archaeological specialist Dr Jonathan Kaplan was appointed to conduct an assessment of the site and his report is attached at Appendix 11.3.2. An application was lodged with SAHRA, and comments received from SAHRA is detailed further in Section 11.7.1.

The following conclusions was outlined in the AIA:

"The study has captured a good record of the archaeological heritage present on the proposed development site. Indications are that, in terms of archaeological heritage, the receiving environment is not a sensitive or threatened landscape. The impact significance of the proposed development on important archaeological heritage was assessed as LOW.

Therefore, there are no objections to the authorization of the proposed Renosterkop extension, development."

The letter written by Dr John Almond is included in Appendix 11.3.2 and recommended that:

"*In view of the negligible palaeontological sensitivity of the ancient Precambrian bedrocks as well as the low sensitivity of the geologically recent superficial sediments along the Orange River in the Kakamas – Augrabies region, the proposed agricultural development – including new citrus orchards and buried pipelines - is not considered to pose a significant threat to palaeontological heritage. Although diamond prospecting has occurred in the Renosterkop region, substantial, potentially-fossiliferous older alluvial deposits are not mapped here. Pending any significant new fossil discoveries in the area, no further specialist studies or mitigation are considered necessary for this agricultural project."*

- Socio-Economic Environment.

Socio:

The farm Renosterkop as part of the Oseiland Eiendomme PTY Ltd is a highly commercial agricultural (farming) unit, which is currently being farmed on a commercial basis. The farms are situated within an area surrounded by other farms and farming communities.
The closest town to the farm is the town of Augrabies. A very competent and motivated workforce manages the other properties as part of the company. It has many success stories, which contributes positively to the local economy and the provision of job opportunities in the region and the Northern Cape Province.

It is envisaged that Oseiland will need to create some new permanent and a number of new seasonal employee positions in the near future should the new development be approved. The entity also plans to convert some of the current seasonal positions to permanent positions should this application be successful.
As mentioned before, table grape production is very labour-intensive, even more so if packed as well. It creates around 4 new employment positions per hectare if also packed on the farm. Citrus production plus the raisin plant creates another 1 position per hectare.
The new development will therefore create an immediate need to appoint more workers and supervisors.
The new development will lead to the expansion of the farming operation, and will create a demand for new staff and new skills, eg.

- Skilled agricultural labourers
- Specific knowledge of vineyards and citrus fruit production will be needed
- Specific knowledge of fruit packing will be needed
- Support staff will be needed: Admin, forklift drivers, tractor operators and Code 14 drivers.

Preference will be given to black/coloured people for these positions, and more specific black/coloured women where possible.
Existing employees with experience on the farm, plus the potential to be leaders, will in the first place be identified for new supervisory positions.

Economic:
In a rural area such as this with a high unemployment rate, any new employment positions have a huge impact on the immediate and extended families of such new workers. Add then also the impact of more people with proper housing, undergoing skills training and going to church, sport, etc. and children going to school, to understand the positive impact on this rural community. Even seasonal work opportunities has the advantage of extra income plus the opportunity to gain skills that can in future be used to gain permanent employment on the farm or elsewhere.
Not only are the new employment opportunities important, but also the fact that:

1. Existing jobs can be secured: Enough water and farming development will directly secure existing and new job opportunities.
2. More sustainable development will immediately create the opportunity to proceed with the expensive exercise to plant new varieties that can spread the preparation, pruning, harvesting and packing seasons over longer periods. This will support the entity in their efforts to convert as much as possible seasonal job opportunities into permanent job opportunities. Especially black females from the farm and neighbouring towns will benefit here. The positive impact on their lives will even be more as more of them will now also be promoted to supervisor level to help manage the increased production as well as the increase in value-adding volume.
3. The increase in production of export produce will bring more foreign capital to South Africa which is much needed to strengthen our economy and as such fully supported by Government.

The Agri-BEE report is attached at Appendix 11.3.3, as referenced: “In a rural area such as this with a high unemployment rate, any new employment positions have a huge impact on the immediate and extended families of such new workers. Add then also the impact of more people with proper housing, undergoing skills training and going to church, sport, etc. and children going to school, to understand the positive impact on this rural community. Even seasonal work opportunities have the advantage of extra income plus the opportunity to gain skills that can in future be used to gain permanent employment on the farm or elsewhere.”

- Electricity

The development falls within the capacity of Eskom. Note that no additional electrical capacity is necessary as the new pump station as part of an existing Environmental Authorisation (NC/EIA06/ZFM/KAI!/AUG1/2017) will provide sufficient pumping capacity for this development as well.

- Water Use License Application

The project is an application under Section 21(a) for the proposed transfer of water rights from various properties (owned by the applicant) to Kakamas South Settlement 2193 and 2185 for irrigation purposes.

The project is also for an application under Section 21 (c) and (i) for the construction of agricultural areas across streams (ephemeral), the construction of pipelines.

An application for a license in terms of the National Water Act, 1998 is made by the developer, Oseiland Eiendomme PTY Ltd/ Burger Du Plessis Familie Trust for the transfer water rights, taking of water from the Orange River, the water use application is summarised as the follows:

(a) taking water from a water resource;	Transfer of water rights
(c) impeding or diverting the flow of water in a watercourse	Impeding flow
(i): altering the bed, banks, course or characteristics of a watercourse;	Altering the banks of a water course

The applicant, Oseiland Eiendomme PTY Ltd, wants to expand their farm by extending the existing agricultural areas with approximately 34ha. The applicant wishes to transfer water from various small properties owned by the applicant, which are currently due to location and size uneconomical to farm separately, to the property, Kakamas South Settlement no 2193 and 2185 (Renosterkop), where the new agricultural areas will be developed.

The farm is currently irrigating their vineyards with water that is pumped directly from the canal at an existing abstraction point. The proposal is to construct a new pipeline from the new development on Kakamas South Settlement no 1726, that abstract from a pump station at the canal, water can also be pumped directly from this new off take. Note the development infrastructure above falls under the Environmental Authorisation with reference (NC/EIA06/ZFM/KAI!/AUG1/2017), accept for the new pipeline. The additional water allocation (588 00m³/a from the Kakamas WUA from the various properties) will be pumped directly from the canal and irrigated onto the vineyards or pumped to the storage dam.

It has already been confirmed by the Kakamas WUA that the additional water allocation can be accommodated and that they have no objections to the abstraction from the Orange River and the Kakamas/Augrabies Canal. The additional water will have little or no effect on the quantity of available water from the water resources within the immediate vicinity.

The establishment of these vineyards will be close to small sections of the unnamed drainage system that is located on site. The drainage system is classified as an ephemeral course as it will only flow sporadically after rain. These watercourses are not considered to be seasonal rivers which will regularly contain water in a seasonal pattern.

The drainage channel system on site has not been mapped (as a watercourse) on any of the maps that are available of the study area. However, upon request from DENC and DWS, the drainage system is seen as a watercourse. Please note: There will be NO planting of vineyards within the larger drainage channels to the north of the site only at the bottom section of the site with smaller sections of the streams.

- Alternative energy and optimisation

The proposed development of the vineyards will in effect result in the following measures to reduce energy and water usage:

- Use water sparingly and the latest irrigation technology and scheduling methods are always implemented.
- Best practices to reduce water consumption and lowest possible electricity consumption.

Alternatives:

The development layout was developed using an opportunities and constraints analysis which included on the constraints side, mainly the suitability of the agricultural areas on the particular position from a design perspective as well as possible impacts on natural vegetation and drainage areas, which is clearly outlined in Alternative 1 (preferred alternative). From a technology perspective the suitability of the proposed agricultural activities to be established on the property, is outlined in alternative 1 and 2.

For the Scoping Process the following were considered, Alternative 1(preferred alternative), Alternative 2 the agricultural activities alternative and location and Alternative 3 the No-Go Option.

No site alternative was considered as this is the applicant's property, and no other properties are available with this site having close access to the Canal and the Orange River. No site alternatives are therefore available. There are also no technology alternatives available.

The alternatives considered for the development are described below:

Alternative 1 (preferred location/design and technology alternative):

This option will consist of agricultural land to be established, clearly outlined according to:

1. Transformation of approximately 34ha of indigenous vegetation to vineyards,
2. Construction of approximately 3km of new pipelines,

The layout is shown below in Figure 4.

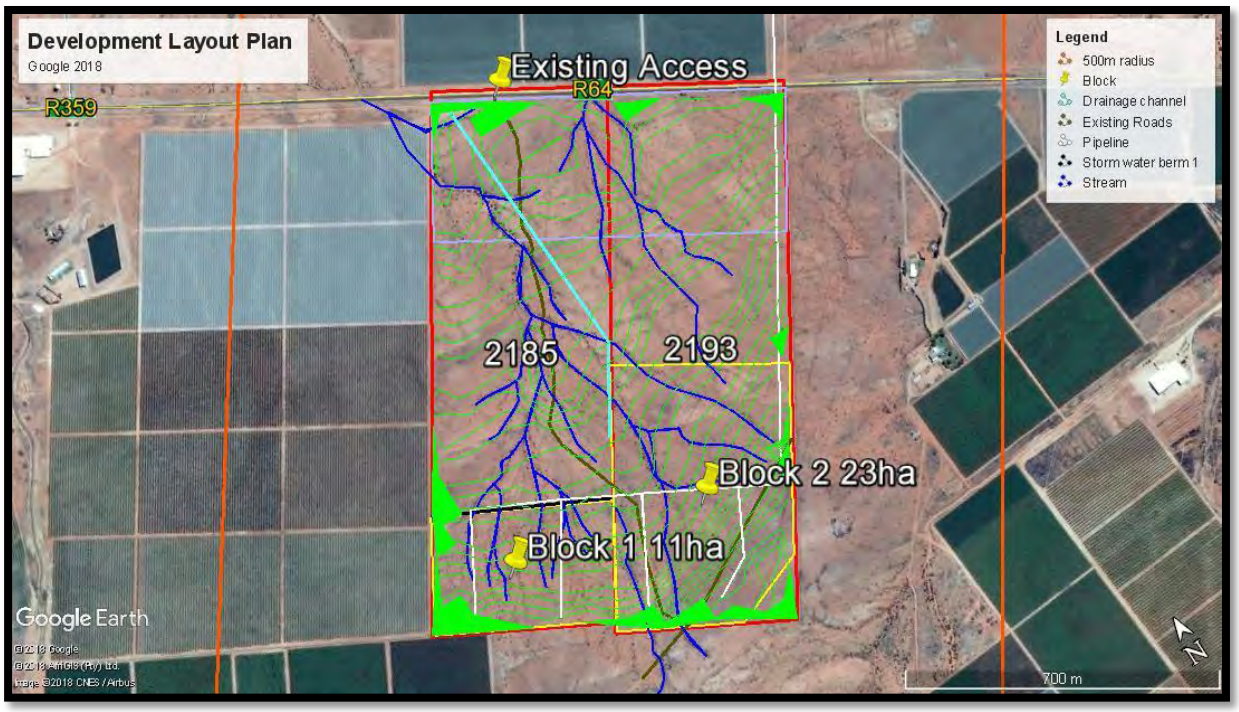

Figure 4: Alternative 1 – All proposed development areas

This alternative is considered as preferred for the following reasons:

- From a design perspective this alternative was the best option. It took into consideration design measures by establishing agricultural areas as far as possible on areas that have already been disturbed.
- From a fresh water feature perspective it took into consideration the ephemeral streams, the development was located as far as possible from the main streams to the northern side of the site and located more to the southern area with small ephemeral drainage areas. This was designed to have to lowest possible impact on the streams.
- From a financial perspective this alternative was the best option. This development will contribute to the local and international market.
- From a vegetation perspective this alternative will have a low negative impact on vegetation.
- From a heritage/archaeological perspective this alternative will not have a significant impact, most probably a low impact with mitigation measures.

- This alternative will also fully utilise the farms agricultural potential according to existing water use rights and additional rights to be transferred.
- This alternative will also contribute socially to the upliftment of the existing workers through additional job opportunities.

It is clear therefore that this alternative meets the requirements of the socio-economic, vegetation, fresh water ecology and design considerations and was deemed preferred.

Alternative 2 (location/design alternative):

This option will consist of agricultural land to be established, clearly outlined according to:

1. Location – Kakamas South Settlement 2193 and 2185
2. Size – approximately 35ha
3. Proposed agricultural activity – vineyards
4. Pipelines of approximately 2km

The layout is shown below in Figure 5.

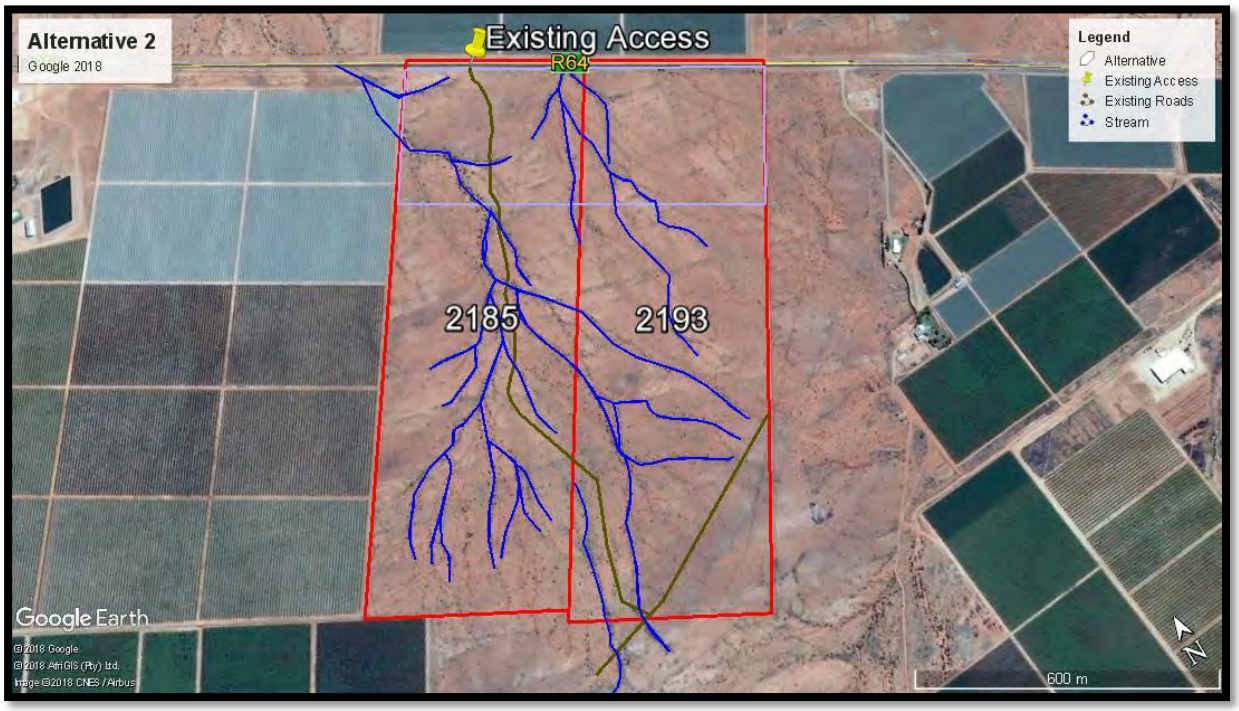

Figure 5: Alternative 2

This alternative is not considered as preferred for the following reasons:

- From a design perspective this alternative was not the best option. It did not take into consideration design measures by not establishing agricultural areas as far as possible on areas that have already been disturbed.
- From a fresh water feature perspective it did not take into consideration the ephemeral streams, the development was located over the streams.
- From an agricultural perspective only for the establishment of vineyards, and did not take into consideration other agricultural practices, therefore contributing to the economy in periods where one agricultural use is under pressure.

This alternative is therefore not deemed preferred and not better suited than that of alternative 1.

Alternative 3: No-go Option

This is not seen as preferred for the following reason:

- The current agricultural activities on the property are not being utilised to full potential. For this to take place additional agricultural areas would have to be established.
- From a botanical perspective the No Go alternative would be no further development of vineyards at the properties. The natural veld would remain as it is and there would be minimal change over time but with some low-level impacts due to human activity. The result would be a Very Low Negative impact.
- No social upliftment of existing workers and no additional job opportunities.

Therefore, this alternative is not seen as preferred as the expansion of agricultural activities will contribute to the agricultural potential of the property and if this does not take place the expansion of the farm to its full potential cannot take place. No upliftment and economical contribution can take place.

Alternatives that will be considered within this report:

Following from the section above it is clear that Alternative 1 addresses the key concerns raised.

In conclusion, taking into consideration that Alternative 2 is not viable from a design, fresh water ecology or vegetation perspective and the fact that Alternative 1 took into consideration inputs from relevant specialists and inputs during public participation, this development of alternative 1 is seen as preferred.

Alternative 1 as the Preferred Option and Alternative 3 the No-Go Option, are considered further in terms of the significant ratings in this EIA phase.

Public participation included the following:

Public participation for the Draft Environmental Impact Report (fEIR):

- **Notice Board**

  Notice Boards were displayed at the entrance of the farm from Wednesday 17 October 2018.

- **Information and reporting for formal process**

  A notice that included the Executive Summary and draft EIR was made available and distributed by registered post to all registered I&APs and neighbours for the 30 day commenting period, from Wednesday 17 October 2018 to Friday 16 November 2018. The notice informed all I&AP's of the availability of the dEIR and WULA, which could be obtained from the EAP. Digital copies were made available on the website www.pbps.co.za and distributed to all I&AP's.

  Hard copies of the report were also sent to the following Authorities: DENC, DWS, Dept. of Agriculture, SAHRA and Kai! Garib Municipality.

- **I&AP database**

  The I&AP database was developed from registered and listed I&APs. The database was not updated following the Scoping Phase as no new I&AP's registered during the EIA phase.

All comments received on the FSR and the DEIR have been addressed in the Comments and Response sheet included at Appendix 11.1.7

Issues identified for EIA phase:

A summary of the main issues identified in the Scoping Phase are shown in Table 2. Two types of reports have been compiled for the EIA Assessment.

1. A Report on a specific technical subject.
2. Final Specialist Environmental Impact Reports as outlined in Table 2.

Table 2: Identified issues, EIA studies and reports

Main issues identified	Reports	Final EIA studies
Heritage/Archaeology & Palaeontology		X
Socio-Economic	X	
Vegetation		X
EMP	X	
Water Use License Application	X	

ENVIRONMENTAL IMPACT STATEMENT SUMMARY OF RATING

EIA Assessment	Preferred Alternative 1	Alternative 3 - No-Go Option
Botanical (open plains)	Development of citrus orchards on the 'open plains' would have Low Negative impact without mitigation and Very Low Negative impact with mitigation.	No impact on vegetation if this takes place.
Botanical (seasonal watercourses)	The seasonal drainage lines are not true grassland but rather an azonal aspect of Bushmanland Arid Grassland where shrubs and trees dominate. The seasonal watercourses are important for two main reasons; firstly, they have a concentration of *Boscia foetida* and secondly, they are ecological corridors that provide cover for movement of birds and small mammals. A greater negative impact would result from the loss of the vegetation along the seasonal watercourses compared with the impact of loss of the grassland on the open plains. This is the reason for the separation of the assessment of impacts on the seasonal watercourses and the open plains. It is anticipated that the loss of the seasonal watercourses would result in High Negative impact since numerous *B. foetida* trees would be lost at a local scale. It would be difficult to implement direct mitigation measures but if the area apart from that earmarked for cultivation i.e.	The No Go alternative would be that the proposed development of 34 ha of soft citrus would not take place. The natural veld would remain as it is and there would be minimal change over time but with some low-level impacts due to human activity. The result would be a Very Low Negative impact.

	65.6 ha in the northern two-thirds of the site could be conserved, it could then be considered to be an 'on-site offset'1 that would serve as mitigation for loss of seasonal watercourses and open plains in the study area. The impact would then be reduced to Medium negative.	
Heritage	As referenced form Appendix 11.3.2: "Indications are that, in terms of archaeological heritage, the receiving environment is not a sensitive or threatened landscape."	No Impact
Archaeological/ paleontological	As referenced form Appendix 11.3.2, Archaeological Report: "The impact significance of the proposed development on important archaeological heritage is assessed as LOW. As referenced form Appendix 11.3.2, Palaeontological Report: In view of the negligible paleontological sensitivity of the ancient Precambrian bedrocks as well as the low sensitivity of the geologically recent superficial sediments along the Orange River in the Kakamas – Augrabies region, the proposed agricultural development – including new citrus orchards and buried pipelines - is not considered to pose a significant threat to paleontological heritage. Although diamond prospecting has occurred in the Renosterkop region, substantial, potentially-fossiliferous older alluvial deposits are not mapped here.	No impact
Visual/Cultural landscape	The planting of vineyards would result in a replacement of the natural landscape by a cultural landscape. During the construction phase there would be very minor impacts to the scenic qualities of the landscape, but the site is quite far from the nearest public road so this negative impact is seen as being of very low significance. There are no fatal flaws. No mitigation or management measures are suggested aside from best practice considerations such as keeping the area free of unsightly materials, litter and the like. The vineyards of the Orange River region add scenic value and sense of place to the environment. Once the vineyards are	Low negative due to the land remaining undeveloped, with no vineyards and positive visual (cultural perspective) impact on the barren landscape.

[1] An 'on site offset' is defined as a part of the greater application area where the habitat is similar to that which would be lost and it is an area that can be set aside in perpetuity as a conservation easement to conserve some of the local habitat.

	established it is expected that the impacts to the landscape will be positive so long as the area is retained in a tidy and attractive state.	
Water quality	No impact on water quality, as construction will be conducted outside the rainfall season. No flow from agricultural areas as a storm water berm will be constructed.	No impact
Impeding and diverting flow	The natural drainages areas and small ephemeral stream will be filled in and vineyards established on these areas, therefore a low negative impact on surface water flow. This will however be mitigated by establishing a storm water berm surrounding the agricultural areas to prevent any contamination further downstream of these drainage areas.	No impact
Socio-Economic	Overall impact is medium positive	No development during the construction phase will result in no job creation and no skill development. Upliftment of permanent workers will not take place, therefore medium negative impact.
Air and Noise pollution	Very low negative and only during construction phase	No Impact
Sewage and waste disposal	Very low negative and only during construction phase	No Impact
Fauna	Very low negative and only during construction phase. Thereafter free movement of animals allowed and mitigation of no hunting allowed.	No impact
Overall	The development will result in an overall low negative impact, mostly due to the loss of vegetation in the watercourses, offset by the positive impacts associated with the creation of employment and empowerment opportunities.	No development will result in a medium negative impact due to the loss of opportunity for employment generation and empowerment in a poor community.

Conclusion:

Taking into account that the purpose of scoping is *"must contain the information that is necessary for a proper understanding of the process, informing all preferred alternatives, including location alternatives, the scope of the assessment, and the consultation process to be undertaken through the environmental impact assessment process"* it can be concluded that the process has been successful. A number of issues identified in the scoping phase have

been assessed in the EIA phase, including the assessment of the preferred alternative and the No-Go Alternative

The proposed development has been identified and the layout designed according to the findings of the baseline studies to ensure minimal impact on the environment. Alternative 1 addresses the key concerns with regards to design and the inputs from the specialists through the following:

- No constraints were identified from a botanical perspective that would prevent the agricultural development from proceeding as along as suitable mitigation is implemented.
- No significant impact on heritage/archaeology, suitable mitigation measures will be implemented.
- Determined the best suitable alternative through assessing the impacts on the environment, preferred alternative 1 was determined.
- Low impact on the ephemeral streams and the conservation of the northern section.
- The farm can be utilised to its full agricultural potential.
- The land area available for the proposed cultivation has been calculated on the availability of irrigated water. The WULA addresses the transfer of water rights, and the impacts on the watercourses.
- It will also result in the social upliftment of the existing workers and create additional job opportunities.
- Financially contribute to the local and international market.

The detailed impacts and mitigation measures for Alternative 1 have been investigated and are detailed further in Section 7.

Note that the "**do nothing option"**, has been investigated as Alternative 4 and when taking into consideration that the current agricultural potential of the property is not utilising to its full potential, thus keeping the site as is, is not deemed as preferred. However, the EIA process requires that the "do nothing option" be included in the significance rating process.

Thus Alternative 1 and Alternative 4: No-Go Option has been subjected to the significance ratings in the EIA Phase, as included in the Environmental Impact Statement in Section 9.

It is required by law that projects must meet with the requirements of sustainable development. The concept is defined as follows *"the integration of social, economic and environmental factors into planning, implementation and decision-making so as to ensure that development serves present and future generations".*

In achieving sustainable development, the focus therefore may not be restricted to environmental or nature conservation factors only. It should include economic and social realities. Social factors influence the livelihoods of people. They determine income, quality of life, social networks, and other means aimed at maintaining and improving the wellbeing of people. Economic factors deal with the affordability of processes, their potential to generate income over an extended period (into future generations) and to maintain the ability to support both the environmental and social needs of an area.

In short; if people are impoverished, there will be no environment to protect; if a project is not attractive economically, it will not be launched; but the environment is the essential basis for all development.

Overall it is clear that the preferred option best meets the above integration factors and has the biggest advantages and takes into account the NEMA principles.

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List of abbreviations

CA	Competent Authority
DENC:NC	Department of Environment and Nature Conservation: Northern Cape
DEAT	Department of Environmental Affairs and Tourism
dSR	Draft Scoping Report
fSR	Final Scoping Report
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment and the process to be followed in terms of the National Environmental Management Act, Act 107 of 1998
EIR	Environmental Impact Report
EMF	Environmental Management Framework
EMP	Environmental Management Programme
GG	Government Gazette
GN	Government Notice
I&AP	Interested and Affected Party
IAIAsa	International Association for Impact Assessment for South Africa
NEMA	National Environmental Management Act, Act 107 of 1998

NID	Notice of Intent to Develop
PoSfEIA	Plan of Study for EIA
ROD	Record of Decision
SDF	Spatial Development Framework
SR	Scoping Report
TOR	Terms of Reference

1 Introduction

1.1 Scoping Report acceptance and subsequent process

The Scoping process was completed in June 2017 and acceptance of the Final Scoping Report was received from DENC in their letter dated 03 August 2017 (attached at Appendix 11.1.6.2).

The Final Scoping Report and the Plan of Study for EIA indicated that the Preferred Alternative and the "No go" options would be investigated in the EIA Phase. The Plan of Study for EIA required that the following impact studies be undertaken in the EIA Phase. These studies have been undertaken and are included as Appendices:

- Botanical Impact Assessment Report (Appendix 11.3.1)
- Heritage/Archaeology and Paleontological Assessment (Appendix 11.3.2)
- Socio-Economic Summary (Appendix 11.3.3)
- Water Use Licence Application (Appendix 11.3.4)

Apart from the EIA studies listed above the following report was completed:

- EMPr (Appendix 12)

This document serves as the Environmental Impact Assessment and will follow the assessments outlined in the plan of study for EIA.

1.2 Purpose of the EIR

This report has been compiled from all specialist and technical reports to capture all information in a format as required by the regulations as indicated below. The report has therefore been compiled using information, text and figures taken from the various specialists and technical reports.

Please note this process was initiated under NEMA 2014 Regulations and therefore will be completed under these regulations, as amended by the EIA Regulations dated 7 April 2017.

According to section 23 of the NEMA Regulations (GN 326 dated 7 April 2017), point 3, and an environmental impact report must contain all information set out in Appendix 3 and referenced below:

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

Table 1: EIA information

Number (not corresponding to the numbering in the Regulations of 2017)	**Information necessary for EIA Report:**	**Section in report**
a)	details of- (i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vitae;	[see section 1.4]
b)	the location of the development footprint on the approved site as contemplated in the accepted scoping report,	[see section 1.1 and 1.3]

	including: (i) the 21 digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; and (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	
c)	a plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is- (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	[see section 2.2 and 6.2]
d)	a description of the scope of the proposed activity, including- (i) all listed and specified activities triggered and being applied for; and (ii) a description of the associated structures and infrastructure related to the development;	[see section 2.1 & 2.2]
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;	[see 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 development footprint on the approved site as contemplated in the accepted scoping report;	[see section 4]
g)	a motivation for the most ideal location of the development footprint of the approved site;	[see section 6]
h)	(i) details of the development footprint alternatives considered; [see section 6] (ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; [see 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; [see section 11.1.7] (iv) the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic,	[See sections in left column]

	heritage and cultural aspects; [see section 5] (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; [see section 7 & 9] (vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks; [see section 7] (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; [see section 7 & 9] (viii) the possible mitigation measures that could be applied and level of residual risk; [see section 7 & 9] (ix) if no alternative development locations for the activity were investigated, the motivation for not considering such; and [see section 6] (x) a concluding statement indicating the preferred alternative development location within the approved site; [see section 9] and	
h)	a full description of the process followed to reach the proposed development footprint within the approved site, including: (i) a full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred location through the life of the activity, including- (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and (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;	[see section 3, 7 & 9]
j)	an assessment of each identified potentially significant impact and risk, including- (i) cumulative impacts; (ii) the nature, significance and consequences of the	[see section 7 & 9]

	impact and risk; (iii) the extent and duration of the impact and risk; (iv) the probability of the impact and risk occurring; (v) the degree to which the impact and risk can be reversed; (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) the degree to which the impact and risk can be mitigated;	
k)	where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;	[see section 7 & 9]
l)	an environmental impact statement which contains- (i) a summary of the key findings of the environmental impact assessment: (ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred development footprint on the approved site as contemplated in the accepted scoping report indicating any areas that should be avoided, including buffers; and (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	[see section 9]
m)	based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation;	[see section 7]
n)	the final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment;	[see section 7]
o)	any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation	[see section 7 and 10]
p)	a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;	[see section 7]
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 that authorisation;	[see section 10]
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	[not applicable]

	requirements finalised;	
s)	an undertaking under oath or affirmation by the EAP in relation to: (i) the correctness of the information provided in the reports; (ii) the inclusion of comments and inputs from stakeholders and l&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) 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;	[see section 13.2]
t)	where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	[not applicable, possible fine structure included in the EMP attached at Appendix 12]
u)	an indication of any deviation from the approved scoping report, including the plan of study, including- (i) any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and (ii) a motivation for the deviation;	[not applicable, no deviation, see section 1.1]
v)	any specific information that may be required by the competent authority; and	[none additional]
w)	any other matters required in terms of section 24(4)(a) and (b) of the Act.	[none additional]

The report therefore summarises all available data for DENC to make the final decision.

1.2.1 Report lay-out

Section 2 of the report describes the scope of the proposed activities and section 3 provides policies and legislative context. Section 4 provides the needs and desirability. Section 5 shows a description of the environment and baseline information. Section 6 lists the alternatives with identified issues in section 7. Section 8 provides the public participation undertaken and Section 9 shows the details of the EIA phase. The conclusions are shown in section 10. The appendices are shown in Section 11. Section 12 provides the EMPr, and Section 13, other additional information.

The EIA process is shown in section 3.1. The project is in the Environmental Impact Assessment Phase following the acceptance of the Final Scoping Report by DENC:NC dated 9 June 2017 (attached at Appendix 11.1.6.2).

1.3 Property Location and Description

The proposed properties on which the expansion of agricultural activities, pipelines and associated infrastructure will take place are situated on two properties namely Kakamas South Settlement no 2193 and 2185, Augrabies. The farms are situated on the left side of the R64 approximately 2km before you enter the small town of Augrabies in the Northern Cape Province, see Figure 1.1. The site lies north of the R64 (MR 359) and south and west of Renosterkop Peak, a prominent inselberg in an otherwise flat landscape, and south of the Orange/Gariep River. Small ephemeral streams cross the site. Accesses to the farms are via existing gravel roads that gain access off the R64. The property is currently zoned Agriculture.

The owner of the properties is Oseiland Eiendomme (PTY) Ltd/Burger Du Plessis Familie Trust and has appointed PBPS as the independent consultant to undertake the EIA process.

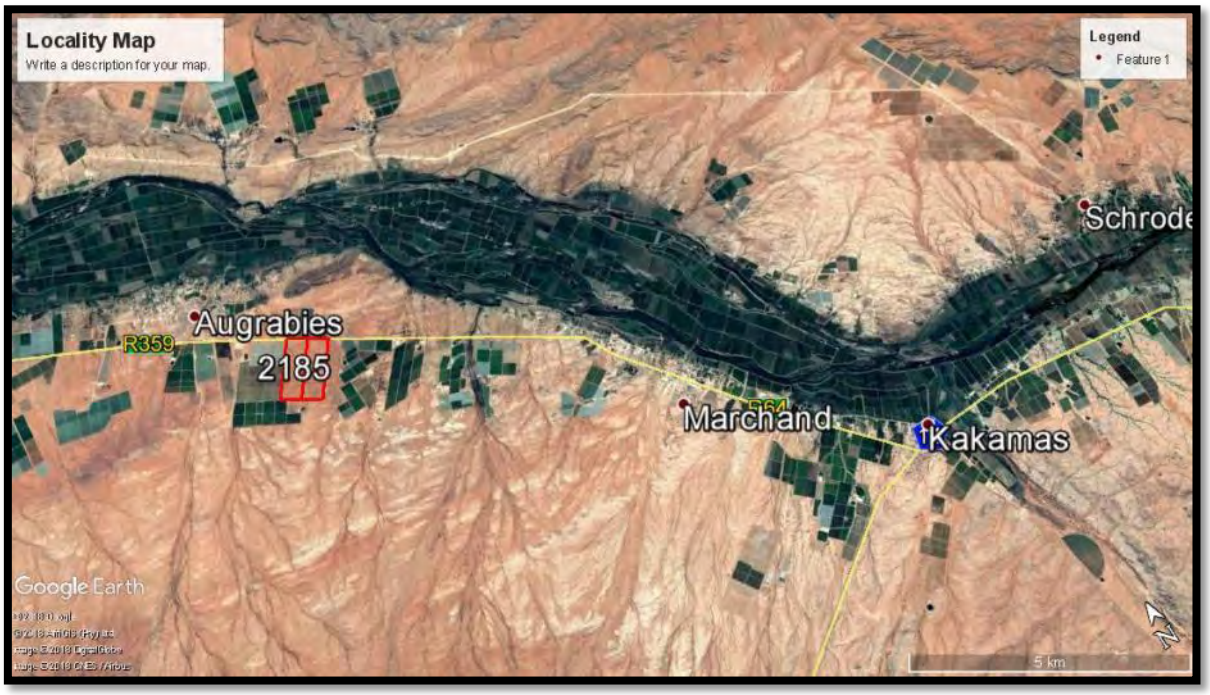


Figure 1.1: Locality of Project Site

Table 2: Property details

Property details	Sizes of properties	Ha of proposed new development area.
Kakamas South Settlement no 2193	50.142ha	23ha planted
Kakamas South Settlement no 2185	50.108ha	11ha planted

The SG 21 Digit Codes of the 3 properties indicated in Figure 1.1 above and provided in the list below:

C	0	3	6	0	0	0	7	0	0	0	0	2	1	9	3	0	0	0	0	0
C	0	3	6	0	0	0	7	0	0	0	0	2	8	1	5	0	0	0	0	0

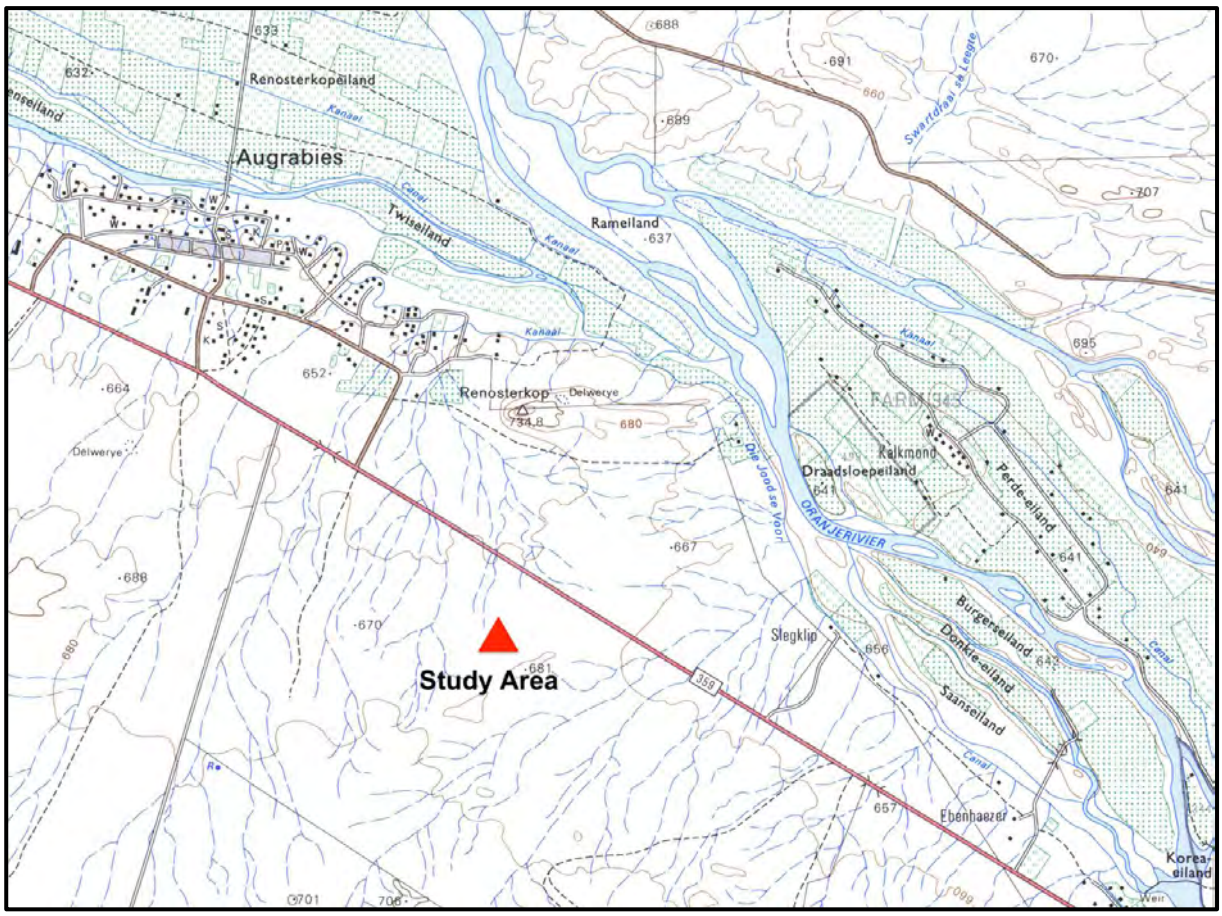


Figure 1.2: 1:50 000 Topographical Map

1.4 EAP experience

The requirements for an EIR state that the details of the EAP and relevant experience must be provided:

1.4.1 Details of the EAP

Elanie Kuhn

Pieter Badenhorst Professional Services

P. O. Box 1058

Wellington

7654

Cell: 076 584 0822

Fax: 0866721916

Website: www.pbps.co.za

1.4.2 Relevant Experience

Pieter Badenhorst

The consultant has more than 44 years' experience in project management and report writing. He worked at the CSIR in environmental and estuarine management for 16 years. During that time he was part of the team that developed coastal management guidelines, the first process for EIA's and undertook numerous environmental studies for DEAT in collaboration with a team of ecologists. The past couple of years he has worked mainly in environmental control and environmental impact assessments and has completed EIAs for many projects. He has also attended an EIA peer review on a major development for DEAT and is a member of IAIAsa.

The practitioner has attended or organised many meetings/workshops/open days to identify issues for similar projects at the CSIR; Blue Flag for DEAT as well as other DEAT projects. The Blue Flag and other projects required interaction with large groups of stakeholders.

Elanie Kühn

The consultant has 11 years' experience in project management and report writing. She has worked for two other environmental assessment companies prior to the present. She completed her BSc degree and gained an Honours Degree in Environmental Management from the North West University in Potchefstroom. She has been working with Pieter Badenhorst for the last six years working on environmental impact assessments.

CV attached in Section 11.

1.4.3 Applicant details

The applicant's details are as follows:

Oseiland Eiendomme (PTY) Ltd

Contact person: J. G. Du Plessis

P.O. Box 45

Augrabies

Northern Cape

8874

Email:oseiland@intecom.co.za

Tel: (054) 451 7004

Fax: (054) 451 7006

2 Description of scope of proposed activity

2.1 Project description

Proposed development:

The proposed development is to establish additional agricultural areas for the cultivation of vineyards and orchards on areas with indigenous vegetation and across small streams. It is also proposed to construct additional pipelines, which will cross streams. The farm is also approximately 2km from the Orange/Gariep River, it is separated from the Orange River via agricultural areas, the inselberg Renosterkop, the canal and the R64. The proposed agricultural areas and pipelines are shown in the Figure 2.1 (A3 version in Section 11.4).

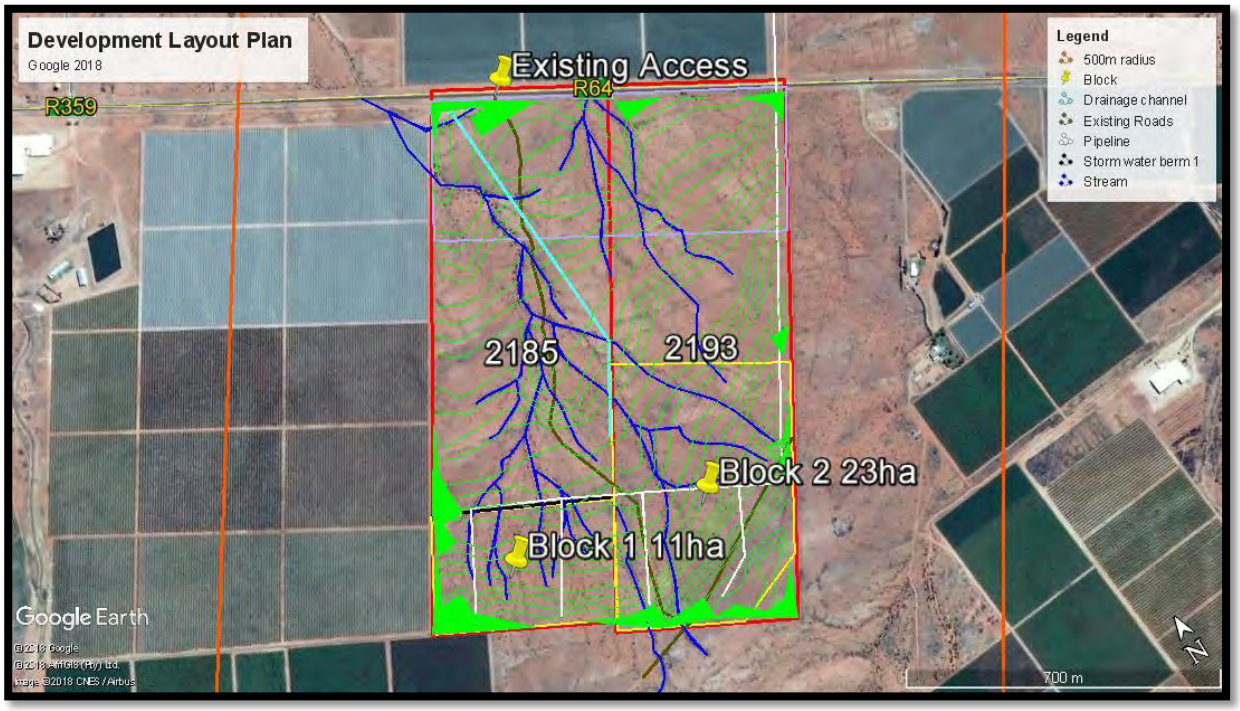


Figure 2.1: Proposed Agricultural areas.

As per the above Figure 2.1, the proposed development is for the following:

1. Transformation of approximately 34ha of indigenous vegetation to vineyards,
2. Construction of approximately 3km of new pipelines, a small drainage channel and berm, within internal pipelines.

The following is a more detailed summary of the proposed development (All design layouts also included in 11.4.2 as A3's):

1. New cultivation areas:

It is proposed to construct approximately 34ha of new vineyards and orchards. The site has not been previously cultivated, however small existing roads cross the site, see Figure 2.2. Two blocks were designed on the properties, Block 1 on Kakamas South Settlement no 2185 and Block 2 on Kakamas South Settlement no 2193, see Figure 2.1. The design of the blocks took into consideration the natural constraints such as vegetation and the streams.

Figure 2.2: Proposed cultivation site

2. Pipelines:

It is proposed to construct approximately 3km of pipelines. The pipeline material will vary from small sections of galvanised steel and mostly uPVC. The pipelines will also vary in size from 250mm to 160mm in diameter. As shown in Figure 2.3 the pipelines will cross small sections of the streams, the pipeline will also cross the R64 towards the existing development on Farm 1726.

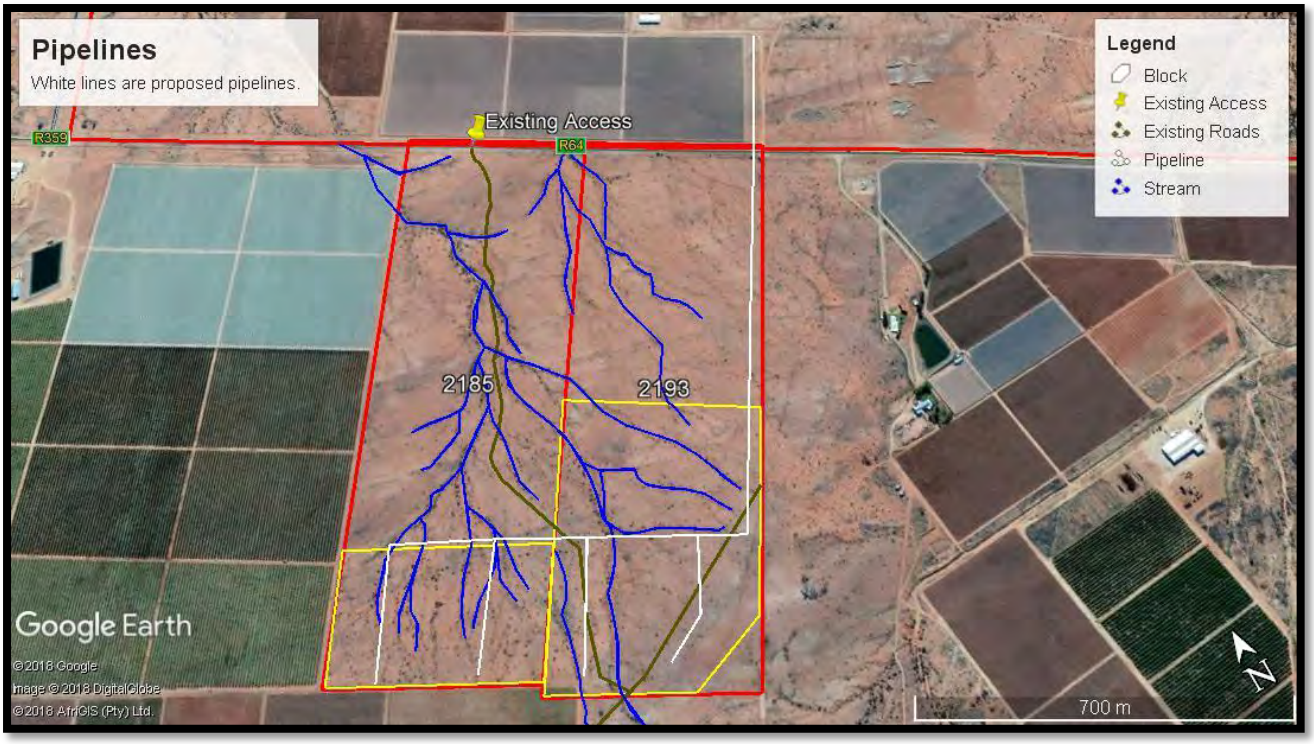


Figure 2.3: Pipelines

Note that no additional applications are necessary for the pump stations, as the existing pump station will form part of an existing Environmental Authorisation with a reference number of NC/EIA,06/ZFM/KAI!/AUG1/2017.

2.2 Statutory requirements

According to National Environmental Management Act, 1998 (Act No. 107 of 1998), Environmental Impact Assessment Regulations, dated December 2014, as amended by GN 324, GN 3325, GN 326, and GN 327 dated 7 April 2017.

The highlighted sections are the applicable listed activities in terms of the amended EIA Regulations dated 7 April 2017.

Table 3: Listed Activities

Government Notice R327 Activity No(s):	Describe the relevant **Basic Assessment Activity(ies)** in writing as per **Listing Notice 1** (GN No. R327)	Describe the portion of the development as per the project description that relates to the applicable listed activity
9.	**The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or storm water—** **(i) with an internal diameter of 0,36 metres or more; or** **(ii) with a peak throughput of 120 litres per second or more;** **excluding where—** **(a) such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve; or** **(b) where such development will occur within an urban area.**	**For the construction of approximately 3km pipeline, with sections of 400mm uPVC pipelines for the bulk transportation of water.**
12.	**The development of—** **(i) canals exceeding 100 square metres in size;** **(ii) channels exceeding 100 square metres in size;** **(iii) bridges exceeding 100 square metres in size;** **(iv) dams, where the dam, including infrastructure and water surface area, exceeds 100 square metres in size;** **(v) weirs, where the weir, including infrastructure and water surface area, exceeds 100 square metres in size;** **(vi) bulk storm water outlet structures exceeding 100 square metres in size;** **(vii) marinas exceeding 100 square metres in size;** **(viii) jetties exceeding 100 square metres in size;** **(ix) slipways exceeding 100 square metres in size;** **(x) buildings exceeding 100 square metres in size;** **(xi) boardwalks exceeding 100 square metres in size; or** **(xii) infrastructure or structures with a physical footprint of 100 square metres or more;** **where such development occurs—** **(a) within a watercourse;** **(b) in front of a development setback; or** **(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; —** **excluding—** **(aa) the development of infrastructure or structures within existing ports or**	**For the construction of infrastructure (pipelines, vineyards/orchards) within 32m of a watercourse.**

	harbours that will not increase the development footprint of the port or harbour; **(bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;** **(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;** **(dd) where such development occurs within an urban area; or** **(ee) where such development occurs within existing roads or road reserves.**	
19	**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—** **(i) a watercourse;** **(ii) the seashore; or** **(iii) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater—** **but excluding where such infilling, depositing , dredging, excavation, removal or moving—** **(a) will occur behind a development setback;** **(b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or** **falls within the ambit of activity 21 in this Notice, in which case that activity applies.**	**For the infilling of ephemeral streams/drainage areas.**
Government Notice R324 Activity No(s):	Describe the relevant **Basic Assessment Activity(ies)** in writing as per **Listing Notice 3** (GN No. R324)	Describe the portion of the development as per the project description that relates to the applicable listed 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 a maintenance management plan.** **In Northern Cape:** **(i) Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;** **(ii) Within critical biodiversity areas identified in bioregional plans;** **(iii) Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuary, whichever**	**As indicated by the Botanical Specialist the proposed development lies within two CBA's and therefore this activities is triggered for the removal of 300 square meters or more of vegetation within a CBA.**

	distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas; or **(iv) On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.**	
14	**The development of—** **(i) canals exceeding 10 square metres in size ;** **(ii) channels exceeding 10 square metres in size;** **(iii) bridges exceeding 10 square metres in size;** **(iv) dams, where the dam, including infrastructure and water surface area exceeds 10 square metres in size;** **(v) weirs, where the weir, including infrastructure and water surface area exceeds 10 square metres in size;** **(vi) bulk storm water outlet structures exceeding 10 square metres in size;** **(vii) marinas exceeding 10 square metres in size;** **(viii) jetties exceeding 10 square metres in size;** **(ix) slipways exceeding 10 square metres in size;** **(x) buildings exceeding 10 square metres in size;** **(xi) boardwalks exceeding 10 square metres in size; or** **(xii) infrastructure or structures with a physical footprint of 10 square metres or more;** **where such development occurs—** **(a) within a watercourse;** **(b) in front of a development setback; or** **(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;** **excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.** (a) **In Free State, Limpopo, Mpumalanga and Northern Cape:** **i. In an estuary;** **ii. Outside urban areas, in:** (aa) **A protected area identified in terms of NEMPAA, excluding conservancies;** (bb) **National Protected Area Expansion Strategy Focus areas;** (cc) **World Heritage Sites;** (dd) **Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as**	**As indicated by the Botanical Specialist the proposed development lies within two CBA's and therefore this activities is triggered for the development of bulk storm water structures, slipways and infrastructure within 32m of a stream outside urban areas within a CBA.**

	adopted by the competent authority; (ee) **Sites or areas identified in terms of an International Convention;** (ff) **Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;** (gg) **Core areas in biosphere reserves;** (hh) **Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve;** (ii) **Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined; or** **iii. In urban areas:** (aa) **Areas zoned for use as public open space;** (bb) **Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority, zoned for a conservation purpose; or** **Areas seawards of the development setback line.**	
Government Notice R325 Activity No(s):	Describe the relevant **Scoping and EIA Activity (ies)** in writing as per **Listing Notice 2** (GN No. R325)	Describe the portion of the development as per the project description that relates to the applicable listed activity
15	**The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for—** **(i) the undertaking of a linear activity; or** **(ii) maintenance purposes undertaken in accordance with a maintenance management plan.**	**For the clearance of areas in total more than 20 hectares (proposed development 34ha) for the development of agricultural areas.**
Please note: Only those activities for which the applicant applies will be considered for authorisation. The onus is on the applicant to ensure that all the applicable listed activities are included in the application. Failure to do so may invalidate the application.		

3 Policies and legislative context

3.1 Environmental regulations and Acts

3.1.1 EIA regulations

REGULATIONS IN TERMS OF CHAPTER 4 OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998

Environmental Impact Assessment Regulations, 2014 as amended by the Regulations dated 7 April 2017 9GN 326)

The Minister of Environmental Affairs and Tourism has in terms of section 21 and 22 read with Appendix 2 of the National Environmental Management Act, 1998 (Act No. 107 of 1998), Environmental Impact Assessment Regulations, 2014 (as amended by the Regulations dated 7 April 2017 in GN 326) made the regulations set out in the schedule hereto.

The following is an extract from this legislation and explains the EIA Process. The Content of the EIR is included in Table 1.1 above, which is in terms of Appendix 3 of these EIA Regulations.

The numbering below refers to the section of the EIA Regulations.

Submission and consideration of environmental impact assessment report and environmental management programme

23. (1) The applicant must within 106 days of the acceptance of the scoping report submit to the competent authority—

(a) an environmental impact assessment report inclusive of any specialist reports, and an EMPr, which must have been subjected to a public participation process of at least 30 days and which reflects the incorporation of comments received, including any comments of the competent authority; or

(b) a notification in writing that the reports, and an EMPr, will be submitted within 156 days of receipt of the application by the competent authority, as significant changes have been made or significant new information has been added to the environmental impact assessment report or EMPr, which changes or information was not contained in the reports consulted on during the initial public participation process contemplated in subregulation (1)(a), and that the revised environmental impact assessment report or EMPr will be subjected to another public participation process of at least 30 days.

(2) In the event where subregulation (1)(b) applies, the environmental impact assessment report inclusive of specialist reports, and EMPr, which reflects the incorporation of comments received, including any comments of the competent authority, must be submitted to the competent authority within 156 days of the acceptance of the scoping report by the competent authority.

(3) An environmental impact assessment report must contain all information set out in Appendix 3 to these Regulations or comply with a protocol or minimum information requirements relevant to the application as identified and *gazetted* by the Minister in a government notice and, where the application is for an environmental authorisation for prospecting, exploration, extraction of a mineral or petroleum resource, including primary processing or activities directly related thereto, the environmental impact assessment report

must contain attachments that address the requirements as determined in the regulations, pertaining to the financial provision for the rehabilitation, closure and post closure of prospecting, exploration, mining or production operations, made in terms of the Act.

(4) An EMPr must contain all information set out in Appendix 4 to these Regulations or must be a generic EMPr relevant to the application as identified and *gazetted* by the Minister in a government notice and, where the application for an environmental authorisation is for prospecting, exploration, or extraction of a mineral or petroleum resource, including primary processing or activities directly related thereto, the EMPr must contain attachments that address the requirements as determined in the regulations, pertaining to the financial provision for the rehabilitation, closure and post closure of prospecting, exploration, mining or production operations, made in terms of the Act.

(5) A specialist report must contain all information set out in Appendix 6 to these Regulations or comply with a protocol or minimum information requirements relevant to the application as identified and *gazetted* by the Minister in a government notice.

Appendix 3: Environmental impact assessment process

1. (1) The environmental impact assessment process must be undertaken in line with the approved plan of study for environmental impact assessment.

(2) The environmental impacts, mitigation and closure outcomes as well as the residual risks of the proposed activity must be set out in the environmental impact assessment report.

Objective of the environmental impact assessment process

2. The objective of the environmental impact assessment process is to, through a consultative process—

(a) determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;

(b) describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the development footprint on the approved site as contemplated in the accepted scoping report;

(c) identify the location of the development footprint within the approved site as contemplated in the accepted scoping report based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;

(d) determine the—

(i) nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and

(ii) degree to which these impacts—

(aa) can be reversed;

(bb) may cause irreplaceable loss of resources, and

(cc) can be avoided, managed or mitigated;

(e) identify the most ideal location for the activity within the development footprint of the approved site as contemplated in the accepted scoping report based on the lowest level of environmental sensitivity identified during the assessment;

(f) identify, assess, and rank the impacts the activity will impose on the development footprint on the approved site as contemplated in the accepted scoping report through the life of the activity;
(g) identify suitable measures to avoid, manage or mitigate identified impacts; and
(h) identify residual risks that need to be managed and monitored.

Scope of assessment and content of environmental impact assessment reports

3. (1) An environmental impact assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include—

(a) details of—
  (i) the EAP who prepared the report; and
  (ii) the expertise of the EAP, including a curriculum vitae;
(b) the location of the development footprint of the activity on the approved site as contemplated in the accepted scoping report, including:
  (i) the 21 digit Surveyor General code of each cadastral land parcel;
  (ii) where available, the physical address and farm name; and
  (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;
(c) a plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is—
  (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken;
  (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;
(d) a description of the scope of the proposed activity, including—
  (i) all listed and specified activities triggered and being applied for; and
  (ii) a description of the associated structures and infrastructure related to the development;
(e) a description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context;
(f) a motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred development footprint within the approved site as contemplated in the accepted scoping report;
(g) a motivation for the preferred development footprint within the approved site as contemplated in the accepted scoping report;
(h) a full description of the process followed to reach the proposed development footprint within the approved site as contemplated in the accepted scoping report, including:
  (i) details of the development footprint alternatives considered;
  (ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;
  (iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;

(iv) the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;
(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;
(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;
(vii) positive and negative impacts that the proposed activity and 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;
(viii) the possible mitigation measures that could be applied and level of residual risk;
(ix) if no alternative development footprints for the activity were investigated, the motivation for not considering such; and
(x) a concluding statement indicating the location of the preferred alternative development footprint within the approved site as contemplated in the accepted scoping report;

(i) a full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred development footprint on the approved site as contemplated in the accepted scoping report through the life of the activity, including—
(i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and
(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;

(j) an assessment of each identified potentially significant impact and risk, including—
(i) cumulative impacts;
(ii) the nature, significance and consequences of the impact and risk;
(iii) the extent and duration of the impact and risk;
(iv) the probability of the impact and risk occurring;
(v) the degree to which the impact and risk can be reversed;
(vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and
(vii) the degree to which the impact and risk can be mitigated;

(k) where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;

(l) an environmental impact statement which contains—
(i) a summary of the key findings of the environmental impact assessment:
(ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities

of the preferred development footprint on the approved site as contemplated in the accepted scoping report indicating any areas that should be avoided, including buffers; and

(iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;

(m) based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation;

(n) the final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment;

(o) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;

(p) a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;

(q) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;

(r) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised;

(s) an undertaking under oath or affirmation by the EAP in relation to—

(i) the correctness of the information provided in the reports;

(ii) the inclusion of comments and inputs from stakeholders and I&APs;

(iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and

(iv) 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;

(t) where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;

(u) an indication of any deviation from the approved scoping report, including the plan of study, including─

(i) any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and

(ii) a motivation for the deviation;

(v)any specific information that may be required by the competent authority; and

(w) any other matters required in terms of section 24(4)(a) and (b) of the Act.

(2) Where a government notice *gazetted* by the Minister provides for any protocol or minimum information requirement to be applied to an environmental impact assessment report the requirements as indicated in such notice will apply.

Terms of Reference for EIA studies

According to the NEMA 2014 Regulations as amended by the EIA Regulations of 2017 (dated 7 April 2017) in GN 326, the Specialist Reports need to be prepared in terms of Appendix 6 of these Regulations, as included below:

"Appendix 6: Specialist reports

1. (1) A specialist report prepared in terms of these Regulations must contain—

(a) details of—

(i) the specialist who prepared the report; and

(ii) the expertise of that specialist to compile a specialist report including a curriculum vitae;

(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;

(c) an indication of the scope of, and the purpose for which, the report was prepared;

(cA) an indication of the quality and age of base data used for the specialist report;

(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;

(d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;

(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;

(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;

(g) an identification of any areas to be avoided, including buffers;

(h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;

(i) a description of any assumptions made and any uncertainties or gaps in knowledge;

(j) a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;

(k) any mitigation measures for inclusion in the EMPr;

(l) any conditions for inclusion in the environmental authorisation;

(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;

(n) a reasoned opinion—

(i) whether the proposed activity, activities or portions thereof should be authorised;

(iA) regarding the acceptability of the proposed activity or activities; and

(ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;

(o) a description of any consultation process that was undertaken during the course of preparing the specialist report;

(p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and

(q) any other information requested by the competent authority.

(2) Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply."

3.1.2 Environmental process

The environmental process is shown graphically in Figure 3.1. At this stage the current process is as outlined in the Figure 3.1 below.

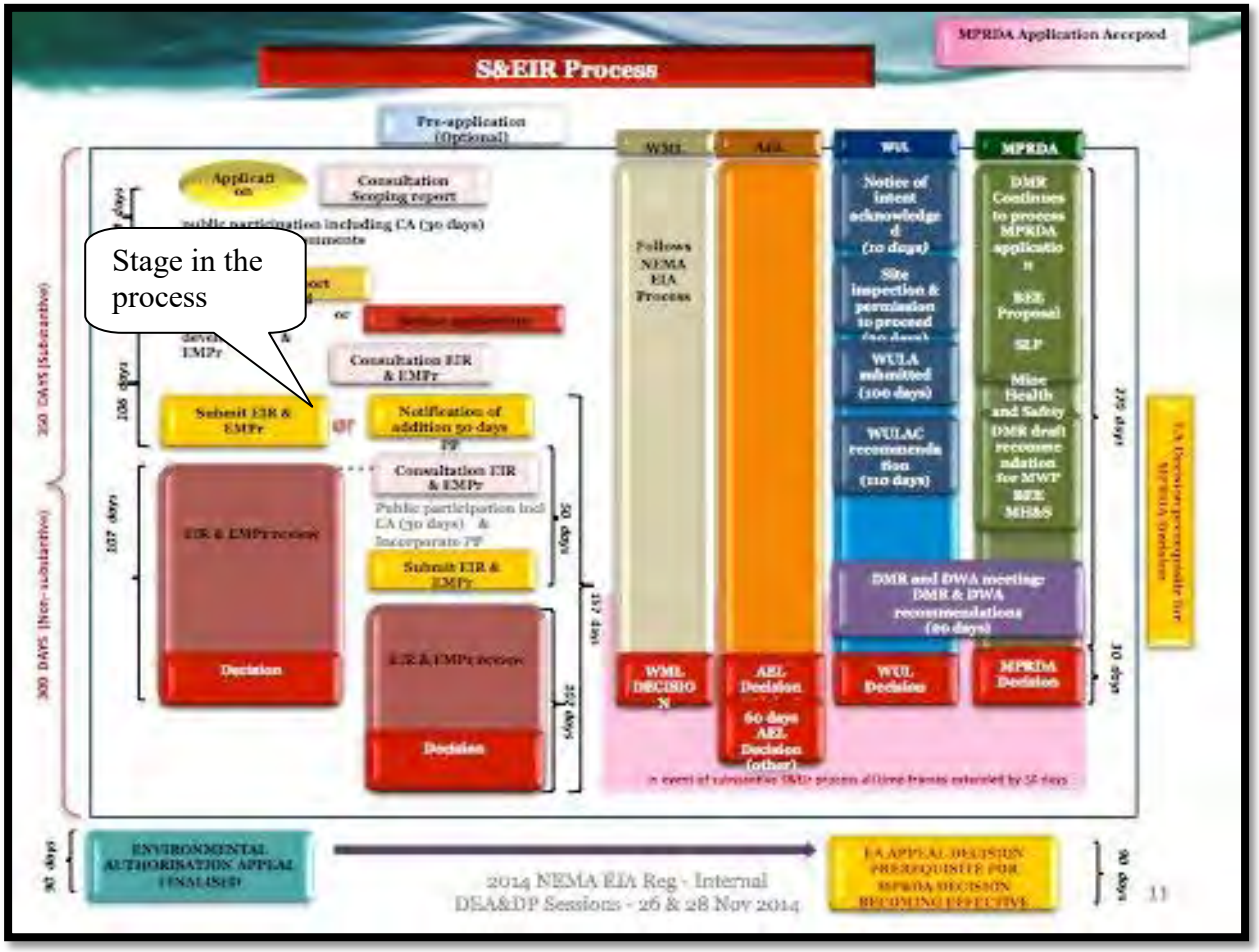


Figure 3.1: Environmental application procedure

3.1.3 NEMA

The purpose of NEMA (Chapter 1) is outlined below:

Purpose of Regulations

2. The purpose of these Regulations is to regulate the procedure and criteria as contemplated in Chapter 5 of the Act relating to the preparation, evaluation, submission, processing and consideration of, and decision on, applications for environmental authorisations for the commencement of activities, subjected to environmental impact assessment, in order to avoid or mitigate detrimental impacts on the environment, and to optimise positive environmental impacts, and for matters pertaining thereto.

3.2 Other applicable legislation

3.2.1 National Water Act, 1998

The purpose of the National Water Act is to provide a framework for the equitable allocation and sustainable management of water resources. Both surface and groundwater sources are redefined by the Act as national resources which cannot be owned by any individual, and rights to which are not automatically coupled to land rights, but for which prospective users must apply for authorisation and register as users. The National Water Act also provides for measures to prevent, control and remedy the pollution of surface and groundwater sources.

"Regulations regarding the Procedural Requirements for Water Use Licence Applications and Appeals" (in GN No. R267 dated 24 March 2017) were recently promulgated in terms of the National Water Act (1998) in GG No. 40713.

An application for a license in terms of the National Water Act, 1998 is being made by the developer, Oseiland Boerderye for the transfer water rights, taking of water from the Canal and Orange River at an existing pump station, in addition to the application to impede the flow of water and to alter the beds, banks and course of the watercourses on site. The water usages is summarised as the follows:

(a) taking water from a water resource;	Transfer of water rights
(c) impeding or diverting the flow of water in a watercourse	Impeding flow
(i): altering the bed, banks, course or characteristics of a watercourse;	Altering the banks of a water course

All the necessary information is included in the WULA as part of this EIA phase of the application, attached at Appendix 11.3.4.

In addition, the Agri-BEE Report attached at Appendix 11.3.3 is submitted as a component of the WULA to report on the social and economic management of access to a new water use license as part of this specific farm and land area.

3.2.2 Heritage Resources Act, 1999

The National Heritage Resources Act (NHRA) No. 25 of 1999 protects a variety of heritage resources as follows:

- Section 34: structures older than 60 years;
- Section 35: paleontological, prehistoric and historical material (including ruins) more than 100 years old;
- Section 36: graves and human remains older than 60 years and located outside of a formal cemetery administered by a local authority; and
- Section 37: public monuments and memorials.

Following Section 2, the definitions applicable to the above protections are as follows:

- Structures: "any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith";
- Paleontological material: "any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace";

- Archaeological material: a) “material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures”; b) “rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation”; c) “wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the Republic, as defined respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation”; and d) “features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found”;
- Grave: “means a place of interment and includes the contents, headstone or other marker of such a place and any other structure on or associated with such place”; and
- Public monuments and memorials: “all monuments and memorials a) “erected on land belonging to any branch of central, provincial or local government, or on land belonging to any organisation funded by or established in terms of the legislation of such a branch of government”; or b) “which were paid for by public subscription, government funds, or a public-spirited or military organisation, and are on land belonging to any private individual.”

While landscapes with cultural significance do not have a dedicated Section in the NHRA, they are protected under the definition of the National Estate (Section 3). Section 3(2)(c) and (d) list “historical settlements and townscapes” and “landscapes and natural features of cultural significance” as part of the National Estate. Furthermore, Section 3(3) describes the reasons a place or object may have cultural heritage value.

Section 38 (2a) states that if there is reason to believe that heritage resources will be affected then an impact assessment report must be submitted.

For this proposed development the following is applicable:

1. Legal requirements

In terms of Section 38 (1) (c) (iii) of the National Heritage Resources Act 1999 (Act 25 of 1999), a Heritage Impact Assessment (HIA) of the proposed project is required if the footprint area of the proposed development is more than 5000m² in extent.

Section 38 (1) (a) of the Act also indicates that any person constructing a powerline, pipeline or road, or similar linear development or barrier exceeding 300m in length is required to notify the responsible heritage resources authority, who will in turn advise whether an impact assessment report is needed before development can take place.

2. Aim of the AIA

The overall purpose of the AIA is to assess the sensitivity of archaeological resources in the affected areas, to determine the potential impacts on such resources, and to avoid and/or minimize such impacts by means of management and/or mitigation measures.

The significance of archaeological resources was assessed in terms of their content and context. Attributes considered in determining significance include artefact and/or ecofact types, rarity of finds, exceptional items, organic preservation, potential for future research, density of finds and the context in which archaeological traces occur

Under the National Environmental Management Act (No. 107 of 1998; NEMA), as amended, the project is subject to an EIA. Ngwao-Boswa Ya Kapa Bokoni (Heritage Northern Cape; for built environment and cultural landscapes) and the South African Heritage Resources Agency (SAHRA

for archaeology and palaeontology) are required to provide comment on the proposed project in order to facilitate final decision making by the Northern Cape Department of Environment and Nature Conservation.

3.2.3 Northern Cape Nature Conservation Act, 2009 (Act No. 9 of 2009) and Regulations (2011)

The following should be noted, should any Botanical constraints be determined the following should be done:

"The assessment takes careful note of the general requirements and recommendations of the Department of Environment and Nature Conservation (Northern Cape) and the Botanical Society of South Africa for proactive assessment of biodiversity of proposed development sites and follows published guidelines for evaluating potential impacts on the natural vegetation in an area earmarked for some form of development (Brownlie 2005)."

3.2.4 Other policies, plans or guidelines

Other policies, municipal plans or guideline documents that are relevant to the project:

- Guidelines published in terms of NEMA EIA Regulations
- Conservation of Agricultural Resources Act (Act 43 of 1983)

4 Need and Desirability

As stated in the NEMA 2014 Guidelines on Needs and Desirability *"....the need for and desirability of an proposed activity must specifically and explicitly be addressed throughout the EIA process (screening, "scoping", and assessment) when dealing with individual impacts and specifically in the overall impact summary by taking into account the answers to inter alia the following questions..."* "it is therefore assumed that for the EIA Phase, the Need and Desirability has been adequately addressed within the table below, which includes all the questions outlined in the Guidelines.

Table 4: Questions and answers pertaining to Need and Desirability of the Proposed Development

Question	Answer
1. How will this development (and its separate elements/aspects) impact on the ecological integrity of the area? 1.1. How were the following ecological integrity considerations taken into account?: 1.1.1.Threatened Ecosystems, 1.1.2.Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure, 1.1.3.Critical Biodiversity Areas ("CBAs") and Ecological Support Areas ("ESAs"), 1.1.4.Conservation targets, 1.1.5. Ecological drivers of the ecosystem, 1.1.6.Environmental Management Framework, 1.1.7.Spatial Development Framework, and 1.1.8.Global and international responsibilities relating to the environment (e.g. RAMSAR sites, Climate Change, etc.).	The proposed development will not significantly affect the ecological integrity of the area, although the proposed development of the agricultural areas will be in a CBA. The properties (Erf 2185 and 2193) are located in an area classified as CBA2 as outlined in the botanical report. The Renosterkop study area is not near any focus areas of the National Protected Area Expansion Strategy nor is it close to any mountain catchment area. It is separated from the Augrabies National Park by numerous other farms. The expected impact on the 'open plains' Bushmanland Arid Grassland would be Low Negative without mitigation and Very Low Negative with mitigation. The impact on the seasonal watercourses would be High Negative without mitigation and Medium Negative with mitigation.
1.2. How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	These areas were chosen due to their location within property. The 'Northern Areas' are located within the main sections of the ephemeral streams. Areas with the larger connecting ephemeral streams were excluded from the proposed agricultural development, therefore forcing the development to southern side of the site to reduce the impact on the ecosystem or biological diversity of the larger connecting ephemeral streams.
1.3. How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	This development will not pollute or degrade the biophysical environment. Care will be taken during construction to prevent any pollution or degradation.
1.4. What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?	It is an agricultural activity and no waste will be generated.
1.5. How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and	The planned development is situated within a purely agricultural area with no other land uses in close proximity. The proposed development will therefore

where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	have no impact on any of the surrounding land uses in the area. With reference to: Cultural/Heritage/Archaeologically: Overall, the results of the desktop study indicate that the proposed activity (i. e. a vineyard/orchards development), including associated activities (i. e. water pipelines), will not have an impact of great significance on the archaeological heritage, as these are expected to be limited. The study has captured a good record of the archaeological heritage present on the proposed development site. Indications are that, in terms of archaeological heritage, the receiving environment is not a very sensitive or threatened landscape. The impact significance of the proposed development on important archaeological heritage is therefore assessed as LOW.
1.6. How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	The only non-renewable natural resource to be used is water. This resource will be used for irrigational purposes and therefore contributes to the economy. It is therefore not a negative impact as the resource will be used sparingly/water wise measures implemented. Note existing water rights, owned by the applicant will be used for the establishment of these areas. A water use license application was submitted to transfer the rights from other properties owned by the applicant. A small amount of electricity will be used for irrigation within the existing system. This will however not result in additional usage from ESKOM.
1.7. How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts? 1.7.1. Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialised growth)? (note: sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life) 1.7.2. Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used (i.e. what are the opportunity costs of using these resources for the proposed development alternative?) 1.7.3. Do the proposed location, type and scale of	The proposed development of agricultural activities in itself is a renewable resource. Therefore, this development will have a positive impact on the resource and will not negatively impact or jeopardise the integrity of the existing resources. The proposed development will make use of an existing resource (water) however, it will reduce the resource dependency by making use of water wise technology. It is also a great use of the resource as it will provide a new resource (food) and contribute to the economy as well as food security.

development promote a reduced dependency on resources?	
1.8. How were a risk-averse and cautious approach applied in terms of ecological impacts?: 1.8.1. What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)? 1.8.2. What is the level of risk associated with the limits of current knowledge? 1.8.3. Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	Gaps, uncertainties and assumptions: Botanical: The environment was extremely dry at the time of the site visit so many of the herbaceous plants were not in a condition that allowed for positive identification. However, apart from grasses most herbaceous plant species do not make up a significant component of the composition of the plant communities. The indicator species are mainly shrubs or small trees that were easily identified even with the prevailing dry conditions. Cultural/Heritage/Archaeologically: There were no constraints associated with the study. Access to the site via a farm gate alongside R64 was easy, and archaeological visibility was very good.
1.9. How will the ecological impacts resulting from this development impact on people's environmental right in terms following: 1.9.1. Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts? 1.9.2. Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance?	The proposed development will not impact on the rights of other people. The proposed development might have a small impact on air quality as during construction of the agricultural areas dust may be generated. This will, however, be mitigated. Visually there is no impact on surrounding land owners because the activity is similar to neighbouring developments. Positive impacts can be access to renewable resources such as agricultural lands, food, socio-economically providing additional job opportunities.
1.10. Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?	The proposed development will not negatively impact on livelihoods or heritage sites. The development will, however, provide additional job opportunities for local workers.
1.11. Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?	Overall the proposed development will have a low negative impact on vegetation after mitigation. The impact significance of the proposed development on important archaeological heritage was assessed as low. The development will have a positive impact from a socio-economic perspective through job creations and contributions to the economy.
1.12. Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?	The preferred alternative has a low negative impact on vegetation, low impact negative on heritage/archaeological indicators and has a positive impact from a socio-economic perspective through job creations and contributions to the economy, best location, most accessible to existing infrastructure and best technology alternative.
1.13. Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?	Positive economic impact with the enlargement of the agricultural produce to be exported. The impact is due to additional water resource use; this is, however, an existing use, positive impact due to enhancement of production of agricultural produce.

2.1. What is the socio-economic context of the area, based on, amongst other considerations, the following considerations? 2.1.1. The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area, 2.1.2. Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.), 2.1.3. Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.), and 2.1.4. Municipal Economic Development Strategy ("LED Strategy").	The properties are part of Oseiland Eiendomme PTY Ltd, are highly commercial agricultural (farming) units in the area and is surrounded by other similar farms and communities. The proposed development does not fall within an urban area, however, does fall within the boundaries of the Kai! Garib Municipality. The closest communities are that of Augrabies and Marchand. The properties are situated approximately 1km outside of Augrabies. People working on the farms will be sourced locally. Sections of the property will be developed intensively as indicated in this application but some large areas as at present will remain undeveloped. The proposed development will contribute positively to the local economy and the provision of job opportunities in the region and the Northern Cape Province. The planned development is situated within a purely agricultural area with no other land uses in close proximity. The proposed development will therefore have no impact on any surrounding land uses in the area.
2.2. Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area? 2.2.1. Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?	It is envisaged that Oseiland Eiendomme PTY Ltd will need to create some new permanent and a number of new seasonal employee positions in the near future should the new water use be allocated. The entity also plans to convert some of the current seasonal positions to permanent positions should this water licence use application be successful. As mentioned before, table grape production is very labour-intensive, even more so if packed as well. It creates around 4 new employment positions per hectare if also packed on the farm. Citrus production plus the raisin plant creates another 1 position per hectare. The new water use licence will therefore create an immediate need to appoint more workers and supervisors. The new water use licence will lead to the expansion of the farming operation, and will create a demand for new staff and new skills, eg. □ Skilled agricultural labourers □ Specific knowledge of vineyards and citrus fruit production will be needed □ Specific knowledge of fruit packing will be needed □ Support staff will be needed: Admin, forklift drivers, tractor operators and Code 14 drivers. Preference will be given to black/coloured people for these positions, and more specific black/coloured women where possible. Existing employees with experience on the farm, plus the potential to be leaders, will in the first place be identified for new supervisory positions.
2.3. How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	The proposed development will greatly and positively impact on skills development as part of the company's BEE initiatives. In a rural area such as this with a high unemployment rate, any new employment positions

	have a huge impact on the immediate and extended families of such new workers. Add then also the impact of more people with proper housing, undergoing skills training and going to church, sport, etc. and children going to school, to understand the positive impact on this rural community. Even seasonal work opportunities has the advantage of extra income plus the opportunity to gain skills that can in future be used to gain permanent employment on the farm or elsewhere. Not only are the new employment opportunities important, but also the fact that: 1. Existing jobs can be secured: Enough water will directly secure existing and new job opportunities. 2. More sustainable water will immediately create the opportunity to proceed with the expensive exercise to plant new varieties that can spread the preparation, pruning, harvesting and packing seasons over longer periods. This will support the entity in their efforts to convert as much as possible seasonal job opportunities into permanent job opportunities. Especially black females from the farm and neighbouring towns will benefit here. The positive impact on their lives will even be more as more of them will now also be promoted to supervisor level to help manage the increased production as well as the increase in value-adding volume. 3. The increase in production of export produce will bring more foreign capital to South Africa which is much needed to strengthen our economy and as such fully supported by Government. The Agri-BEE report will be included in the EIA phase of the development. SOCIAL PROVISION 1 Measures to address housing and living conditions: □ Most permanent employees live on the farm in subsidised housing with subsidised water and electricity. □ Workers not living on the farm and seasonal workers live in the nearby town and are transported daily to and from work. □ To increase the income of households, spouses of farm workers are used whenever possible for extra temporary and/or seasonal work on the farm. □ Workers are encouraged to establish vegetable gardens at their homes. 2 Measures to provide medical assistance: □ All employees have easy access to medical clinic services. There is a permanent clinic on one of the Oseiland Boerdery properties and the farm has contracted a qualified nurse to visit this clinic every week. □ If more medical attention is needed than the clinic

	can supply, employees are taken to doctor/hospital. Oseiland subsidises medical cost by paying the service provider upfront and the workers can then pay back interest free. HIV/Aids and TB are a problem in the community, so regular information and training sessions are held on the farm by the nurse as a preventative measure. 3 Measures to address educational facilities and opportunities Children have easy access to a crèche on the farm. There are two Primary Schools in the nearby town Augrabies. Augrabies is only 5km from the farm and a Government subsidised bus transport primary school children from the farm on a daily basis to and from school. The nearest High school is in Kakamas, about 30km from the farm. A subsidised bus service also transport these high school learners on a daily basis to and from school.
2.4. Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term?	Yes.
2.5. In terms of location, describe how the placement of the proposed development will: 2.5.1. result in the creation of residential and employment opportunities in close proximity to or integrated with each other, 2.5.2. reduce the need for transport of people and goods, 2.5.3. result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport), 2.5.4. compliment other uses in the area, 2.5.5. be in line with the planning for the area, 2.5.6. for urban related development, make use of underutilised land available with the urban edge, 2.5.7. optimise the use of existing resources and infrastructure, 2.5.8. opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement), 2.5.9. discourage "urban sprawl" and contribute to compaction/densification, 2.5.10. contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs, 2.5.11. encourage environmentally sustainable land development practices and processes, 2.5.12. take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.), 2.5.13. the investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential), 2.5.14. impact on the sense of history, sense of place and	Workers not residing on the property will be provided with transport to and from the site. Not in close proximity to public transport. No bulk services infrastructure will be required. The development took into consideration favourable spatial factors as the property has access to water. The development will not negatively affect the sense of history or heritage/archaeological indicators.

heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area, and 2.5.15. in terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?	
2.6. How were a risk-averse and cautious approach applied in terms of socio-economic impacts?: 2.6.1. What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)? 2.6.2. What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge? 2.6.3. Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	Gaps, uncertainties and assumptions: <u>Botanical:</u> The environment was extremely dry at the time of the site visit so many of the herbaceous plants were not in a condition that allowed for positive identification. However, apart from grasses most herbaceous plant species do not make up a significant component of the composition of the plant communities. The indicator species are mainly shrubs or small trees that were easily identified even with the prevailing dry conditions. <u>Cultural/Heritage/Archaeologically:</u> Access to the site was easy and archaeological visibility was very good. There were no constraints associated with the study. Access to the site via a farm gate alongside R64 was easy, and archaeological visibility was very good.
2.7.How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following: 2.7.1. Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts? 2.7.2. Positive impacts. What measures were taken to enhance positive impacts?	Table grape production is very labour-intensive, even more so if packed as well. It creates around 4 new employment positions per hectare if also packed on the farm. Citrus production plus the raisin plant creates another 1 position per hectare. The new water use licence will therefore create an immediate need to appoint more workers and supervisors. The new water use licence will lead to the expansion of the farming operation, and will create a demand for new staff and new skills, eg. - Skilled agricultural labourers - Specific knowledge of vineyards and citrus fruit production will be needed - Specific knowledge of fruit packing will be needed - Support staff will be needed: Admin, forklift drivers, tractor operators and Code 14 drivers. Preference will be given to black/coloured people for these positions, and more specific black/coloured women where possible. Existing employees with experience on the farm, plus the potential to be leaders, will in the first place be identified for new supervisory positions.
2.8.Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?	The proposed development is for agricultural development in an area not sensitive to ecological impacts with positive socio economic impacts on the local community.
2.9.What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	Design, comments, location, technology alternatives were considered to determine the best option.
2.10. What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate	The project is the development of an existing farm. No discrimination will therefore takes place.

against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)? Considering the need for social equity and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered?	
2.11. What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	The proposed development will occur according to the specific needs of the site and the contractor will have to make use of trained staff.
2.12. What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	Where local communities are employed, it will be the responsibility of the applicant to ensure their safety and to provide the relevant training for the execution of their tasks.
2.13. What measures were taken to: 2.13.1. ensure the participation of all interested and affected parties, 2.13.2. provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, 2.13.3. ensure participation by vulnerable and disadvantaged persons, 2.13.4. promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means, 2.13.5. ensure openness and transparency, and access to information in terms of the process, 2.13.6. ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge, and 2.13.7. ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein were be promoted?	Public participation was done in accordance to the NEMA 2017 Regulations specifications. Skills development will be undertaken for staff.
2.14. Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g.. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?	The proposed development will provide job opportunities for low and middle income groups and will provide foreign capital for high-income groups.
2.15. What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?	Where local communities are employed, it will be the responsibility of the applicant to ensure their safety and to provide the relevant training for the execution of their tasks.
2.16. Describe how the development will impact on job creation in terms of, amongst other aspects: 2.16.1. the number of temporary versus permanent jobs that will be created, 2.16.2. whether the labour available in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area), 2.16.3. the distance from where labourers will have to travel, 2.16.4. the location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits), and	Table grape/Fruit production is very labour-intensive, even more so if packed as well. It creates around 4 new employment positions per hectare if also packed on the farm. Citrus production plus the raisin plant creates another 1 position per hectare. The new water use licence will therefore create an immediate need to appoint more workers and supervisors. The new water use licence will lead to the expansion of the farming operation, and will create a demand for new staff and new skills, eg.

2.16.5. the opportunity costs in terms of job creation (e.g. a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.).	Skilled agricultural labourers Specific knowledge of vineyards and citrus fruit production will be needed Specific knowledge of fruit packing will be needed Support staff will be needed: Admin, forklift drivers, tractor operators and Code 14 drivers. Preference will be given to black/coloured people for these positions, and more specific black/coloured women where possible. Existing employees with experience on the farm, plus the potential to be leaders, will in the first place be identified for new supervisory positions. As already stated the proposed development is approximately 2km from Augrabies and Marchand and approximately 30km from Kakamas.
2.17. What measures were taken to ensure: 2.17.1. that there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment, and 2.17.2. that actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?	All policies and legislation were taken into account; all relevant governmental institutions applicable to the applications were requested to comment on the process.
2.18. What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?	Various mitigation measures to be implemented as part of the EA issued.
2.19. Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?	The mitigation measures will be provided by specialists during the EIA phase and will therefore be realistic.
2.20. What measures were taken to ensure that he costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?	The development is agricultural in nature similar to the present usage of the farm.
2.21. Considering the need to secure ecological integrity and a healthy, biophysical, environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?	In a rural area such as this with a high unemployment rate, any new employment positions have a huge impact on the immediate and extended families of such new workers. Add then also the impact of more people with proper housing, undergoing skills training and going to church, sport, etc. and children going to school, to understand the positive impact on this rural community. Even seasonal work opportunities has the advantage of extra income plus the opportunity to gain skills that can in future be used to gain permanent employment on the farm or elsewhere. Not only are the new employment opportunities important, but also the fact that: 1. Existing jobs can be secured: Enough water will directly secure existing and new job opportunities. 2. More sustainable water will immediately create the opportunity to proceed with the expensive exercise to plant new varieties that can spread the preparation, pruning, harvesting and packing seasons over longer periods. This will support the entity in their

	efforts to convert as much as possible seasonal job opportunities into permanent job opportunities. Especially black females from the farm and neighbouring towns will benefit here. The positive impact on their lives will even be more as more of them will now also be promoted to supervisor level to help manage the increased production as well as the increase in value-adding volume. 3. The increase in production of export produce will bring more foreign capital to South Africa which is much needed to strengthen our economy and as such fully supported by Government. The Agri-BEE report is attached at Appendix 11.3.3.
2.22. Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?	Only a positive cumulative socio-economic impact in the form of job creation and foreign capital.

5 Description of the environment and baseline conditions

5.1 Property description

5.1.1 Location in landscape

The characteristic of the area is typical of a farm. The area where the proposed development will take place consists mainly of natural veld with the remains of previous livestock farming, see Figure 5.1. Small ephemeral streams/drainage cross the site at various locations. There is existing infrastructure at the proposed development site across the R64, the new development site has existing roads and infrastructure to link into. Therefore, no new roads would have to be constructed, see Figure 5.1. The pipelines will link in with existing infrastructure at Farm 1726 (further with pump stations and Orange River and on Farm 1576) and will run within the road reserves as far as possible until it connects with the Orange River.

Figure 5.1: Natural veld

The application area is situated on land with a relatively even surface except for some individual rocky areas and small ephemeral streams. The area where the development will take place is therefore suitable for a development of this nature, see Figure 5.2.

As outlined in the SANBI (BGIS Maps), see Figure 5.6, the site is situated in an area outlined as a Critical Biodiversity Area 2. Note, however, that these areas were previously used for live stock farming.

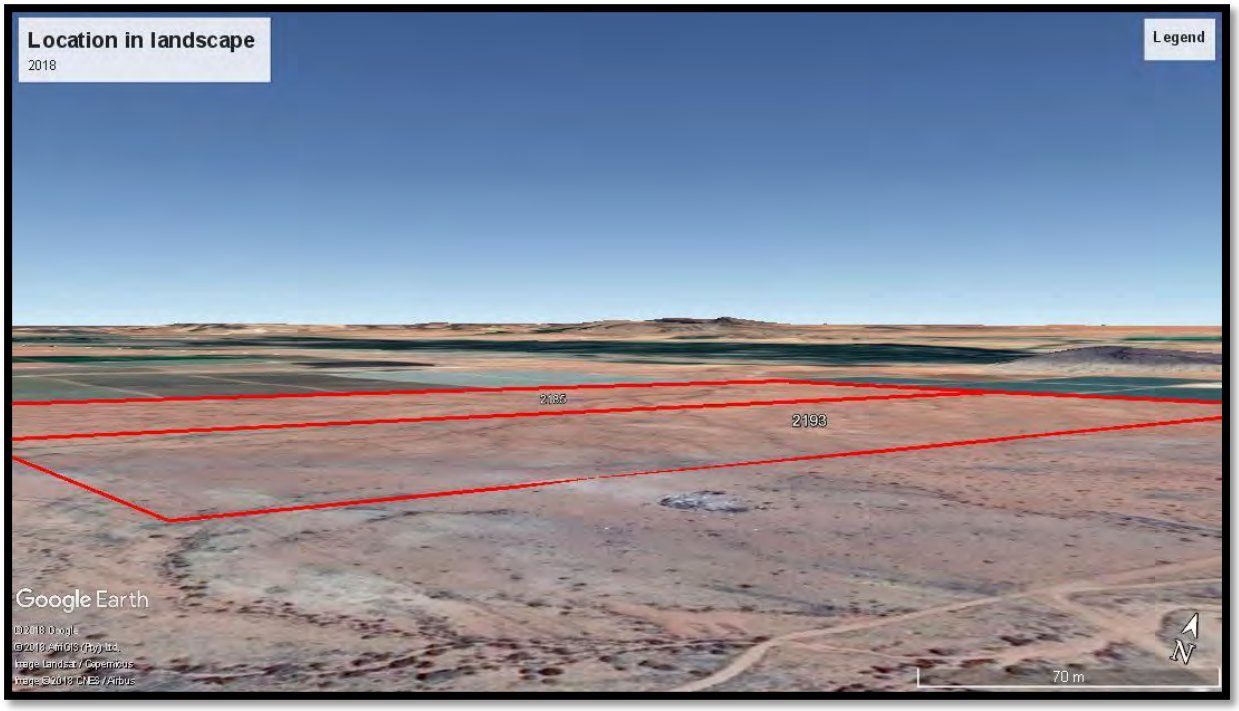


Figure 5.2: Location in the landscape

5.1.2 Climate

Kakamas South Settlement no 2185 and 2193 falls within the Nama-Karoo Biome and has an arid climate. Rainfall peaks in March (autumn) with 10 mm or more occurring in January, February, March, April and October. Augrabies, the nearest town with measured rainfall and temperatures has a mean annual rainfall of 251 mm, mean summer daytime temperature (October to March) of 35 °C and mean winter night temperature (April to September) of 5 °C (Figure 5.3).

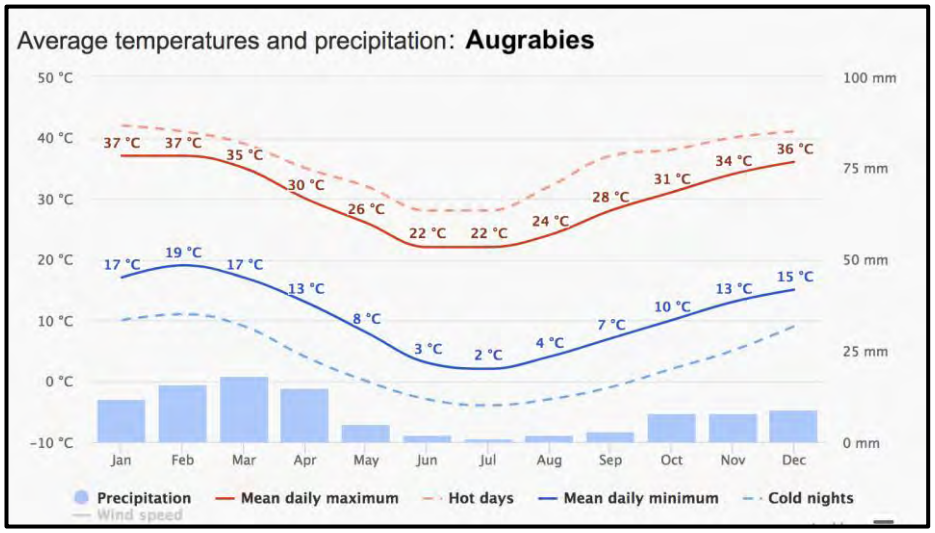
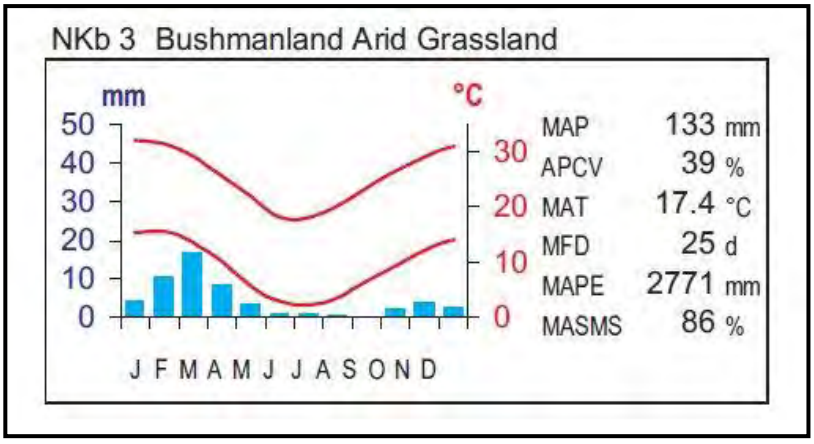


Figure 5.3. Average temperature and precipitation for Augrabies (Source: meteoblue)

A climate diagram for Bushmanland Arid Grassland (Figure 5.4) from Mucina et al. (2006) shows that the mean annual precipitation, as a measure of aridity, is slightly above half toless than half that occurring at Augrabies town. This is probably explained by the proximity of the town to the Orange River.



Showing MAP – Mean Annual Precipitation; ACPV = Annual Precipitation Coefficient of Variance; MAT = Mean Annual Temperature; MFD = Mean Frost Days; MAPE = Mean Annual Potential Evaporation; MASMA = Mean Annual Soil Moisture Stress.

Figure 5.4. Climate diagram for Bushmanland Arid Grassland (10b) (from Mucina et al., 2006)

5.1.3 Topography, Geology and Soils

The terrain studied is on the lowlands south and south-east of Renosterkop. The elevation is approximately 640 m above mean seal level. The landscape is generally flat but is dissected by drainage lines over part the site (Figure 5.5). Soils generally consist of red sandy topsoil with dense weathered granite-gneiss subsoils across the whole site. The land-type is classified as Ag2 for the whole property, described as, *"Migmatite, gneiss and granite predominantly; small outcrops of ultrametamorphic rocks in places (Namaqualand Metamorphic Complex). Occasional small seif dunes; dorbank at many places; very dense subdendritic drainage and dissection pattern; occasional lime nodules and calcrete." (Land Type Survey Staff, 1972--2006).*

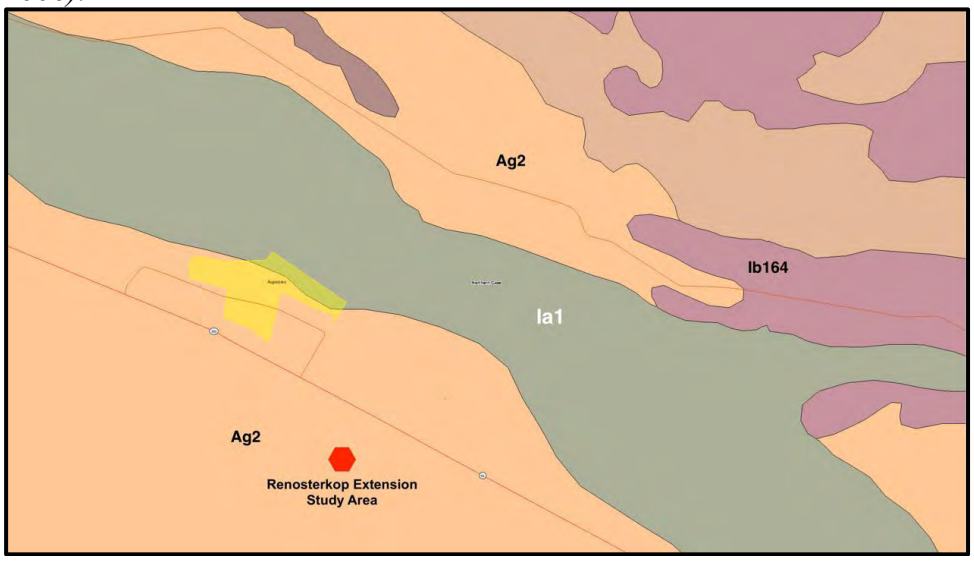


Figure 5.5: Land type map showing that the study area (Erf 2183 and 2195) is all within the Ag2 land type (Source: http://www.agis.agric.za/agisweb/viewer.htm/pn=2016).

5.1.4 Vegetation

The proposed development area will falls within the Nama Karoo Biome, see summary below:

"The Nama Karoo Biome covers an extensive area from the north-west through the central part of South Africa to the south and southeast of the country. It is an arid zone and is subdivided into three bioregions, the Upper Karoo Bioregion, Lower Karoo Bioregion and Bushmanland Bioregion. The Augrabies study area is located in the Bushmanland Bioregion at a north-central location (Rutherford & Westfall, 1994; Rutherford et al. 2006; Mucina et al. 2006 in Mucina & Rutherford, 2006)."

Critical Biodiversity Areas (CBAs) were delimited for the Namaqua District Municipality (NDM) by Desmet & Marsh (2008). The maps they compiled did not include the Augrabies area. However, more recently critical biodiversity areas and ecological support areas have been mapped for the whole of the Northern Cape Province including the Kai! Garib Municipality where the study area is located.

The available CBA shapefiles (Enrico Oosthuysen pers. comm.) for the Northern Cape Province were overlaid on Google Earth ™. This permitted examination of the conservation status classification of the area around Augrabies including the two said properties. The Kakamas South Settlement no 2185 and 2193 study area is located in an area classified as CBA2 (Figure 5.6). It is not near any focus area of the National Protected Area Expansion Strategy nor is it close to any mountain catchment area. It is also separated from the Augrabies Falls National Park by numerous other farms.

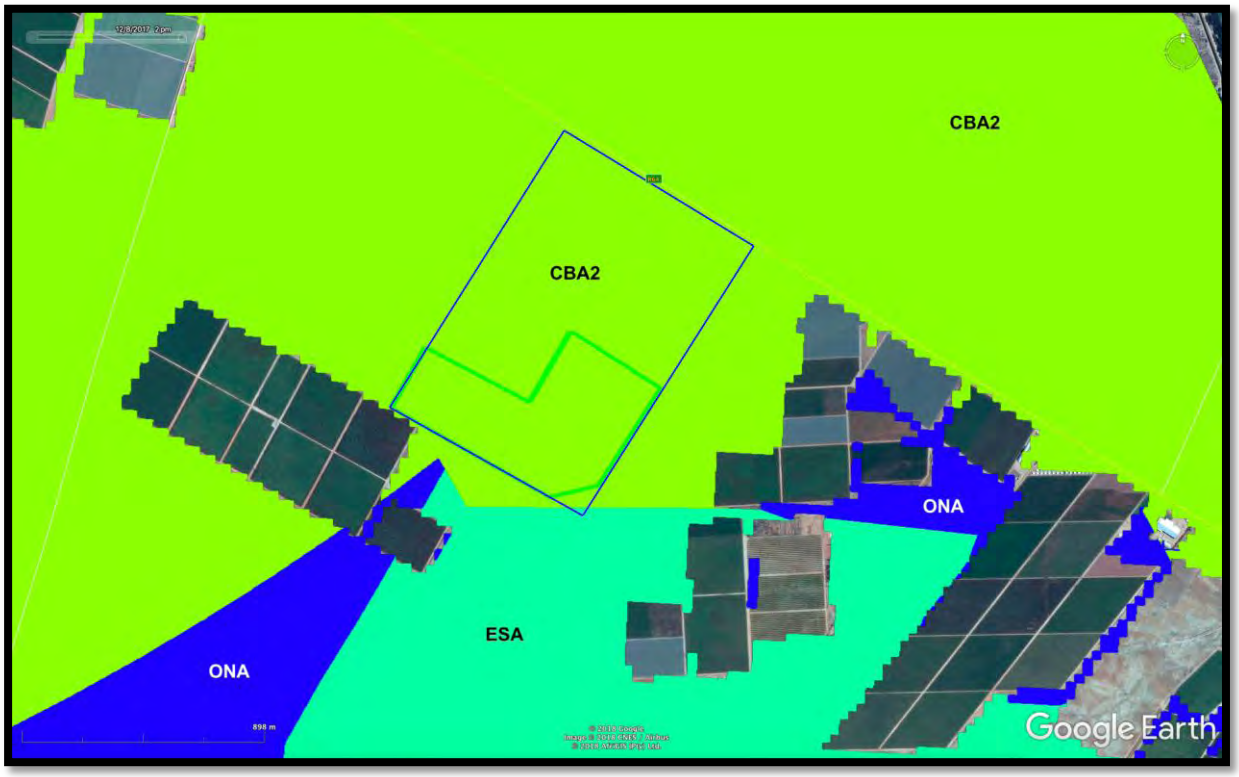


Figure 5.6: Portion of the Critical Biodiversity Areas map for the Northern Cape Province showing indicating that the Renosterkop Extension study area (blue boundary) falls entirely within a CBA2. ESA = Ecological Support Area; ONA = Other Natural Areas.

The entire Kakamas South Settlement no 2185 and 2193 study area falls within an extensive vegetation unit that was mapped by Mucina et al. (2005) and SANBI (2012) as Bushmanland Arid Grassland. It is widespread in the Bushmanland Bioregion and has a Least Threatened conservation status (Government Gazette, 2011; Driver et al. 2012). This vegetation type is characteristically dominated by 'white grasses' in the genus *Stipagrostis* but also has a complement of low shrubs, see Figure 5.7.

The *Vegetation Map of South Africa, Lesotho & Swaziland* (Mucina et al. 2005) was mapped at a broad scale and therefore did not accommodate small-scale variation within the larger area of Bushmanland Arid Grassland. Two main sub-types are found within the Bushmanland Arid Grassland at Kakamas South Settlement no 2193 and 2185. The first is the 'open plains' that have shallow soil and support a grass-dominated community but with scattered low shrubs. The second sub-type is the numerous shallow, often sandy, seasonal drainage lines that form a dendritic pattern in the landscape. The drainage lines are usually narrow, seldom exceeding 4 m in width. Owing to the seasonal concentration of moisture, the drainage lines support tall shrubs and low trees as well as a greater concentration of grasses than found on the 'open plains'.

Figure 5.7: Typical Bushmanland Arid Grassland

5.1.5 Fresh Water Features

The drainage lines for most of the year are dry and sandy and flow for short periods after relatively heavy rains. They are mostly ephemeral streams. The flow of water along the main drainage lines should not be impeded and prevention of erosion should be a high priority if the area is to be developed, see Figure 5.8 (dark blue lines).

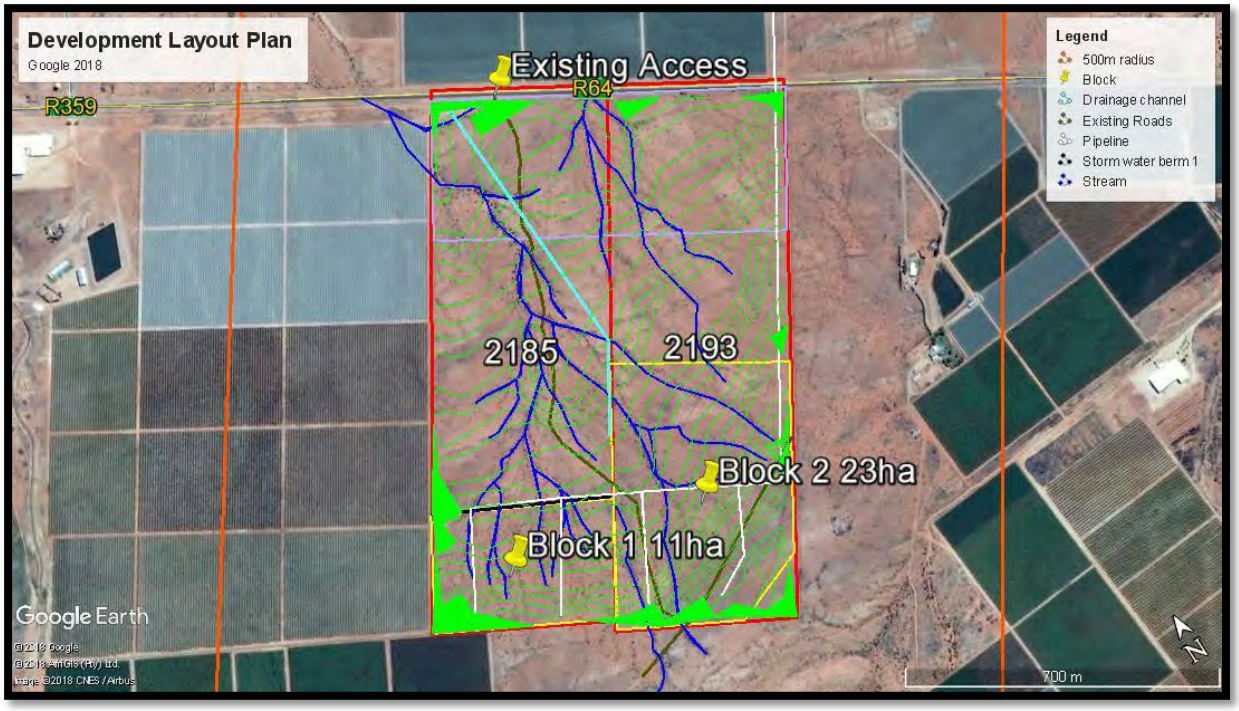


Figure 5.8: Drainage areas

Note the applicant intends to develop a storm water drainage channel (turqois line) and storm water berms (black line) to prevent any downstream contamination and high velocity flows. This will all form part of the Storm Water Management Plan included in the WULA Report in Section 11.3.4.

5.2 Baseline information

5.2.1 Vegetation

The following areas should be taken into consideration:

The 'open plains'

The 'open plains' are areas between the drainage lines on flat, gently sloping to slightly convex areas with shallow sandy soil with surface gravel. These areas are vegetated mainly with 'white' grasses (Stipagrostis spp.), low shrubs and mid-high shrubs, see Figure 5.9

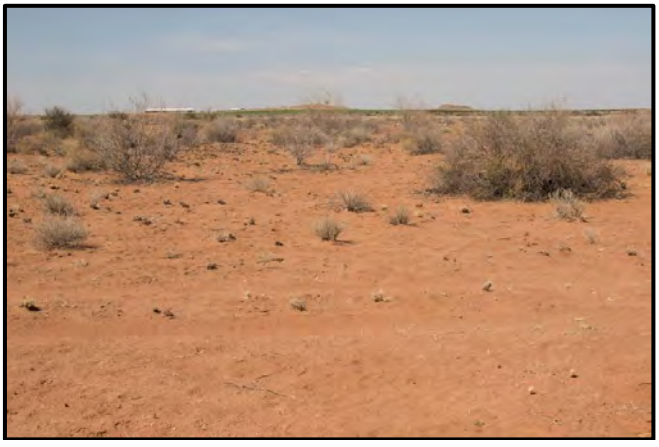


Figure 5.9. Bushmanland Arid Grassland 'open plains' with scattered shrubs.

Sensitivity of the 'open plains'
Apart from the presence of Boscia foetida shrubs and small trees on the open plains, the vegetation has very low sensitivity. Only a few protected Aloe claviflora plants were found near the southern boundary of the property and no other plant species of conservation concern were recorded.

The seasonal drainage lines or watercourses:
The seasonal watercourses extend across the study area with flow direction from south to north. They arise in the south but runoff into these watercourses has already been negatively impacted by development of vineyards on the adjacent property on the south side. The seasonal watercourses are most easily recognized by the concentration of trees within the drainage lines. Senegalia mellifera subsp. detinens occurs in greater abundance along the drainage lines than elsewhere (Figure 5.10) and there are also greater numbers of Boscia foetida plants along the drainage lines than away from them (Figure 5.11). A map of the main drainage lines is provided in Figure 16.

Sensitivity of the seasonal watercourses
The watercourses or drainage lines are botanically more sensitive than the open plains due mainly to the presence of Boscia foetida.

Figure 5.10. A typical seasonal watercourse or drainage line with sandy wash zone and small trees of Senegalia mellifera subsp. detinens (blackthorn, swarthaak).

Figure 5.11. Boscia foetida (shown by black arrow) and Senegalia mellifera subsp. detinens on the edge of a sandy seasonal watercourse.

Protected Plant Species
Only one protected tree species was encountered in the study area namely, *Boscia albitrunca* (Witgatboom; Shepherd's Tree). This species that is protected in terms of the National Forests Act 1998 (Act 94 of 1998), is uncommon in the study area with only two specimens recorded. Loss of the two *Boscia albitrunca* trees due to anticipated clearing for cultivation, would require that permits should be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF).

The closely related *Boscia foetida* that occurs much more commonly on the site is not listed as a protected species.

The other protected species found in the study area is *Aloe claviflora*. It is protected in terms of the Northern Cape Nature Conservation Act, 2009 (Act No. 9 of 2009) since all *Aloe* species, regardless of how common, are protected in the Northern Cape Province. The distribution of *Aloe claviflora* in the study area is towards the southern boundary and within the 34 ha area earmarked for cultivation.

Find the Botanical Assessment Report included in Section 11.3.1

5.2.2 Heritage, Archaeology and Palaeontology

A Heritage/Archaeological specialist Dr Jonathan Kaplan was appointed to conduct an assessment, included in Section 11.3.2.1, of the site and an application was lodge to SAHRA.

The following summary from the AIA:

"Findings:
A 2-day foot survey of the proposed development site was undertaken by ACRM in December 2017, in which the following observations were made:
Despite the relatively large (34ha) footprint area, only small traces of archaeological resources (i.e. stone tools) were recorded during the field study, which, are spread very thinly and unevenly over the surrounding landscape. The majority of the implements comprise single, isolated finds which constitutes an extremely low density scatter of pre-colonial resources. More than 80% of the tools encountered are assigned to the Later Stone Age (LSA), while a small number of Middle Stone Age (MSA) flakes and retouched blade tools were also noted. No Early Stone Age (ESA) tools were noted.
More than 95% of the lithics documented are made on locally available, fine grained banded ironstones, which is a favoured raw material on many sites in the Northern Cape because of its superior flaking qualities. The remainder are in quartz and quartzite. Quartz outcrops locally, and large patches were encountered during the field assessment. No pebbles of banded ironstone were noted, which likely explains the very ephemeral scatter of tools across the landscape.
The majority of the implements recorded comprise utilised and retouched flakes, and chunks, while 13 cores were also counted. These included a vein quartz bipolar core and a high backed banded ironstone bladelet core. At least a dozen chunks with one or two flake scars were also identified, which might constitute residual cores.
With regard to formally retouched tools, three possible scrapers were found, although many of the flakes display secondary (scraper) retouch, and are best described as unstandardized utilitarian tools. One step-flaked piece on an older MSA flake was also noted. An anvil and a broken/split hammerstone were found, possibly indicating low levels of stone tool knapping across the affected landscape No organic remains such as pottery, bone or ostrich eggshell were encountered during the field assessment.

As archaeological sites are concerned, the occurrences are lacking in context. No evidence of any factory or workshop site, or the result of any human settlement was identified within the proposed development site. No significant landscape features such as rocky outcrops, caves or shelters occur within the proposed site, or were noted in the surrounding landscape, which, apart from the imposing Renosterkop Peak north of the R64, is generally flat and featureless. It is maintained that most of the archaeological resources recorded during the study therefore comprise discarded flakes and flake debris (i. e. chunks & cores).
It is noted that large numbers of lithics were recorded north of the R64, on the Farm Renosterkop during the 2016 assessment, while pebbles of banded ironstone, derived from an older gravel/Dwyka tillite flushed from an area on top of Renosterkop, cover much of the development site, which most likely explains the large number of tools documented during the study.
Grading:
Overall, the relatively small numbers, isolated and disturbed context in which they were found, means that the archaeological resources recorded on Kakamas South Settlement No. 2185 and 2193, have been rated as having low (Grade 3C) significance.
Built environment/historical structures:
In terms of the built environment, no old buildings, historical structures or features, or any old equipment was found on the proposed development site.
Graves:
No graves or typical grave markers were encountered during the field study.
Palaeontology:
According to the South Africa Heritage Resources Information System (SAHRIS) fossil-sensitivity map, the proposed development site is of insignificant/zero palaeontological importance. Almond's 2017 PIA desktop study of the proposed Renosterkop vineyard development confirms the `very low palaeontological sensitivity of the study region'.
Impact statement:
Overall, the results of the study indicate that the proposed activity (i. e. a citrus field development) will not have an impact of great significance on pre-colonial archaeological heritage, as these are expected to be limited. Only a small number of tools were documented during the study which, occur in an isolated, and transformed context.
Conclusion:
The study has captured a good record of the archaeological heritage present on the proposed development site.
Indications are that, in terms of archaeological heritage, the receiving environment is not a sensitive or threatened landscape.
The impact significance of the proposed development on important archaeological heritage is assessed as LOW.
Therefore, there are no objections to the authorization of the proposed Renosterkop extension, development.

A Paleontological Assessment was conducted by Dr. John E. Almond, included in Section 11.3.2.2, with the following summary:
"In view of the negligible palaeontological sensitivity of the ancient Precambrian bedrocks as well as the low sensitivity of the geologically recent superficial sediments along the Orange River in the Kakamas – Augrabies region, the proposed agricultural development – including new citrus orchards and buried pipelines - is not considered to pose a significant threat to palaeontological heritage. Although diamond prospecting has occurred in the Renosterkop region, substantial, potentially-fossiliferous older alluvial deposits are not mapped here."

5.2.3 Socio-Economic Environment.

Socio:
The properties as part of the Oseiland Eiendomme PTY Ltd/Bruger Du Plessis Familie Trust are a highly commercial agricultural (farming) unit, which are currently being farmed on a commercial basis. The farms are situated within an area surrounded by other farms and farming communities.
The closest town to the farm is the town of Kakamas. A very competent and motivated workforce manages the other properties as part of company. It has many success stories, which contributes positively to the local economy and the provision of job opportunities in the region and the Northern Cape Province.

It is envisaged that Oseiland Eiendomme PTY Ltd will need to create some new permanent and a number of new seasonal employee positions in the near future should the new development be approved. The entity also plans to convert some of the current seasonal positions to permanent positions should this application be successful.
As mentioned before, table grape production is very labour-intensive, even more so if packed as well. It creates around 4 new employment positions per hectare if also packed on the farm. Citrus production plus the raisin plant creates another 1 position per hectare.
The new development will therefore create an immediate need to appoint more workers and supervisors.
The new development will lead to the expansion of the farming operation, and will create a demand for new staff and new skills, eg.
- Skilled agricultural labourers
- Specific knowledge of vineyards and citrus fruit production will be needed
- Specific knowledge of fruit packing will be needed
- Support staff will be needed: Admin, forklift drivers, tractor operators and Code 14 drivers.

Preference will be given to black/coloured people for these positions, and more specific black/coloured women where possible.
Existing employees with experience on the farm, plus the potential to be leaders, will in the first place be identified for new supervisory positions.

Economic:
In a rural area such as this with a high unemployment rate, any new employment positions have a huge impact on the immediate and extended families of such new workers. The new development will also contribute to more people with proper housing, undergoing skills training and going to church, sport, etc. and children going to school, which will further have a positive impact on this rural community. Even seasonal work opportunities has the advantage of extra income plus the opportunity to gain skills that can in future be used to gain permanent employment on the farm or elsewhere.
Not only are the new employment opportunities important, but also the fact that:

1. Existing jobs can be secured: Enough water and farming development will directly secure existing and new job opportunities.
2. More sustainable development will immediately create the opportunity to proceed with the expensive exercise to plant new varieties that can spread the preparation, pruning, harvesting and packing seasons over longer periods. This will support the entity in their efforts to convert as much as possible seasonal job opportunities into permanent job opportunities. Especially black females from the farm and neighbouring towns will benefit here. The positive impact on their lives will even be more as more

of them will now also be promoted to supervisor level to help manage the increased production as well as the increase in value-adding volume.

3. The increase in production of export produce will bring more foreign capital to South Africa which is much needed to strengthen our economy and as such fully supported by Government.

The Agri-BEE report will be included in the EIA phase of the development.

5.2.4 Electricity

The development falls within the capacity of Eskom. No additional electrical capacity is necessary for the development.

5.2.5 Water Use License Application

The project is an application under Section 21(a) for the proposed transfer of water rights from various properties (owned by the applicant) to Kakamas South Settlement 2193 and 2185 for irrigation purposes.

The project is also for an application under Section 21 (c) and (i) for the construction of agricultural areas across streams (ephemeral), the construction of pipelines.

An application for a license in terms of the National Water Act, 1998 is made by the developer, Oseiland Eiendomme PTY Ltd/ Burger Du Plessis Familie Trust for the transfer water rights, taking of water from the Orange River, the water use application is summarised as the follows:

(a) taking water from a water resource;	Transfer of water rights
(c) impeding or diverting the flow of water in a watercourse	Impeding flow
(i): altering the bed, banks, course or characteristics of a watercourse;	Altering the banks of a water course

The applicant, Oseiland Eiendomme PTY Ltd, wants to expand their farm by extending the existing agricultural areas with approximately 34ha. The applicant wishes to transfer water from various small properties owned by the applicant, which are currently due to location and size uneconomical to farm separately, to the property, Kakamas South Settlement no 2193 and 2185 (Renosterkop), where the new agricultural areas will be developed.

The farm is currently irrigating their vineyards with water that is pumped directly from the canal at an existing abstraction point. The proposal is to construct a new pipeline from the new development on Kakamas South Settlement no 1726, that abstract from a pump station at the canal, water can also be pumped directly from this new off take. Note the development infrastructure above falls under the Environmental Authorisation with reference (NC/EIA06/ZFM/KAI!/AUG1/2017), accept for the new pipeline. The additional water allocation (588 00m³/a from the Kakamas WUA from the various properties) will be pumped directly from the canal and irrigated onto the vineyards or pumped to the storage dam.

It has already been confirmed by the Kakamas WUA that the additional water allocation can be accommodated and that they have no objections to the abstraction from the Orange River

and the Kakamas/Augrabies Canal. The additional water will have little or no effect on the quantity of available water from the water resources within the immediate vicinity.

The establishment of these vineyards will be close to small sections of the unnamed drainage system that is located on site. The drainage system is classified as an ephemeral course as it will only flow sporadically after rain. These watercourses are not considered to be seasonal rivers which will regularly contain water in a seasonal pattern.

The drainage channel system on site has not been mapped (as a watercourse) on any of the maps that are available of the study area. However, upon request from DENC and DWS, the drainage system is seen as a watercourse. Please note: There will be NO planting of vineyards within the larger drainage channels to the north of the site only at the bottom section of the site with smaller sections of the streams.

Refer to Appendix 11.3.4 for the WULA.

5.2.6 Alternative energy and optimisation

The proposed development of the vineyards will in effect result in the following measures to reduce energy and water usage:

- Use water sparingly and the latest irrigation technology and scheduling methods are always implemented.
- Best practices to reduce water consumption and lowest possible electricity consumption.

6 Alternatives

6.1 Alternative development

The development layout was developed using an opportunities and constraints analysis which included on the constraints side, mainly the suitability of the agricultural areas on the particular position from a design perspective as well as possible impacts on natural vegetation and drainage areas, this is clearly outlined in Alternative 1 (preferred alternative). From a technology perspective the suitability of the proposed agricultural activities to be established on the property, this is outlined in alternative 1 and 2. For the Scoping Process the following were considered, Alternative 1(preferred alternative), Alternative 2 the agricultural activities alternative and location and Alternative 3 the No-Go Option.

No site alternative was considered as this is the applicant's property, no other properties available and this site has close access to the Canal and the Orange River. No site alternatives available. Also no technology alternatives available.

For A3 Layouts see section 11.4.1.

The alternatives considered for the development are described below:

Alternative 1 (preferred location/design and technology alternative):

This option will consist of agricultural land to be established, clearly outlined according to:

3. Transformation of approximately 34ha of indigenous vegetation to vineyards,
4. Construction of app. 3km of new pipelines,

The layout is shown below in Figure 6.1.

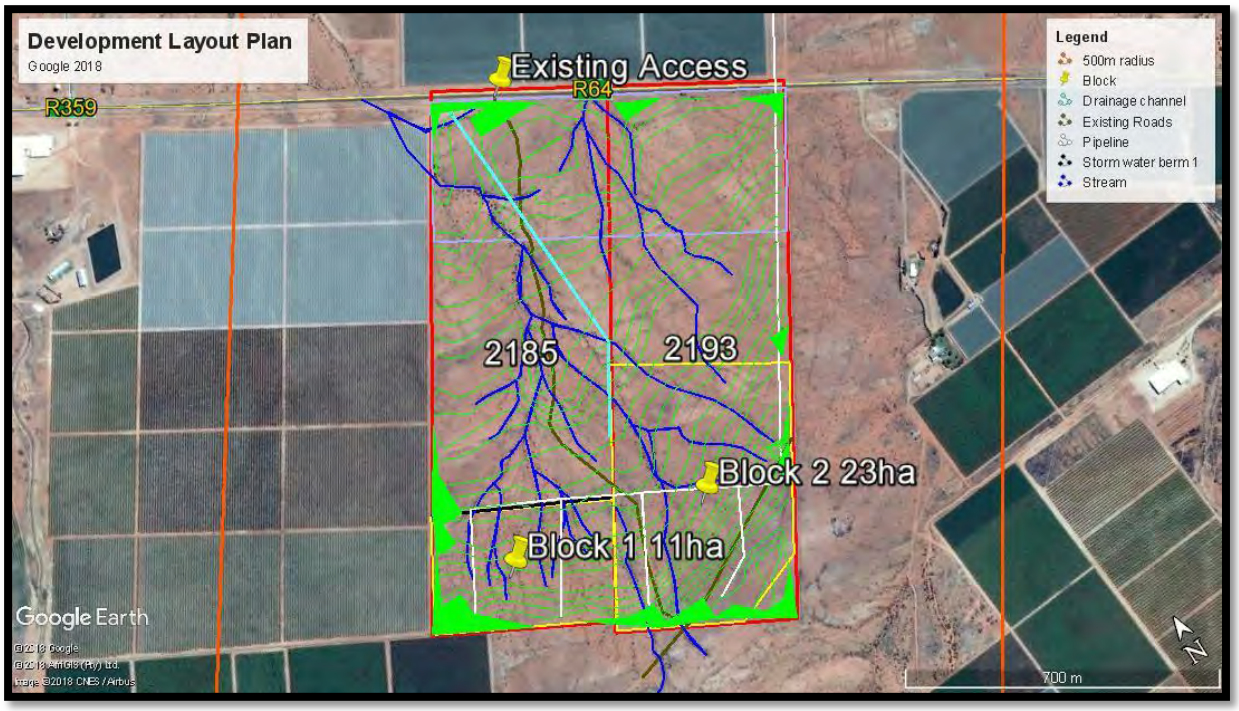


Figure 6.1: Alternative 1 – All proposed development areas

This alternative is considered as preferred for the following reasons:

- From a design perspective this alternative was the best option. It took into consideration design measures by establishing agricultural areas as far as possible on areas that have already been disturbed.
- From a fresh water feature perspective it took into consideration the ephemeral streams, the development was located as far as possible from the main streams to the northern side of the site and located more to the southern area with small ephemeral drainage areas. This was designed to have to lowest possible impact on the streams.
- From a financial perspective this alternative was the best option. This development will contribute to the local and international market.
- From a vegetation perspective this alternative will have a low negative impact on vegetation.
- From a heritage/archaeological perspective this alternative will not have a significant impact, most probably a low impact with mitigation measures.
- This alternative will also fully utilise the farms agricultural potential according to existing water use rights and additional rights to be transferred.
- This alternative will also contribute socially to the upliftment of the existing workers through additional job opportunities.

It is clear therefore that this alternative meets the requirements of the socio-economic, vegetation, fresh water ecology and design considerations and was deemed preferred.

Alternative 2 (location/design alternative):

This option will consist of agricultural land to be established, clearly outlined according to:

5. Location – Kakamas South Settlement 2193 and 2185
6. Size – approximately 35ha
7. Proposed agricultural activity – vineyards
8. Pipelines of approximately 2km

The layout is shown below in Figure 6.2.

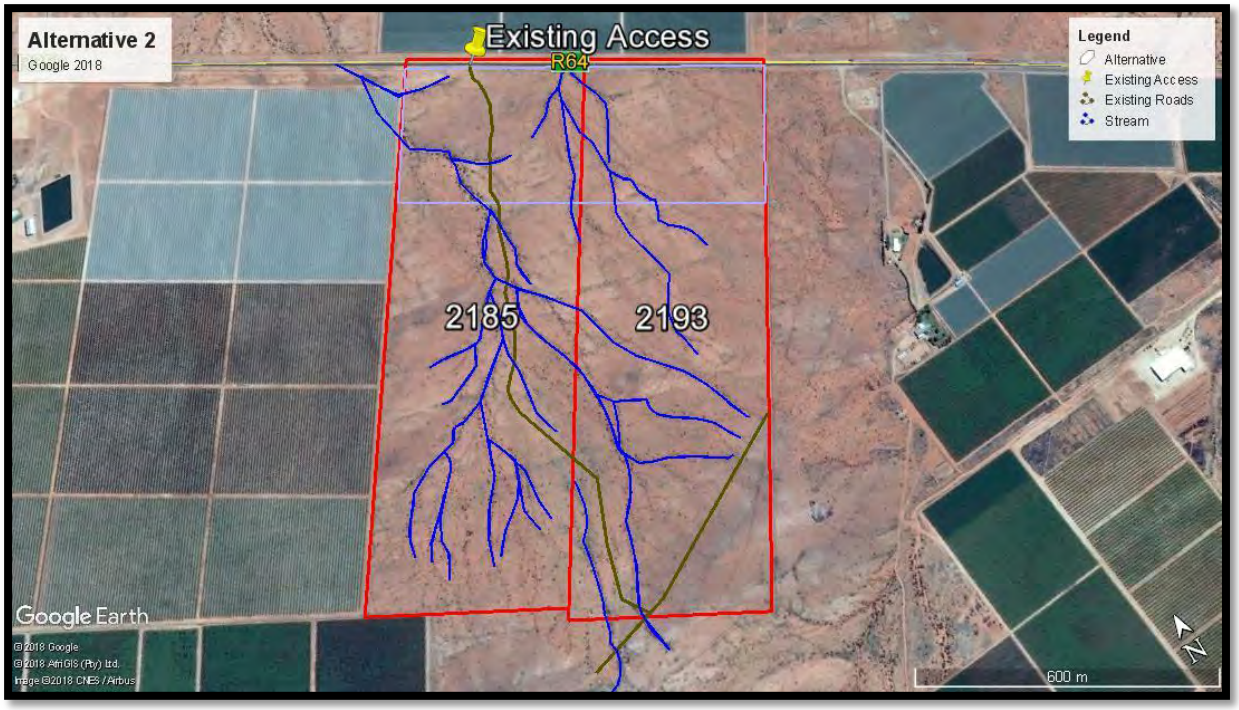


Figure 6.2: Alternative 2

This alternative is not considered as preferred for the following reasons:

- From a design perspective this alternative was not the best option. It did not take into consideration design measures by not establishing agricultural areas as far as possible on areas that have already been disturbed.
- From a fresh water feature perspective it did not take into consideration the ephemeral streams, the development was located over the streams.
- From an agricultural perspective only for the establishment of vineyards, and did not take into consideration other agricultural practices, therefore contributing to the economy in periods where one agricultural use is under pressure.

This alternative is therefore not deemed preferred and not better suited than that of alternative 1.

Alternative 3: No-go Option

This is not seen as preferred for the following reason:

- The current agricultural activities on the property are not being utilised to full potential. For this to take place additional agricultural areas would have to be established.
- From a botanical perspective the No Go alternative would be no further development of vineyards at the properties. The natural veld would remain as it is and there would be minimal change over time but with some low-level impacts due to human activity. The result would be a Very Low Negative impact.
- No social upliftment of existing workers and no additional job opportunities.

Therefore, this alternative is not seen as preferred as the expansion of agricultural activities will contribute to the agricultural potential of the property and if this does not take place the

expansion of the farm to its full potential cannot take place. No upliftment and economical contribution can take place.

Alternatives that will be considered

Following from the section above it is clear that Alternative 1 addresses the key concerns raised.

In conclusion, taking into consideration that Alternative 2 is not viable from a design, fresh water ecology or vegetation perspective and the fact that Alternative 1 took into consideration inputs from relevant specialists and inputs during public participation, this development of alternative 1 is seen as preferred.

Alternative 1 as the preferred option and Alternative 3 the No-go Option, will be brought forward into the EIA phase of the development.

6.2 Alternatives Confirmed for Further Assessment

Following from section 4.1 it is clear that Alternative 1 addresses the key concerns raised.

In conclusion, taking into consideration that Alternative 2 is not viable from a design, fresh water ecology or vegetation perspective and the fact that Alternative 1 took into consideration inputs from relevant specialists and inputs during public participation, this development of alternative 1 is seen as preferred.

Alternative 1 as the preferred option and Alternative 3 the No-go Option, has been assessed to determine the significance of the impacts associated with these alternatives.

7 Assessment of Alternatives and Impacts

A summary of the main issues identified in the Scoping Phase is shown in Table 5. Two types of reports have been compiled to address these issues.

1. A report on a specific technical subject – identified by shading and an X under "Reports" in Table 5.
2. Final specialist environmental impact reports.

Table 5: Identified issues, EIA Studies and Reports

Main issues identified	Reports	Final EIA studies
Heritage/Archaeology		X
Socio-Economic	X	
Vegetation		X
EMP	X	
WULA	X	

7.1 Summary of findings and mitigation measures

7.1.1 Heritage and Archaeology

A Heritage/Archaeological specialist Dr Jonathan Kaplan was appointed to conduct an assessment of the site and his report is attached at Appendix 11.3.2.

In the case of the proposed citrus development (Renosterkop Extension) on Kakamas South Settlement No. 2185 & 2193, it is expected that some archaeological impacts will occur during the Construction Phase, but that the overall impact on archaeological resources will be LOW. (Table 6 extracted from Appendix 11.3.2).

Table 6: Potential impacts on archaeological heritage

Potential impacts on archaeological heritage	
Extent of impact:	Site specific
Duration of impact;	Permanent
Intensity	Low
Probability of occurrence:	Probable
Significance without mitigation	Low
Significance with mitigation	Negative
Confidence:	High

With regard to the proposed development (Renosterkop Extension) on Kakamas South Settlement No. 2185 and 2193, the following recommendations are made:

1. No mitigation is required prior to proposed development activities commencing.

2. Should any unmarked human burials/remains or ostrich eggshell water flask caches be uncovered, or exposed during proposed activities, these must immediately be reported to the archaeologist (Jonathan Kaplan 0823210172), or the South African Heritage Resources Agency (Ms Natasha Higgit 021 4624502). Burials, particularly, must not be removed or disturbed until inspected by a professional archaeologist.

3. The above recommendations must be incorporated into the Environmental Management Plan (EMP) for the proposed development.

The letter written by Dr John Almond is included in Appendix 11.3.2 and recommended that:

"*In view of the negligible palaeontological sensitivity of the ancient Precambrian bedrocks as well as the low sensitivity of the geologically recent superficial sediments along the Orange River in the Kakamas – Augrabies region, the proposed agricultural development – including new citrus orchards and buried pipelines - is not considered to pose a significant threat to palaeontological heritage. Although diamond prospecting has occurred in the Renosterkop region, substantial, potentially-fossiliferous older alluvial deposits are not mapped here. Pending any significant new fossil discoveries in the area, no further specialist studies or mitigation are considered necessary for this agricultural project.*

All South African fossil heritage is protected by the National Heritage Resources Act, 1999. Should substantial fossil remains - such as vertebrate bones and teeth, or petrified logs of fossil wood - be encountered at surface or exposed during construction, the ECO should safeguard these, preferably in situ. They should then alert the relevant provincial heritage management authority as soon as possible - i.e. SAHRA (Contact details: Dr Ragna Redelstorff, SAHRA, P.O. Box 4637, Cape Town 8000. Tel: 021 202 8651. Email: rredelstorff@sahra.org.za). This is to ensure that appropriate action (i.e. recording, sampling or collection of fossils, recording of relevant geological data) can be taken by a professional palaeontologist at the developer's expense."

These mitigation recommendations should be incorporated into the Environmental Management Programme (EMPr) for this agricultural project. Please note that:

- *All South African fossil heritage is protected by law (South African Heritage Resources Act, 1999) and fossils cannot be collected, damaged or disturbed without a permit from SAHRA or the relevant Provincial Heritage Resources Agency;*
- *The palaeontologist concerned with potential mitigation work will need a valid fossil collection permit from SAHRA and any material collected would have to be curated in an approved depository (e.g. museum or university collection);*
- *All palaeontological specialist work should conform to international best practice for palaeontological fieldwork and the study (e.g. data recording fossil collection and curation, final report) should adhere as far as possible to the minimum standards for Phase 2 palaeontological studies developed by SAHRA (2013).*

An application was lodged with SAHRA during the distribution of the Scoping Report, and comment received from SAHRA is detailed further in Section 11.1.7, which provided the following comments:

- *"SAHRA Archaeology, Palaeontology and Meteorites (APM) Unit requests that the draft Basic Assessment Report (BAR) and all appendices must be submitted to the case application on SAHRIS so that an informed comment can be issued.*
- *Further comments will be issued upon receipt of the above."*

7.1.2 Vegetation

As outlined in Section 5.2.1 an impact assessment Report has been compiled by a specialist as attached at Appendix 11.3.1. The vegetation types found on site is of low botanical sensitivity; however the proposed development will probably have low negative impact on the vegetation if the appropriate mitigation measures are implemented.

Mitigation:

Mitigation during the planning, construction and operation phases of this proposed development are as follows:

"Very little scope is available for mitigation measures to compensate for the loss of natural or near natural habitat in the study area. Wherever there is future cultivation, the vegetation and habitat would be lost. The only mitigation measures that can be proposed are, (1) Search & Rescue of Aloe claviflora, where the aloe plants would be relocated to safe sites that would not be affected by cultivation and (2) conservation of the northern part of the study area, to conserve both and area of 'open plains' and the seasonal watercourses north of the area proposed for cultivation. This would ensure that a reasonable amount of viable habitat is protected and this would offset the loss of equivalent habitat in the area targeted for citrus orchards.
Note that it would not be possible to translocate ANY trees since they would not survive disturbance. Therefore no holding facility such as a greenhouse etc. is advised. "

7.1.3 Botanical Impact Rating

Reference is made to Appendix 11.3.1: "*The proposed agricultural development of Kakamas South Settlement no 2193 and 2185 for soft citrus would be such that the natural vegetation within the proposed 34 ha would be cleared and lost. The orchards would affect the open plains more or less to the same extent that they would negatively impact on the drainage lines. This means that there would be inevitable and unavoidable loss of only two Boscia albitrunca trees. This is taken into account in the impact assessment below. It would also mean disturbance of all the clusters of Aloe claviflora found on the site (see below for mitigation!).*"

This has been taken into account in the impact assessment below:

Assessed impacts

The assessment of the impacts is considered for agricultural development of Kakamas South Settlement no 2193 and 2185 (preferred alternative) and the 'No Go' alternative which would be 'no further development'. And

'No Go' Alternative

The No Go alternative would be that the proposed development of 34 ha of soft citrus would not take place. The natural veld would remain as it is and there would be minimal change over time but with some low-level impacts due to human activity. The result would be a Very Low Negative impact.

Direct Impacts

The impacts of the development of agriculture in the study are considered for the loss of natural vegetation and habitat i.e. loss of Bushmanland Arid Grassland.

1. Loss of vegetation and habitat of the 'open plains'

The open plains support typical Bushmanland Arid Grassland and, as noted above, this widespread vegetation type, as found in the study area, has low botanical sensitivity. Development of citrus orchards on the 'open plains' would have Low Negative impact without mitigation and Very Low Negative impact with mitigation (Table 7). This rating is applied even though the entire 97.6 ha area of the site is classified as CBA2.

Table 7: Impact and Significance – Loss of Bushmanland Arid Grassland vegetation due to conversion of the 'open plains' to vineyards

CRITERIA	'NO GO' ALTERNATIVE		PREFERRED ALTERNATIVE	
Nature of impact	Loss of Bushmanland Arid Grassland vegetation: open plains			
	WITHOUT MITIGATION	WITH MITIGATION	WITHOUT MITIGATION	WITH MITIGATION
Extent	Local	Local	Local	Local
Duration	Long-term	Long-term	Long-term	Long-term
Intensity	Very Low	Very Low	Low	Very Low
Probability of occurrence	Unlikely	Unlikely	Probable	Probable
Confidence	High	High	High	High
Significance	Very Low negative	Very low negative	Low negative	Very low negative
Nature of Cumulative impact	Loss of Bushmanland Arid Grassland			
Cumulative impact prior to mitigation	Very Low Negative		Low negative	
Degree to which impact can be reversed	Not reversible			
Degree to which impact may cause irreplaceable loss of resources	Low			
Degree to which impact can be mitigated	Medium			
Proposed mitigation	Search and rescue of *Aloe claviflora*			
Cumulative impact post mitigation	Low negative			
Significance after mitigation	Low negative			

2. Loss of vegetation and habitat of the seasonal drainage lines

The seasonal drainage lines are not true grassland but rather an azonal aspect of Bushmanland Arid Grassland where shrubs and trees dominate. The seasonal watercourses are important for two main reasons; firstly, they have a concentration of *Boscia foetida* and secondly, they are ecological corridors that provide cover for movement of birds and small mammals. A greater negative impact would result from the loss of the vegetation along the seasonal watercourses compared with the impact of loss of the grassland on the open plains. This is the reason for the separation of the assessment of impacts on the seasonal watercourses and the open plains. It is anticipated that the loss of the seasonal watercourses would result in High Negative impact since numerous *B. foetida* trees would be lost at a local scale (Table 7). It would be difficult to implement direct mitigation measures but if the area apart from that earmarked for cultivation i.e. 65.6 ha in the northern two-thirds of the site could be conserved, it could then be considered to be an 'on-site offset'2 that would serve as mitigation for loss of seasonal watercourses and open plains in the study area. The impact would then be reduced to Medium negative (Table 8).

Table 8: Impact and Significance – Loss of Bushmanland Arid Grassland – seasonal watercourses

CRITERIA	'NO GO' ALTERNATIVE		PREFERRED ALTERNATIVE	
Nature of impact	Loss of Bushmanland Arid grassland vegetation: seasonal watercourses			
	WITHOUT MITIGATION	WITH MITIGATION	WITHOUT MITIGATION	WITH MITIGATION
Extent	Local	Local	Local	Local
Duration	Long-term	Long-term	Long-term	Long-term
Intensity	Low	Low	High	Medium
Probability of occurrence	Probable	Probable	Highly Probable	Highly Probable
Confidence	High	High	High	High
Significance	Very Low negative	Very low negative	High negative	Medium negative
Nature of Cumulative impact	Loss of Bushmanland Arid Grassland			
Cumulative impact prior to mitigation	Very Low Negative		Medium negative	
Degree to which impact can be reversed	Not reversible			
Degree to which impact may cause irreplaceable loss of resources	Low			
Degree to which impact can be	Medium			

[2] An 'on site offset' is defined as a part of the greater application area where the habitat is similar to that which would be lost and it is an area that can be set aside in perpetuity as a conservation easement to conserve some of the local habitat.

mitigated	
Proposed mitigation	Conservation of the northern part (65.6 ha) of the Renosterkop Extension study area.
Cumulative impact post mitigation	Medium negative
Significance after mitigation	Medium negative

Indirect Impacts

No indirect impacts of the proposed transformation of natural vegetation in the study area at Kakamas South Settlement no 2193 and 2185were identified.

Cumulative Impacts

Bushmanland Arid Grassland is a widespread vegetation type in the Northern Cape Province with low botanical sensitivity over much of its range. This vegetation type has been lost mainly to agriculture where there is available water to permit conversion of the landscape to vineyards, citrus orchards or other forms of cultivation. In the recent past, numerous renewable energy facilities (many of which are still to be constructed) have also targeted landscapes where Bushmanland Arid Grassland is found, due to the suitability of the receiving environment. However, despite development in this ecosystem, much of it still remains intact since it is used as rangeland for animal production. Cumulative impacts are thus very low at a broad scale although at a local scale such as around Augrabies, cumulative impacts are somewhat higher due to intensive cultivation. Considering local and broad-scale impacts, cumulative impacts range from Low Negative to Medium Negative with the latter related mainly to loss of protected tree species.

7.1.4 Fauna

Although not observed during the site visit, it is expected that small game such as klipspringer, steenbok, porcupines, baboons and dassies will be found in the area. Some bird species were also found.

However, it is not anticipated that the proposed development will have a significant negative impact on these species.

Habitat destruction and the possible genetic contamination of species are however all factors that can negatively impact on vertebrate species, but can be minimized through applying the following mitigation measures:

Mitigation

- Regular maintenance of the water network will minimize the damage done by porcupines.
- No hunting of small game with dogs will be allowed.
- In order to ensure that all fauna will be able to relocate to the adjacent veld, openings should be made in the fences surrounding the proposed development area before any construction work may commence
- To ensure environmentally friendly farming practices, the site manager will have to adhere to the requirements and prescriptions which will be included in the environmental management plan to be included as part of the EIA process. This plan will also deal with issues such as the prohibition of the hunting of small game etc.

7.1.5 Land uses

The planned development is situated within a purely agricultural area with no other land uses in close proximity. The proposed development will therefore have no impact on any surrounding land uses in the area.

7.1.6 Plough certificate

A plough certificate has to be obtained and included as part of Appendix N in the WULA (Section 11.3.4 of the EIR) is the application submitted to obtain a certificate.

7.1.7 Water

"Regulations regarding the Procedural Requirements for Water Use Licence Applications and Appeals" (in GN No. R267 dated 24 March 2017) were recently promulgated in terms of the National Water Act (1998) in GG No. 40713.

An application for a license in terms of the National Water Act, 1998 is being made by the developer, Oseiland Boerderye for the transfer water rights, in addition to the application to impede the flow of water and to alter the beds, banks and course of the watercourses on site summarised as the followed:

(a) taking water from a water resource;	[transfer of water between properties]
(c) impeding or diverting flow of water in a watercourse	For the construction of agricultural areas across ephemeral streams/natural drainage areas.
(i) altering the bed, banks, course or characteristics of a watercourse	For the construction of agricultural areas across ephemeral streams/natural drainage areas.

A copy of the WULA is attached at Appendix 11.3.4

Mitigation

- Measures should be implemented to reduce water use within the proposed development, such as the use of tension meters to avoid over irrigation of the soils.
- Environmental education programs for workers will ensure that they will be sensitive to the environment and report incidents such as leaking taps, broken irrigation systems, etc.

7.1.8 Sewage disposal

Chemical toilets will be provided for the workers in the vineyard/ agricultural land. These toilets will be emptied on a daily basis in the sewage tank system at the households and at the packing sheds.

Mitigation

With regard to the development work at the site it must be ensured that the applicant/ contractor provide sufficient sanitation facilities for the use of his employees during the actual construction period. The applicant/ contractor will be solely responsible for the proper use and maintenance thereof in conditions, which are to the satisfaction of both the contractor and the

applicant. All facilities must be positioned within walking distance from wherever employees or labourers are at work.

Other specifications to be adhered to are, amongst others, the following;

- All facilities provided at the site must comply with the requirements of the Local Municipality.
- No sewerage facility may be erected within a radius of 100m from a water source.
- The applicant/ contractor must be held responsible for the cleaning of the sanitary facilities to prevent health hazards for the duration of the contract.
- Sanitary facilities must be provided at a ratio of one (1) facility for every fifteen (15) persons.
- All sanitation facilities must be sited, in terms of the specifications of the National Water Act no. 36 of 1998, in such a way that they do not cause water- or other pollution.

7.1.9 Solid waste disposal

The application area is located within the municipal area of Kai! Garieb Municipality. No household waste will be generated as part of this application.

All facilities in use during the construction phase must be utilized and maintained in a manner that prevents pollution of any groundwater sources. No waste of any kind may be disposed of in the surrounding environment.

Mitigation
A no-nonsense approach with regard to littering on the farm exists and the neatness of the workplace as well as the residential areas is all high priorities for the management.

Sufficient provision should be made for rubbish bins on the farm to prevent workers from littering. These rubbish bins should be clearly marked and be visible.

7.1.10 Air and noise pollution

Air Pollution
During the construction phase, and due to the nature of the project, a small amount of smoke (from machines) and dust could be generated. Dust pollution may have an impact on the operational workers.

Mitigation

In order to minimize the effect of dust pollution, the construction area should be kept wet as far as possible and the workers must wear the necessary safety clothing. The applicant is referred to section 19 of the National Water Act no. 36 of 1998 with regard to the prevention of, and remedies for, the effects of pollution. In terms of this section of the Act, the person who owns controls, occupies or uses the land in question is responsible for taking measures to prevent pollution of water resources and property.

Noise Pollution
During the construction phase there may be minimal and sporadic incidents of air and noise pollution due to the construction activities such as dust and noise as a result of earthworks. Due to the fact that the area is situated within an agricultural environment, the impact is not expected to be severe.

Mitigation
The contractor should make adequate provision to prevent or minimize the possible effects of air and noise pollution. Should the noise from the construction work be found to cause

problems, (which is not anticipated to be the case) work hours in these areas may be restricted between 06:00 and 20:00, or as otherwise agreed between the parties involved. Strict measures should therefore be enforced, especially in terms of the contract specifications, to prevent any negative impacts in this regard.

8 Public Participation

Public participation included the following:

- **Notice Board**

Notice Boards was displayed at the entrance of the farm from Wednesday, 17 October 2018.

- **Information and reporting for formal process**

Scoping:

A notice that included the Executive Summary and draft Environmental Impact Report was made available and distributed by registered post to all registered I&APs and neighbours for the 30 day commenting period, from (17 October 2018 until 16 November 2018). The notice informed all I&AP's of the availability of the dEIR and WULA which were to be obtained from the EAP. Digital copies have been made available on the website www.pbps.co.za and distributed to all I&AP's.

Hard copies of the report will be sent to the following Authorities: DENC, DWS, Dept. of Agriculture, SAHRA and Kai! Garib Municipality.

- **I&AP database**

The I&AP database was developed from registered and listed I&APs. The database was not updated following the Scoping Phase as no new I&AP's registered in the EIA phase.

All comments received for the FSR and the DEIR have been addressed in the Comments and Response sheet, in Appendix 7.

9 Environmental Impact Statement

9.1 Summary of findings

A summary of the impacts and mitigation measures has been compiled in Section 7, as referenced from the various specialist assessments where applicable.

9.2 Maps of Environment Sensitive Areas and Layout of Preferred Alternative

The maps inserted below show the environmentally sensitive areas as highlighted in the botanical, heritage and surface water sections of this dEIR. The Kakamas South Settlement no 2193 and 2185 study area is located in an area classified as CBA2 (Figure 9.1). It is not near any focus area of the National Protected Area Expansion Strategy nor is it close to any mountain catchment area. It is also separated from the Augrabies Falls National Park by numerous other farms.

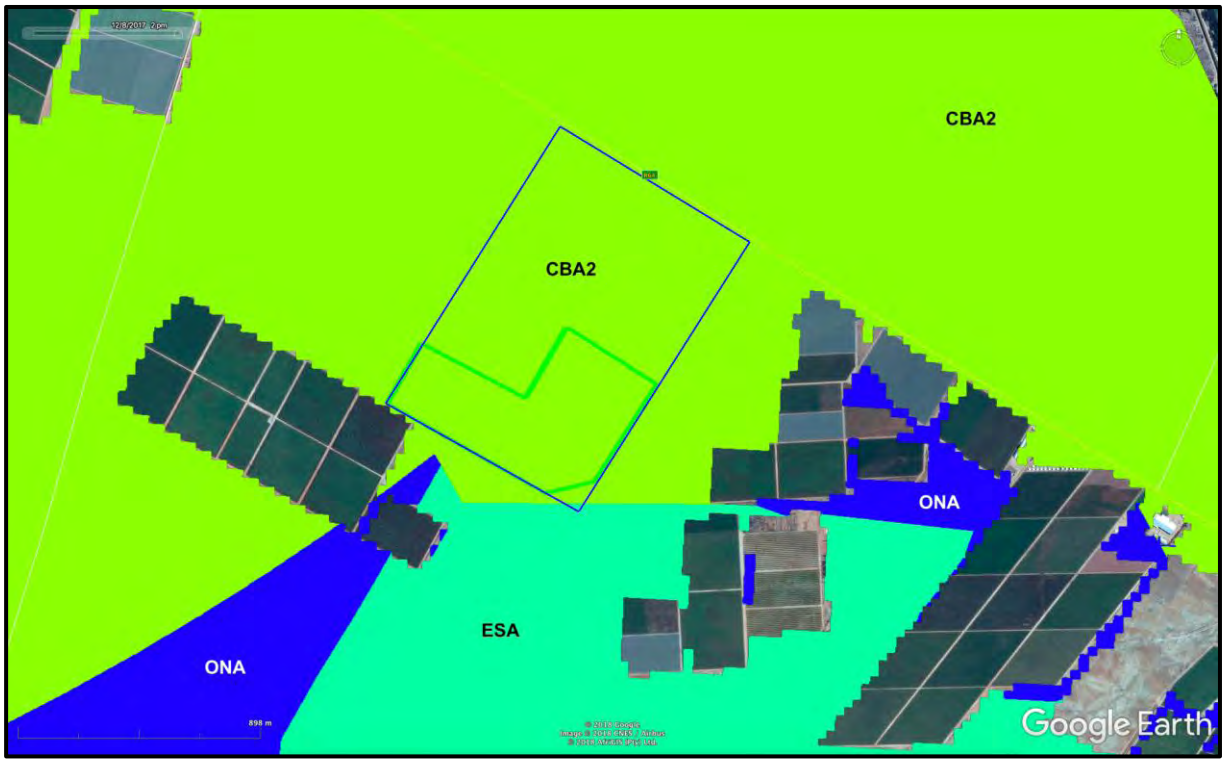


Figure 9.1: Portion of the Critical Biodiversity Areas map for the Northern Cape Province showing indicating that the Renosterkop Extension study area (blue boundary) falls entirely within a CBA2. ESA = Ecological Support Area; ONA = Other Natural Areas.

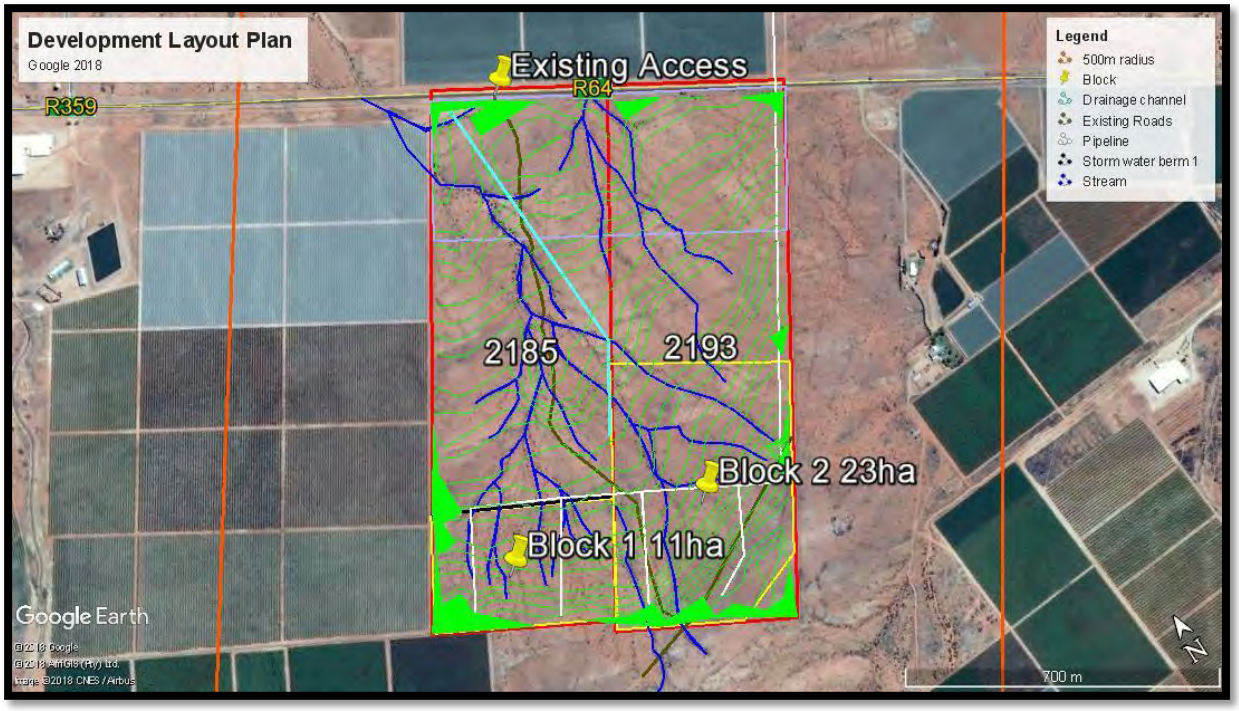


Figure 9.2: Layout of Preferred Alternative, showing the drainage areas.

9.3 Comparative assessment

Two alternatives were assessed, Alternative 1: the Preferred Option, and Alternative 4: the No-Go Option. Alternative 1 is a layout alternative as detailed in Section 6 above.

The following table provides an overall summary of impacts with mitigation measures included:

Table 9: Legend for Impact Rating

Legend		
Significance Ratings (after mitigation)	**Negative Impacts**	**Positive Impacts**
Very low to none		
Low		
Medium		
High		

Table 10: Impact per Alternative

EIA Assessment	**Preferred Alternative 1**	**Alternative 4 - No-Go Option**
Botanical (open	Development of citrus orchards on the	No impact on vegetation if

plains)	'open plains' would have Low Negative impact without mitigation and Very Low Negative impact with mitigation.	this takes place.
Botanical (seasonal watercourses)	The seasonal drainage lines are not true grassland but rather an azonal aspect of Bushmanland Arid Grassland where shrubs and trees dominate. The seasonal watercourses are important for two main reasons; firstly, they have a concentration of *Boscia foetida* and secondly, they are ecological corridors that provide cover for movement of birds and small mammals. A greater negative impact would result from the loss of the vegetation along the seasonal watercourses compared with the impact of loss of the grassland on the open plains. This is the reason for the separation of the assessment of impacts on the seasonal watercourses and the open plains. It is anticipated that the loss of the seasonal watercourses would result in High Negative impact since numerous *B. foetida* trees would be lost at a local scale. It would be difficult to implement direct mitigation measures but if the area apart from that earmarked for cultivation i.e. 65.6 ha in the northern two-thirds of the site could be conserved, it could then be considered to be an 'on-site offset'3 that would serve as mitigation for loss of seasonal watercourses and open plains in the study area. The impact would then be reduced to Medium negative.	The No Go alternative would be that the proposed development of 34 ha of soft citrus would not take place. The natural veld would remain as it is and there would be minimal change over time but with some low-level impacts due to human activity. The result would be a Very Low Negative impact.
Heritage	As referenced form Appendix 11.3.2: "Indications are that, in terms of archaeological heritage, the receiving environment is not a sensitive or threatened landscape."	No Impact
Archaeological/ paleontological	As referenced form Appendix 11.3.2, Archaeological Report: "The impact significance of the proposed development on important archaeological heritage is assessed as LOW.	No impact

[3] An 'on site offset' is defined as a part of the greater application area where the habitat is similar to that which would be lost and it is an area that can be set aside in perpetuity as a conservation easement to conserve some of the local habitat.

	As referenced form Appendix 11.3.2, Palaeontological Report: In view of the negligible paleontological sensitivity of the ancient Precambrian bedrocks as well as the low sensitivity of the geologically recent superficial sediments along the Orange River in the Kakamas – Augrabies region, the proposed agricultural development – including new citrus orchards and buried pipelines - is not considered to pose a significant threat to paleontological heritage. Although diamond prospecting has occurred in the Renosterkop region, substantial, potentially-fossiliferous older alluvial deposits are not mapped here.	
Visual/Cultural landscape	The planting of vineyards would result in a replacement of the natural landscape by a cultural landscape. During the construction phase there would be very minor impacts to the scenic qualities of the landscape, but the site is quite far from the nearest public road so this negative impact is seen as being of very low significance. There are no fatal flaws. No mitigation or management measures are suggested aside from best practice considerations such as keeping the area free of unsightly materials, litter and the like. The vineyards of the Orange River region add scenic value and sense of place to the environment. Once the vineyards are established it is expected that the impacts to the landscape will be positive so long as the area is retained in a tidy and attractive state.	Low negative due to the land remaining undeveloped, with no vineyards and positive visual (cultural perspective) impact on the barren landscape.
Water quality	No impact on water quality, as construction will be conducted outside the rainfall season. No flow from agricultural areas as a storm water berm will be constructed.	No impact
Impeding and diverting flow	The natural drainages areas and small ephemeral stream will be filled in and vineyards established on these areas, therefore a low negative impact on surface water flow. This will however be mitigated by establishing a storm water berm surrounding the agricultural areas to prevent any contamination further downstream of these drainage areas.	No impact

Socio-Economic	Overall impact is medium positive	No development during the construction phase will result in no job creation and no skill development. Upliftment of permanent workers will not take place, therefore medium negative impact.
Air and Noise pollution	Very low negative and only during construction phase	No Impact
Sewage and waste disposal	Very low negative and only during construction phase	No Impact
Fauna	Very low negative and only during construction phase. Thereafter free movement of animals allowed and mitigation of no hunting allowed.	No impact
Overall	The development will result in an overall low negative impact, mostly due to the loss of vegetation in the watercourses, offset by the positive impacts associated with the creation of employment and empowerment opportunities.	No development will result in a medium negative impact due to the loss of opportunity for employment generation and empowerment in a poor community.

It is required by law that projects must meet with the requirements of sustainable development. The concept is defined as follows *"the integration of social, economic and environmental factors into planning, implementation and decision-making so as to ensure that development serves present and future generations"*.

In achieving sustainable development, the focus therefore may not be restricted to environmental or nature conservation factors only. It should include economic and social realities. Social factors influence the livelihoods of people. They determine income, quality of life, social networks, and other means aimed at maintaining and improving the wellbeing of people. Economic factors deal with the affordability of processes, their potential to generate income over an extended period (into future generations) and to maintain the ability to support both the environmental and social needs of an area.

In short; if people are impoverished, there will be no environment to protect; if a project is not attractive economically, it will not be launched; but the environment is the essential basis for all development.

Overall it is clear that the preferred option best meets the above integration factors and has the biggest advantages and takes into account the NEMA principles as outlined in Section 2 of NEMA.

Implementation of the project and protection of the environment must take place under control of the EMP as specified in Appendix 12.

10 Conclusions

10.1 General

Taking into account that the purpose of scoping is *"must contain the information that is necessary for a proper understanding of the process, informing all preferred alternatives, including location alternatives, the scope of the assessment, and the consultation process to be undertaken through the environmental impact assessment process"* it can be concluded that the process has been successful. A number of issues identified in the scoping phase has been assessed in the EIA phase, including the assessment of the preferred alternative and the No-Go Alternative

The proposed development designed according to the findings of the baseline studies to ensure minimal impact on the environment. Alternative 1 addresses the key concerns with regards to design and the inputs from the specialists through the following:

- No constraints were identified from a botanical perspective that would prevent the agricultural development from proceeding as along as suitable mitigation is implemented.
- No significant impact on heritage/archaeology, suitable mitigation measures will be implemented.
- Determined the best suitable alternative through assessing the impacts on the environment, preferred alternative 1 was determined.
- Low impact on the ephemeral streams and the conservation of the northern section.
- The farm can be utilised to its full agricultural potential.
- The land area available for the proposed cultivation has been calculated on the availability of irrigated water. The WULA addresses the transfer of water rights, and the impacts on the watercourses.
- It will also result in the social upliftment of the existing workers and create additional job opportunities.
- Financially contribute to the local and international market.

Note that the "**do nothing option"**, has been investigated as Alternative 3 and when taking into consideration that the current agricultural potential of the property is not utilising to its full potential, thus keeping the site as is, is not deemed as preferred.

Thus Alternative 1 and Alternative 3: No-Go Option has been investigated in this dEIR.

It is required by law that projects must meet with the requirements of sustainable development. The concept is defined as follows *"the integration of social, economic and environmental factors into planning, implementation and decision-making so as to ensure that development serves present and future generations".*

In achieving sustainable development, the focus therefore may not be restricted to environmental or nature conservation factors only. It should include economic and social realities. Social factors influence the livelihoods of people. They determine income, quality of life, social networks, and other means aimed at maintaining and improving the wellbeing of people. Economic factors deal with the affordability of processes, their potential to generate income over an extended period (into future generations) and to maintain the ability to support both the environmental and social needs of an area.
In short; if people are impoverished, there will be no environment to protect; if a project is not attractive economically, it will not be launched; but the environment is the essential basis for all development.

Overall it is clear that the preferred option best meets the above integration factors and has the biggest advantages and takes into account the NEMA principles.

11 Appendices

11.1 Public participation

11.1.1 I&AP database

	Erf no	Surname	Initials	Representing	Tel	Fax	email	Post Box	Town	Code	Reg
AUTHORITIES											
1		Lategan	J.G.	Kai Garib Municipality: Municipal Manager	054 431 6328	054 461 6401	mm@kaigarib.gov.za	Private Bag X6	Kakamas	8870	L
2		Snyers	A.C.	Kai Garib Municipality: Ward Councillor Ward 2	054 431 6328	054 461 6401	mm@kaigarib.gov.za	Private Bag X6	Kakamas	8870	L
3		October	L	Department of Agriculture and Land Reform	054 461 6700	054 461 6401		P. O. Box 18	Springbok	8240	L
4		Towell	J	Department of Water Affairs	082 887 8866/ 054 338 5819		TowellJ@dws.gov.za	Private Bag X5912	Upington	8800	L
5		De la Fontaine	S	Nature Conservation	054 338 4800		sdelafontaine@gmail.com	Evelina De Bruin (former Provincial) Building, Corner of Rivier & Nelson Mandela Road	Upington	8800	L
6		Abrahams	N	Department of Transport: Environmental Coordinator	021 957 4602	021 910 1699	Abrahamsn@nra.co.za	Private Bag X19, Sanlamhof	Belville	7535	L
7		Ceo		Kakamas Water Users Association	054 431 0725/6	054 431 0348	kakamaswgv@isat.co.za	Private Bag X4	Kakamas	8870	L
8		Mans	J	Department of Agriculture Forestry and Fisheries	054 338 5909		jacolinema@daff.gov.za	P. O. Box 2782	Upington	8800	L
INTERESTED AND AFFECTED PARTIES											
1		Burger Du Plessis Familie Trust		Erf 1726 (Application Property) Erf 1288, 1279, 1290, 1537, 2092				P. O. Box 45	Augrabies	8874	L
2		Eternal Flame Inv 104 Pty Ltd		Erf 2094				P.O. Box105	Augrabies	8874	L
3		Kakamas Weiveldeenheid Nommer Een Ltd		Erf 1177				P. O. Box 1	Augrabies	8874	L
4		P J Dippenaar & Seuns Boerdery Pty Ltd		Erf 2192				P. O. Box 43	Kakamas	8870	L

11.1.2 Notice Boards

11.1.2.1 Text for the site notice

Will be included in the FEIR.

11.1.2.2 Proof of Notice Boards for EIR

Will be included in the FEIR.

11.1.3 Proof of notices

11.1.3.1 Proof of notices for dEIR

Will be included in the FEIR.

11.1.4 Notices

11.1.4.1 Notices sent to Authorities for dEIR

Will be included in the FEIR.

11.1.4.2 Notices sent to I&APs for dEIR

Will be included in the FEIR.

The Executive Summary text the same as the Executive Summary of this document.

11.1.5 Comments received from DENC

11.1.5.1 Comments on SR

DENC

From: Ordain Riba
To: Elanie Kuhn
Subject: Re: Draft Scoping Report
Date: Thursday, 14 June 2018 8:26:36 AM

Dear Ms Kuhn

The Department has reviewed your draft scoping report and is satisfied with the contents of the proposed plan of study, please just rework the economic section on page 41. specifically starting from the *add then...* i got lost on that paragraph just rephrase and write it again, other than that, the Department is satisfied.

Kind regards

Please confirm receipt of this email

Ordain Riba
Environmental Officer
Directorate: Impact Management

Postal Address:

Northern Cape Department of Environment and Nature Conservation
Private Bag x 6102
Kimberley
8300

Physical Address:

Northern Cape Department of Environment and Nature Conservation
Provincial Building (First Floor)
Corner of Rivier & Nelson Mandela Road
Upington
8800

060 991 4817 (Preferred)
054 338 4800

ORiba@ncpg.gov.za
oriba.denc@gmail.com

11.1.5.2 Acceptance of FSR by DENC

the denc

Department:
Environment & Nature Conservation
NORTHERN CAPE PROVINCE
REPUBLIC OF SOUTH AFRICA

90 Long Street
Private Bag X6102
Kimberley
8300

Tel. 053-807 7300
Fax: 053-807 7328

Enquiries / Dipatlisiso / Imibuzo / Navrae : M.O Riba

Reference / Tshupelo / Isalathiso / Verwysing : NC/EIA/04/ZFM/KAI! /KAK1/2018

Date / Letlha / Umhla / Datum : 03 August 2018

Elanie Kuhn
P.O. Box 1058
Wellington
7654

PROPOSED CONSTRUCTION OF AGRICULTURAL AREAS, PIPELINES AND ASSOCIATED INFRASTRUCTURE ON KAKAMAS SOUTH SETTLEMENT NO 2185 AND 2193, AUGRABIES, KAI! GARIB LOCAL MUNICIPALITY: ZF MGCAWU DISTRICT MUNICIPALITY.

Dear Ms. Kuhn

The Final Scoping report which was submitted by you in respect of the above mentioned application, and received on the 09th June 2018 was reviewed by the Department and deemed acceptable, you may proceed with the undertaking of the full Environmental Impact Assessment.

- Please just ensure that you amend the application form to reflect the final size of the development footprint, the application form cite the total development footprint as 24ha (Page 5) while the scoping report suggest it is (Page iii 34ha, Page vii 35ha, and Page 11, 34ha).

Please draw the applicant's attention to the fact that the activity may not commence prior to an environmental authorization being granted by the Department.

Yours faithfully

Mr. M.O Riba

Environmental Officer (ZF Mgcawu): Impact Management
Date: 03 August 2018

11.1.6 Comments and responses sheet

COMMENTS ON SR				
Date	Comments from	Comments received	Response from	Response received
29-05-2018	SAHRA – Natasha Higgitt	Interim Comment SAHRA Archaeology, Palaeontology and Meteorites (APM) Unit requests that the draft Basic Assessment Report (BAR) and all appendices must be submitted to the case application on SAHRIS so that an informed comment can be issued. Further comments will be issued upon receipt of the above. Should you have any further queries, please contact the designated official using the case number quoted above in the case header.	PBPS	Please note this was is for a Scoping Process, the Scoping Report was uploaded to SAHRIS website. Note the specialist studies are only presented in the EIA Phase, during this part of the EIA process the Draft EIR will be uploaded for further comments.
14-06-2018	DENC – Ordain Riba	The Department has reviewed your draft scoping report and is satisfied with the contents of the proposed plan of study, please just rework the economic section on page 41. specifically starting from the add then... i got lost on that paragraph just rephrase and write it again, other than that, the Department is satisfied.	PBPS	Noted and rephrased on page 41.

COMMENTS ON DRAFT EIR				
Date	Comments from	Comments received	Response from	Response received

11.1.7 Comments received

11.1.7.1 Comments received on the Draft Scoping Report

SAHRA

AIA Proposed construction of agricultural development on Kakamas South Settlement no 2185 and 2193, Augrabies

Our Ref:

an agency of the
Department of Arts and Culture

T: +27 21 462 4502 | F: +27 21 462 4509 | E: info@sahra.org.za
South African Heritage Resources Agency | 111 Harrington Street | Cape Town
P.O. Box 4637 | Cape Town | 8001
www.sahra.org.za

Enquiries: Natasha Higgitt
Tel: 021 462 4502
Email: nhiggitt@sahra.org.za
CaseID: 12470

Date: Tuesday May 29, 2018
Page No: 1

Interim Comment

In terms of Section 38(8) of the National Heritage Resources Act (Act 25 of 1999)

Attention: Pieter Badenhorst Professional Services

The proposed properties on which the expansion of agricultural activities, pipelines and associated infrastructure will take place are situated on two properties namely Kakamas South Settlement no 2193 and 2815, Augrabies.

Pieter Badenhorst Professional Services has been appointed by Oseiland Eindomme (Pty) Ltd to conduct an Environmental Authorisation (EA) Application process for a proposed citrus development on Renosterkop Extension, Augrabies, Northern Cape. The proposed development is to establish additional agricultural areas for the cultivation of vineyards and orchards on areas with indigenous vegetation and across small streams. It is also proposed to construct additional pipelines, that will cross streams.

ACRM and Natura Viva cc have been appointed to provide heritage input for the EA application process.

Almond, J. E. 2018. Palaeontological Assessment: Recommended Exemption from further palaeontological studies: Proposed new citrus development on farm Kakamas South Settlement No. 2185 & 2193 near Augrabies, Kai! Garib Municipality, Northern Cape.

The proposed development area is underlain by ancient Precambrian igneous and metamorphic bedrocks of the Riemvasmaak Gneiss of the Namaqua-Natal Province that do not contain fossils. These rocks are overlain by Quaternary to recent aged alluvial and aeolian surface gravels that are of low palaeontological sensitivity. The overall area has a low palaeontological sensitivity and no further studies are recommended. Recommendations provided in the report include that should substantial fossil remains, such as vertebrate bones and teeth, or petrified logs of fossil wood, be encountered at surface or exposed during construction, the ECO should safeguard these, preferably in situ. They should then alert the relevant provincial heritage management authority as soon as possible -i.e. SAHRA. This is to ensure that appropriate action (i.e. recording, sampling or collection of fossils, recording of relevant geological data) can be taken by a professional palaeontologist at the developer's expense.

Kaplan, J. 2017. Archaeological Impact Assessment: Proposed citrus development, Renosterkop Extension (Kakamas South Settlement No. 2185 & 2193) Augrabies, Northern Cape.

an agency of the
Department of Arts and Culture

T: +27 21 462 4502 | F: +27 21 462 4509 | E: info@sahra.org.za
South African Heritage Resources Agency | 111 Harrington Street | Cape Town
P.O. Box 4637 | Cape Town | 8001
www.sahra.org.za

Enquiries: Natasha Higgitt
Tel: 021 462 4502
Email: nhiggitt@sahra.org.za
CaseID: 12470

Date: Tuesday May 29, 2018
Page No: 2

A total of 103 surface occurrences of Middle Stone Age (MSA) and Later Stone Age (LSA) lithics were identified within the proposed development area. These include utilised and retouched flakes, cores (bipolar core and bladelet core) with three possible scrapers, an anvil and a broken hammerstone. None of these artefacts were found in context due to the partial transformation and degradation of the area. The overall significance of the heritage resources was rated as having a low significance.

Recommendations provided in the report include the following:

- No archaeological mitigation is required prior to proposed activities commencing;
- Should any unmarked human burials/remains or ostrich eggshell water flask caches be uncovered, or exposed during preparation of the lands for cultivation, these must immediately be reported to the archaeologist (Jonathan Kaplan 082 321 0172), or SAHRA. Burials, etc. must not be removed or disturbed until inspected by the archaeologist;
- The above recommendations must be incorporated into the Environmental Management Plan (EMP) for the proposed development.

Interim Comment

SAHRA Archaeology, Palaeontology and Meteorites (APM) Unit requests that the draft Basic Assessment Report (BAR) and all appendices must be submitted to the case application on SAHRIS so that an informed comment can be issued.

Further comments will be issued upon receipt of the above.

Should you have any further queries, please contact the designated official using the case number quoted above in the case header.

Yours faithfully

Natasha Higgitt
Heritage Officer

AIA Proposed construction of agricultural development on Kakamas South Settlement no 2185 and 2193, Augrabies

Our Ref:

an agency of the
Department of Arts and Culture

T: +27 21 462 4502 | F: +27 21 462 4509 | E: info@sahra.org.za
South African Heritage Resources Agency | 111 Harrington Street | Cape Town
P.O. Box 4637 | Cape Town | 8001
www.sahra.org.za

Enquiries: Natasha Higgitt
Tel: 021 462 4502
Email: nhiggitt@sahra.org.za
CaseID: 12470

Date: Tuesday May 29, 2018
Page No: 3

South African Heritage Resources Agency

Phillip Hine
Acting Manager: Archaeology, Palaeontology and Meteorites Unit
South African Heritage Resources Agency

ADMIN:
Direct URL to case: http://www.sahra.org.za/node/503907
(DENC, Ref:)

11.1.7.2 Comments received on the Draft Environmental Impact Report

Will be included in the FEIR.

11.1.7.3 Response to comments received on the Draft Environmental Impact Report

Will be included in the FEIR.

11.2 Licenses and permits

11.2.1 Heritage comment

11.2.1.1 Comment

The scoping report was uploaded to the SAHRIS website.

Refer to Section 11.1.7 and 11.1.8 above for the Comments from SAHRA.

11.3 Baseline studies

11.3.1 Botanical Impact Assessment

Botanical Assessment for Kakamas South Settlement no 2193 and 2185, Oseiland Boerdery, Augrabies, Northern Cape Province

bergwind
Botanical Surveys & Tours

Report by Dr David J. McDonald
Bergwind Botanical Surveys & Tours CC.
14A Thomson Road, Claremont, 7708
Tel: 021-671-4056
Fax: 086-517-3806

Report prepared for Pieter Badenhorst Professional Services

March 2018; updated October 2018

National Legislation and Regulations governing this report

This is a 'specialist report' and is compiled in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014.

Appointment of Specialist

David J. McDonald of Bergwind Botanical Surveys & Tours CC was appointed by Pieter Badenhorst Professional Services on behalf of Oseiland Boerdery, Augrabies, to provide specialist botanical consulting services to inform the application process for future agricultural development at Kakamas South Settlement no 2193 and 2185, Augrabies, Northern Cape Province. The consulting services comprise an assessment of potential impacts on the flora and vegetation in the designated study area due to the proposed agricultural activities.

Details of Specialist

Dr David J. McDonald Pr. Sci. Nat.
Bergwind Botanical Surveys & Tours CC
14A Thomson Road
Claremont
7708
Telephone: 021-671-4056
Mobile: 082-876-4051
Fax: 086-517-3806
e-mail: dave@bergwind.co.za
Professional registration: South African Council for Natural Scientific Professions No. 400094/06

Expertise

Dr David J. McDonald:

- Qualifications: BSc. Hons. (Botany), MSc (Botany) and PhD (Botany)
- Botanical ecologist with over 35 years' experience in the field of Vegetation Science.
- Founded Bergwind Botanical Surveys & Tours CC in 2006
- Has conducted over 400 specialist botanical / ecological studies.
- Has published numerous scientific papers and attended numerous conferences both nationally and internationally (details available on request)

Independence

The views expressed in the document are the objective, independent views of Dr McDonald and the survey was carried out under the aegis of, Bergwind Botanical Surveys and Tours CC. Neither Dr McDonald nor Bergwind Botanical Surveys and Tours CC have any business, personal, financial or other interest in the proposed development apart from fair remuneration for the work performed.

Conditions relating to this report

The content of this report is based on the author's best scientific and professional knowledge as well as available information. Bergwind Botanical Surveys & Tours CC, its staff and appointed associates, reserve the right to modify the report in any way deemed fit should new, relevant or previously unavailable or undisclosed information become known to the author from on-going research or further work in this field, or pertaining to this investigation

This report must not be altered or added to without the prior written consent of the author. This also refers to electronic copies of the report which are supplied for the purposes of inclusion as part of other reports, including main reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must make reference to this report. If these form part of a main report relating to this investigation or report, this report must be included in its entirety as an appendix or separate section to the main report.

THE INDEPENDENT PERSON WHO COMPILED A SPECIALIST REPORT OR UNDERTOOK A SPECIALIST PROCESS

I David Jury McDonald, as the appointed independent specialist hereby declare that I:

- act/ed as the independent specialist in this application;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and
- do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- have and will not have no vested interest in the proposed activity proceeding;
- have disclosed, to the applicant, EAP and competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- am fully aware of and meet the responsibilities in terms of NEMA, the Environmental Impact Assessment Regulations, 2014 (specifically in terms of regulation 13 of GN No. R. 982) and any specific environmental management Act, and that failure to comply with these requirements may constitute and result in disqualification;
- have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- have ensured that the names of all interested and affected parties that participated in terms of the specialist input/study were recorded in the register of interested and affected parties who participated in the public participation process;
- have provided the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not; and
- am aware that a false declaration is an offence in terms of regulation 48 of GN No. R. 982.

Note: The terms of reference must be attached.

Signature of the specialist:

Bergwind Botanical Surveys & Tours CC

21 March 2018; 11 October 2018

CONTENTS

1. Introduction

Oseiland Boerdery at Augrabies in the Northern Cape Province wishes to develop parts of Kakamas South Settlement no 2193 and 2185 for soft citrus. This botanical assessment investigates the type, condition and sensitivity of the vegetation on the part of the farm to proposed for agricultural development, to inform the environmental process in terms of the NEMA Environmental Impact Assessment Regulations (2014), as amended.

The assessment takes careful note of the general requirements and recommendations of the Department of Environment and Nature Conservation (Northern Cape) and the Botanical Society of South Africa for proactive assessment of biodiversity of proposed development sites and follows published guidelines for evaluating potential impacts on the natural vegetation in an area earmarked for some form of development (Brownlie 2005). **Particular note was taken of the Northern Cape Nature Conservation Act, 2009 (Act No. 9 of 2009) and Regulations (2011).**

2. Terms of Reference

- Conduct a site visit to determine the condition as well as botanical and ecological sensitivity of the study area at Renosterkop;
- Provide a statement on the vegetation type, condition and ecological sensitivity of the land proposed for agricultural development. Highlight any special or protected plant species or sensitive habitats as well as the ecosystem status and conservation value of the vegetation communities, including the whether the site comprises any critically endangered, endangered, or threatened ecosystem(s) listed in terms of section 52 of the NEMBA;
- Describe the direct, indirect and cumulative botanical impacts (both before and after mitigation) and an assessment of the significance of the impacts (on a nominal scale of neutral, very low, low, medium, and high) by evaluating: (a) magnitude, frequency of occurrence, extent, duration and probability of impacts, (b) the local, regional, national and international significance of predicted impacts, (c) the level of confidence in findings relating to potential impacts, (d) reversibility of potential impacts (i.e. the degree to which the impact can be reversed); and (e) the degree to which the impact may cause irreplaceable loss of resources;
- Give an indication of the degree to which the impacts can be mitigated, a description of the measures to mitigate any impacts, and an indication of whether or not the measures (if implemented) would change the significance of the impact.

3. Limitations and Assumptions

The field-survey was undertaken on 10 December 2017. Approximately 6 hours were spent on site. The environment was extremely dry at the time of the survey so many of the herbaceous plants were not in good condition. This limited positive identification. However, apart from grasses, most herbaceous plant species do not make up a significant component of the composition of the plant communities at the study site. The indicator species are mainly shrubs or small trees that were easily identified, even with the prevailing dry conditions.

The study initially did not include every *Boscia foetida* or *Boscia albitrunca* on the site. This was a shortcoming that was addressed with the assistance of Ettienne Swarts who GPS's and photographed every specimen of these species on the site within the 34 ha area. Only the co-ordinates (not the photos) of the plants recorded are given in Appendix 4.

It is important to note that a species checklist for the site was NOT compiled due to the extremely dry conditions and that the survey was not conducted in the growing season. This is not regarded as a limitation to the study.

4. Study Area

4.1 Locality

The study area is part of Kakamas South Settlement no 2193 and 2185, Augrabies. It lies immediately south-east of the town of Augrabies and north-west of Marchand in the Kai Garib Municipality, Northern Cape Province. It lies south of the R64 (MR 359) and south and west of Renosterkop Peak, a prominent inselberg in an otherwise flat landscape, and south of the Orange River (Figures 1—3).

Figure 1. The location of the study at Augrabies in the Northern Cape Province (cream-coloured area).

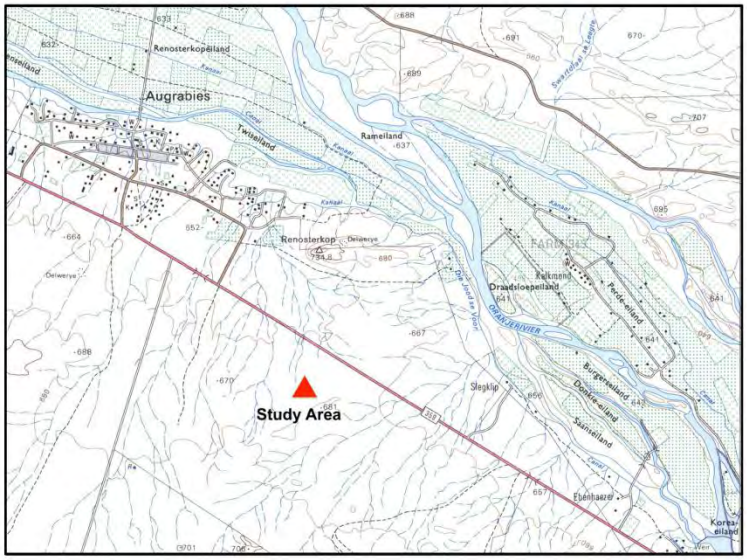


Figure 2. Part of the 1:50 000 topographical map 2820CB Augrabies (Source: National Geo-spatial Information). The red triangle indicates the location of the study area south-east of Augrabies town.

Figure 3. Aerial image (Google Earth ™) showing the study area (blue boundary) at Kakamas South Settlement no 2193 and 2185 with the 34 ha area earmarked for citrus orchards shaded in green.

Figure 4. Magnified aerial view (Google Earth ™) of the study area at Kakamas South Settlement no 2193 and 2185 'Extension' showing the survey track followed (light blue) and the sample waypoints (REX#) recorded. The waypoints designated ACLAV# = *Aloe claviflora* locations and BSA# = *Boscia foetida* locations.

3.2 Topography, Geology and Soils

The terrain studied is on the lowlands south and south-east of Renosterkop. The elevation is approximately 640 m above mean seal level. The landscape is generally flat but is dissected by drainage lines over part the site (Figure 4). Soils generally consist of red sandy topsoil with dense weathered granite-gneiss subsoils across the whole site. The land-type is classified as Ag2 for the whole property, described as, "*Migmatite, gneiss and granite predominantly; small outcrops of ultrametamorphic rocks in places (Namaqualand Metamorphic Complex). Occasional small seif dunes; dorbank at many places; very dense subdendritic drainage and dissection pattern; occasional lime nodules and calcrete.*" (Figure 5) (Land Type Survey Staff, 1972--2006).

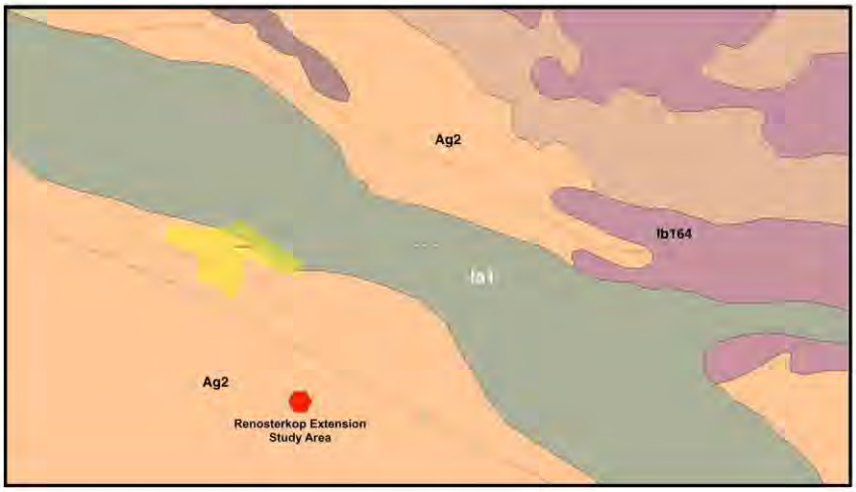


Figure 5. Land type map showing that the study area (Renosterkop Extension) is all within the Ag2 land type (Source: http://www.agis.agric.za/agisweb/viewer.htm?pn=2015).

3.3 Climate

Kakamas South Settlement no 2193 and 2185 falls within the Nama-Karoo Biome and has an arid climate. Rainfall peaks in March (autumn) with 10 mm or more occurring in January, February, March, April and October. Augrabies, the nearest town with measured rainfall and temperatures has a mean annual rainfall of 251 mm, mean summer daytime temperature (October to March) of 35 °C and mean winter night temperature (April to September) of 5 °C (Figure 6).

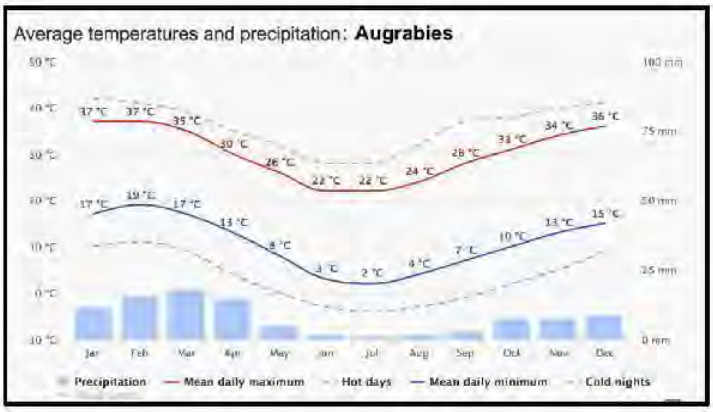


Figure 6. Average temperature and precipitation for Augrabies (Source: meteoblue)

A climate diagram for Bushmanland Arid Grassland (Figure 7) from Mucina *et al.* (2006) shows that the mean annual precipitation, as a measure of aridity, is slightly above half to less than half that occurring at Augrabies town. This is probably explained by the proximity of the town to the Orange River.

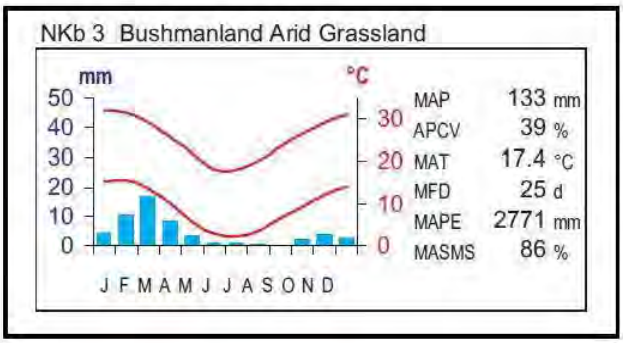


Figure 7. Climate diagram for Bushmanland Arid Grassland (10b) (from *Mucina et al.*, 2006) showing MAP – Mean Annual Precipitation; ACPV = Annual Precipitation Coefficient of Variance; MAT = Mean Annual Temperature; MFD = Mean Frost Days; MAPE = Mean Annual Potential Evaporation; MASMA = Mean Annual Soil Moisture Stress.

4. Evaluation Method

The study area was visited in fine weather. The survey was carried out on foot and a rapid-assessment, plot-less method was employed as is standard practice in similar surveys. A hand-held Garmin ® GPSMap 62s was used to record 'sample' waypoints. The route followed (sample track) on the site is shown in Figure 4. At the 'sample

waypoints specific details of the surrounding vegetation and features of the habitat were recorded and photographs taken to support the general observations made. Sampling was focused to obtain the best overall understanding of landscape and biodiversity conditions.

Satellite aerial photography from Google Earth ™ was also used for interpretation of the landscape and the preparation of maps.

5. The Vegetation

5.1 Broad context

The Nama Karoo Biome covers an extensive area from the north-west through the central part of South Africa to the south and southeast of the country. It is an arid zone and is subdivided into three bioregions, the Upper Karoo Bioregion, Lower Karoo Bioregion and Bushmanland Bioregion. The study area near Augrabies is located in the Bushmanland Bioregion at a north-central location within this bioregion (Rutherford & Westfall, 1994; Rutherford *et al.* 2006; Mucina *et al.* 2006 in Mucina & Rutherford, 2006).

5.2 Critical Biodiversity Areas

Critical Biodiversity Areas (CBAs) were delimited for the Namaqua District Municipality (NDM) by Desmet & Marsh (2008). The maps they compiled did not include the Augrabies area. However, more recently critical biodiversity areas and ecological support areas have been mapped for the whole of the Northern Cape Province including the Kai Garib! Municipality where the study area is located.

The available CBA shapefiles (Enrico Oosthuysen pers. comm.) for the Northern Cape Province were overlaid on Google Earth ™. This permitted examination of the conservation status classification of the area around Augrabies including Kakamas South Settlement no 2193 and 2185. The Kakamas South Settlement no 2193 and 2185 study area is located in an area classified as CBA2 (Figure 9). It is not near any focus area of the National Protected Area Expansion Strategy nor is it close to any mountain catchment area. It is also separated from the Augrabies Falls National Park by numerous other farms.

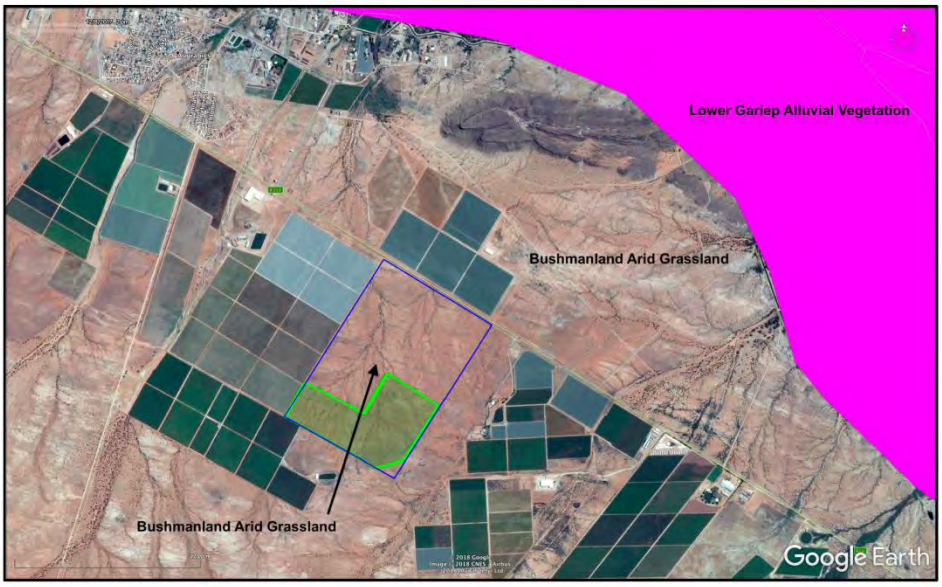


Figure 8. Portion of the national vegetation map (SANBI, 2012) indicating that the study area (blue boundary) falls within Bushmanland Arid Grassland (uncoloured area). The closest other major vegetation type is Lower Gariep Alluvial Vegetation that is found along the Orange River and not within the study area.

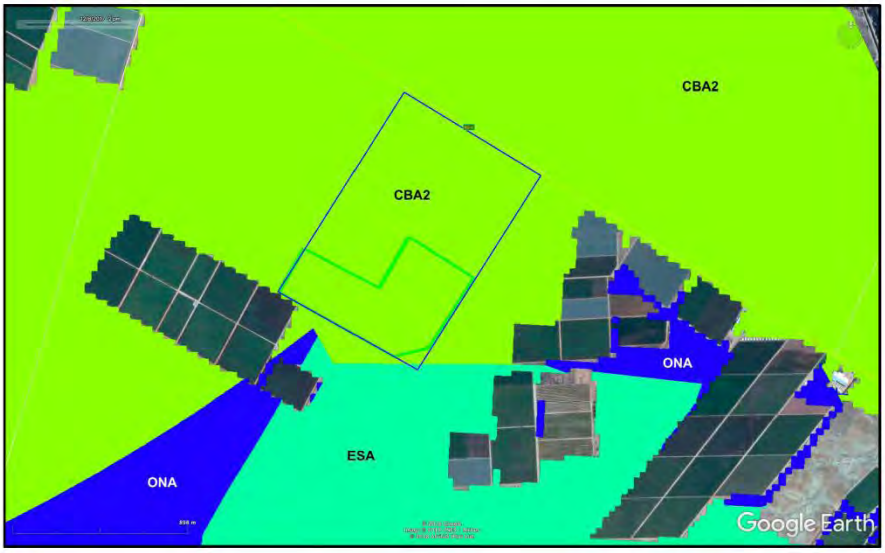


Figure 9. Portion of the Critical Biodiversity Areas map for the Northern Cape Province showing indicating that the Renosterkop Extension study area (blue boundary) falls entirely within a CBA2. ESA = Ecological Support Area; ONA = Other Natural Areas.

5.3 Vegetation of Kakamas South Settlement no 2193 and 2185

The entire Kakamas South Settlement no 2193 and 2185 study area falls within an extensive vegetation unit that was mapped by Mucina *et al.* (2005) and SANBI (2012) as Bushmanland Arid Grassland. It is widespread in the Bushmanland Bioregion and has a **Least Threatened** conservation status (Government Gazette, 2011; Driver *et al.* 2012). This vegetation type is characteristically dominated by 'white grasses' in the genus *Stipagrostis* but also has a complement of low shrubs.

The *Vegetation Map of South Africa, Lesotho & Swaziland* (Mucina *et al.* 2005) was mapped at a broad scale and therefore did not accommodate small-scale variation within the larger area of Bushmanland Arid Grassland. Two main sub-types are found within the Bushmanland Arid Grassland at Kakamas South Settlement no 2193 and 2185. The first is the 'open plains' that have shallow soil and support a grass-dominated community but with scattered low shrubs. The second sub-type is the numerous shallow, often sandy, seasonal drainage lines that form a dendritic pattern in the landscape. The drainage lines are usually narrow, seldom exceeding 4 m in width. Owing to the seasonal concentration of moisture, the drainage lines support tall shrubs and low trees as well as a greater concentration of grasses than found on the 'open plains'.

5.3.1 Results of the vegetation survey at Kakamas South Settlement no 2193 and 2185

The survey was conducted following an anticlockwise circuit from north to south-west across the site (Figure 4), covering as much variation on the property as possible. A high level of confidence is placed on the recorded information within the constraints of the season and extremely dry conditions prevailing at the time of the field survey.

5.3.1.1 The 'open plains'

The 'open plains' are areas between the drainage lines on flat, gently sloping to slightly convex areas with shallow sandy soil with surface gravel. These areas are vegetated mainly with 'white' grasses (*Stipagrostis* spp.), low shrubs and mid-high shrubs (Figures 10 & 11).

Figure 10. Bushmanland Arid Grassland 'open plains' with scattered shrubs.

Figure 11. Bushmanland Arid Grassland 'open plains' with scattered shrubs and 'white grasses'.

Sensitivity of the 'open plains'

Apart from the presence of *Boscia foetida* shrubs and small trees on the open plains, the vegetation has very low sensitivity. Only a few protected *Aloe claviflora* plants were found near the southern boundary of the property and no other plant species of conservation concern were recorded.

5.3.1.2 The seasonal drainage lines or watercourses

The seasonal watercourses extend across the study area with flow direction from south to north. They arise in the south but runoff into these watercourses has

already been negatively impacted by development of vineyards on the adjacent property on the south side. The seasonal watercourses are most easily recognized by the concentration of trees within the drainage lines. *Senegalia mellifera* subsp. *detinens* occurs in greater abundance along the drainage lines than elsewhere (Figure 12) and there are also greater numbers of *Boscia foetida* plants along the drainage lines than away from them (Figure 13). A map of the main drainage lines is given in Figure 16.

Sensitivity of the seasonal watercourses

The watercourses or drainage lines are botanically more sensitive than the open plains due mainly to the presence of *Boscia foetida*.

Figure 12. A typical seasonal watercourse or drainage line with sandy wash zone and small trees of *Senegalia mellifera* subsp. *detinens* (blackthorn, swarthaak).

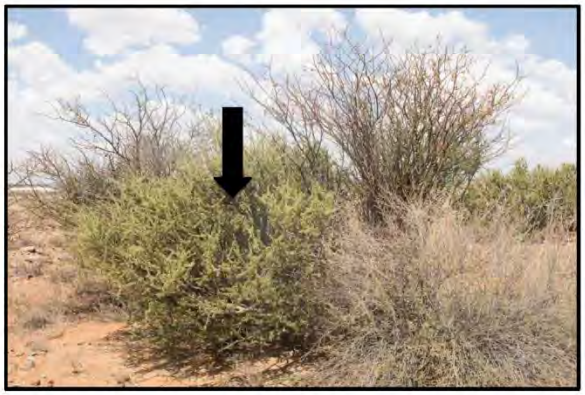


Figure 13. *Boscia foetida* (shown by black arrow) and *Senegalia mellifera* subsp. *detinens* on the edge of a sandy seasonal watercourse.

5.3.2 Comments on the occurrence of *Boscia* spp.

The genus *Boscia* has five species in Southern Africa with *Boscia foetida* (Figure 15) having five subspecies and *Boscia angustifolia* (Figure 14) having one subspecies. All the species in Southern Africa have been evaluated in the Red List of South African Plants (http://redlist.sanbi.org/genus.php?genus=1131) and all have been assigned the status of Least Concern. This is somewhat ironic in terms of the great importance placed on *Boscia albitrunca* (witgatboom) in particular as a protected tree species in terms of the National Forest Act 1998 (Act 94 of 1998) [see below]. *B. albitrunca* is not an uncommon species and is given its protected status more for its mythical and 'traditional' qualities than for its rarity. Trengove & Jandrell (2014) report that the Khomani San in the Northern Cape Province firmly believe that *Boscia albitrunca* is never struck by lightning and that if caught in a storm, this tree species would provide safe shelter. Pastoralists in arid regions have relied on *B. albitrunca* for food for their livestock in times of drought. Since this species is often the only plant of any stature in such arid regions it also provides shelter and nesting places for birds as well as food for mammals.

It is the author's opinion that the over-emphasis placed on recording of every occurrence of *Boscia albitrunca* in a given study area such as at the Renosterkop Extension site is misguided and excessive. Even with extensive agricultural development, *B. albitrunca* would not become threatened and its status as a protected tree species would not be in jeopardy.

Figure 14. *Boscia albitrunca*

Figure 15. *Boscia foetida* subsp. *rehmanniana*

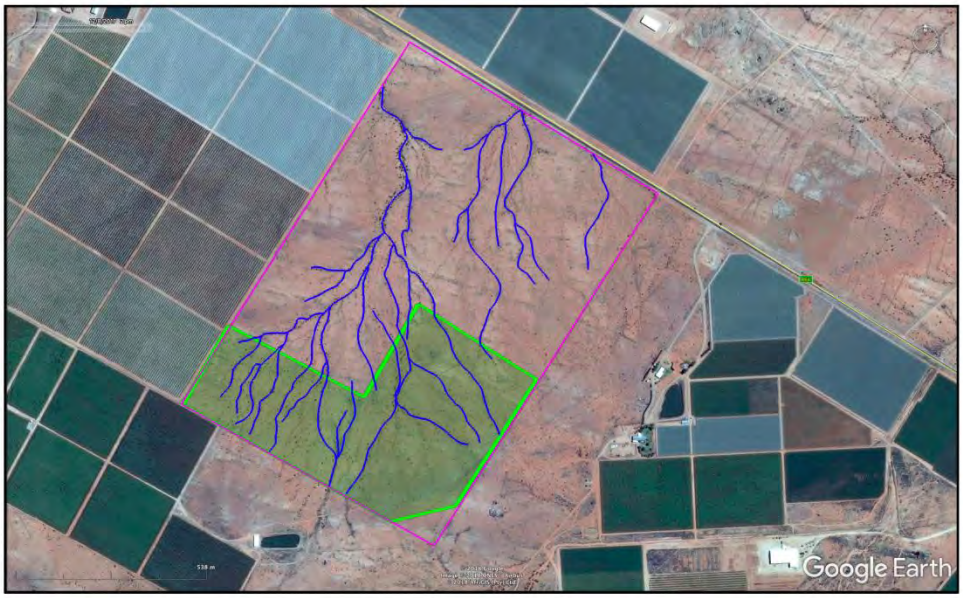


Figure 16. A Google Earth™ aerial image of the Kakamas South Settlement no 2193 and 2185 'Extension' study area (97.6 ha) [pink boundary] with the main drainage lines mapped in blue. The proposed area of cultivation is overlaid in green.

8. Protected Plant Species

Only one protected tree species was encountered in the study area namely, *Boscia albitrunca* (Witgatboom; Shepherd's Tree). This species that is protected in terms of the National Forests Act 1998 (Act 94 of 1998), is uncommon in the study area with only two specimens recorded. Loss of the two *Boscia albitrunca* trees due to anticipated clearing for cultivation, would require that permits should be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF).

The closely related *Boscia foetida* that occurs much more commonly on the site is not listed as a protected species.

The other protected species found in the study area is *Aloe claviflora* (Figure 17). It is protected in terms of the Northern Cape Nature Conservation Act, 2009 (Act No. 9 of 2009) since all *Aloe* species, regardless of how common, are protected in the Northern Cape Province. The distribution of *Aloe claviflora* in the study area is towards the southern boundary and within the 34 ha area earmarked for cultivation. The clusters of these plants are shown in Figure 4 (denoted as ACLAV#).

Figure 17. A cluster of *Aloe claviflora* plants near the southern boundary of the study area. Note the vineyards on the adjacent property.

9. Impact Assessment

The proposed agricultural development of Kakamas South Settlement no 2193 and 2185 for soft citrus would be such that the natural vegetation within the proposed 34 ha would be cleared and lost. The orchards would affect the open plains more or less to the same extent that they would negatively impact on the drainage lines. This means that there would be inevitable and unavoidable loss of only two *Boscia albitrunca* trees. This is taken into account in the impact assessment below. It would also mean disturbance of all the clusters of *Aloe claviflora* found on the site (see below for mitigation!).

9.1 Assessed impacts

The assessment of the impacts is considered for agricultural development of only 34 ha for Kakamas South Settlement no 2193 and 2185(preferred alternative) in the southern part of the site, and the 'No Go' alternative which would be 'no further development'. It was indicated to the author that only 34 ha of the 97.7 ha that makes up the entire site would be developed with citrus.

Three types of impacts are assessed:

- **Direct impacts:** Impacts occurring directly on the vegetation of the site as a result of the proposed agricultural development.
- **Indirect impacts:** Impacts that would not be as a direct result of the proposed activity, but that would occur away from the original source of impact.
- **Cumulative impacts**: Impacts caused by several similar projects.

9.2 'No Go' Alternative

The No Go alternative would be that the proposed development of 34 ha of soft citrus would not take place. The natural veld would remain as it is and there would be minimal change over time but with some low-level impacts due to human activity. The result would be a **Very Low Negative** impact.

9.3 Direct Impacts

The impacts of the development of agriculture in the study are considered for the loss of natural vegetation and habitat i.e. loss of Bushmanland Arid Grassland.

9.3.1. Loss of vegetation and habitat of the 'open plains'

The open plains support typical Bushmanland Arid Grassland and, as noted above, this widespread vegetation type, as found in the study area, has low botanical sensitivity. Development of citrus orchards on the 'open plains' would have **Low Negative** impact without mitigation and **Very Low Negative** impact with mitigation (Table 1). This rating is applied even though the entire 97.6 ha area of the site is classified as CBA2.

Table 1. Impact and Significance – Loss of Bushmanland Arid Grassland vegetation due to conversion of the 'open plains' to citrus orchards.

CRITERIA	'NO GO' ALTERNATIVE		PREFERRED ALTERNATIVE	
Nature of impact	Loss of Bushmanland Arid Grassland vegetation: open plains			
	WITHOUT MITIGATION	WITH MITIGATION	WITHOUT MITIGATION	WITH MITIGATION
Extent	Local	Local	Local	Local
Duration	Long-term	Long-term	Long-term	Long-term
Intensity	Very Low	Very Low	Low	Very Low
Probability of occurrence	Unlikely	Unlikely	Probable	Probable
Confidence	High	High	High	High
Significance	Very Low negative	Very low negative	Low negative	Very low negative
Nature of Cumulative impact	Loss of Bushmanland Arid Grassland			
Cumulative impact prior to mitigation	Very Low Negative		Low negative	
Degree to which impact can be reversed	Not reversible			
Degree to which impact may cause irreplaceable loss of resources	Low			
Degree to which impact can be mitigated	Medium			
Proposed mitigation	Search and rescue of *Aloe claviflora*			
Cumulative impact post mitigation	Low negative			
Significance after mitigation	Low negative			

9.3.2. Loss of vegetation and habitat of the seasonal drainage lines

The seasonal drainage lines are not true grassland but rather an azonal aspect of Bushmanland Arid Grassland where shrubs and trees dominate. The seasonal watercourses are important for two main reasons; firstly, they have a concentration of *Boscia foetida* and secondly, they are ecological corridors that provide cover for movement of birds and small mammals. A greater negative impact would result from the loss of the vegetation along the seasonal watercourses compared with the impact of loss of the grassland on the open plains. This is the reason for the separation of the assessment of impacts on the seasonal watercourses and the open plains. It is anticipated that the loss of the seasonal watercourses would result in **High Negative** impact since numerous *B. foetida* trees would be lost at a local scale (Table 2). It would be difficult to implement direct mitigation measures but if the area apart from that earmarked for cultivation i.e. 65.6 ha in the northern two-thirds of the site could be conserved, it could then be considered to be an 'on-site offset'[1] that would serve as mitigation for loss of seasonal watercourses and open plains in the study area. The impact would then be reduced to **Medium negative** (Table 2).

Table 2. Impact and Significance – Loss of Bushmanland Arid Grassland vegetation due to conversion of the seasonal drainage lines to citrus orchards.

CRITERIA	'NO GO' ALTERNATIVE		PREFERRED ALTERNATIVE	
Nature of impact	Loss of Bushmanland Arid grassland vegetation: seasonal watercourses			
	WITHOUT MITIGATION	WITH MITIGATION	WITHOUT MITIGATION	WITH MITIGATION
Extent	Local	Local	Local	Local
Duration	Long-term	Long-term	Long-term	Long-term
Intensity	Low	Low	High	Medium
Probability of occurrence	Probable	Probable	Highly Probable	Highly Probable
Confidence	High	High	High	High
Significance	Very Low negative	Very low negative	High negative	Medium negative
Nature of Cumulative impact	Loss of Bushmanland Arid Grassland			
Cumulative impact prior to mitigation	Very Low Negative		Medium negative	
Degree to which impact can be reversed	Not reversible			
Degree to which impact may cause irreplaceable loss of resources	Low			
Degree to which impact can be mitigated	Medium			
Proposed mitigation	Conservation of the northern part (65.6 ha) of the Renosterkop Extension study area.			
Cumulative impact post mitigation	Medium negative			
Significance after	Medium negative			

[1] An 'on site offset' is defined as a part of the greater application area where the habitat is similar to that which would be lost and it is an area that can be set aside in perpetuity as a conservation easement to conserve some of the local habitat.

mitigation	

9.4 Indirect Impacts

No indirect impacts of the proposed transformation of natural vegetation in the study area at Kakamas South Settlement no 2193 and 2185were identified.

9.5 Cumulative Impacts

Bushmanland Arid Grassland is a widespread vegetation type in the Northern Cape Province with low botanical sensitivity over much of its range. This vegetation type has been lost mainly to agriculture where there is available water to permit conversion of the landscape to vineyards, citrus orchards or other forms of cultivation. In the recent past, numerous renewable energy facilities (many of which are still to be constructed) have also targeted landscapes where Bushmanland Arid Grassland is found, due to the suitability of the receiving environment. However, despite development in this ecosystem, much of it still remains intact since it is used as rangeland for animal production. Cumulative impacts are thus very low at a broad scale although at a local scale such as around Augrabies, cumulative impacts are somewhat higher due to intensive cultivation. Considering local and broad-scale impacts, cumulative impacts range from **Low Negative** to **Medium Negative** with the latter related mainly to loss of protected tree species.

10. Mitigation

Very little scope is available for mitigation measures to compensate for the loss of natural or near natural habitat in the study area. Wherever there is future cultivation, the vegetation and habitat would be lost. The only mitigation measures that can be proposed are, (1) Search & Rescue of *Aloe claviflora*, where the aloe plants would be relocated to safe sites that would not be affected by cultivation and (2) conservation of the northern part of the study area, to conserve both and area of 'open plains' and the seasonal watercourses north of the area proposed for cultivation. This would ensure that a reasonable amount of viable habitat is protected and this would offset the loss of equivalent habitat in the area targeted for citrus orchards.

Note that it would not be possible to translocate ANY trees since they would not survive disturbance. Therefore no holding facility such as a greenhouse etc. is advised.

11. Conclusions and Recommendations

- The natural vegetation type found in the study area at Kakamas South Settlement no 2193 and 2185 Augrabies as mapped by Mucina *et al*. 2005 and SANBI (2012) is Bushmanland Arid Grassland. According to the National Biodiversity Assessment (Driver *et al.* 2001) and the List of Threatened Terrestrial Ecosystems (Government Gazette, 2011), this vegetation type (ecosystem) is **Least Threatened**.
- The impact of the proposed agricultural development on the 'open plains' Bushmanland Arid Grassland would be **Low Negative** without mitigation and **Very Low Negative** with mitigation. The impact on the seasonal watercourses would be **High Negative** without mitigation and **Medium Negative** with mitigation.
- No plant species of conservation concern were recorded apart from two protected *Boscia albitrunca* (witgatboom) and *Aloe claviflora* (kraalaalwyn).
- It is recommended that to mitigate the loss of Bushmanland Arid Grassland in the study area, the northern area of Kakamas South Settlement no 2193 and 2185 should be set aside and conserved in perpetuity (effectively an 'on-site offset').
- It would be necessary to apply for a permit for the removal of *Boscia albitrunca* trees (two) that fall within the 34 ha area earmarked for cultivation.
- No constraints were identified from a botanical perspective that would prevent the agricultural development from proceeding as along as suitable mitigation is implemented.
- The proposed agricultural development is therefore acceptable and supported from a botanical viewpoint.

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Report submitted: 21 March 2018; reviewed and updated 11 October 2018

Appendix 1: Impact Assessment Methodology

The assessment of impacts needs to include the determination of the following:

- The nature of the impact – see Table 1.1
- The magnitude (or severity) of the impact – see Table 1.2
- The likelihood of the impact occurring - see Table 1.2

The degree of confidence in the assessment must also be reflected.

- ***Table A.1 Impact assessment terminology***

Term	Definition
Impact nature	
Positive	An impact that is considered to represent an improvement on the baseline or introduces a positive change.
Negative	An impact that is considered to represent an adverse change from the baseline, or introduces a new undesirable factor.
Direct impact	Impacts that result from a direct interaction between a planned project activity and the receiving environment/receptors (e.g. between occupation of a site and the pre-existing habitats or between an effluent discharge and receiving water quality).
Indirect impact	Impacts that result from other activities that are encouraged to happen as a consequence of the Project (e.g. in-migration for employment placing a demand on resources).
Cumulative impact	Impacts that act together with other impacts (including those from concurrent or planned future third party activities) to affect the same resources and/or receptors as the Project.

Assessing significance

There is no statutory definition of '*significance*' and its determination is, therefore, somewhat subjective. However, it is generally accepted that significance is a function of the magnitude of the impact and the likelihood of the impact occurring. The criteria used to determine significance are summarized in *Table 1.2*

- ***Table A.2 Significance criteria***

Impact magnitude	
Extent	*On-site* – impacts that are limited to the boundaries of the rail reserve, yard or substation site. *Local* – impacts that affect an area in a radius of 20km around the development site. *Regional* – impacts that affect regionally important environmental resources or are experienced at a regional scale as determined by administrative boundaries, habitat type/ecosystem. *National* – impacts that affect nationally important environmental resources or affect an area that is nationally important/ or have macro-economic consequences.
Duration	*Temporary* – impacts are predicted to be of short duration and intermittent/occasional. *Short-term* – impacts that are predicted to last only for the duration of the construction period. *Long-term* – impacts that will continue for the life of the Project, but ceases when the Project stops operating. *Permanent* – impacts that cause a permanent change in the affected receptor or resource (e.g. removal or destruction of ecological habitat) that endures substantially beyond the Project lifetime.

Intensity	BIOPHYSICAL ENVIRONMENT: *Intensity can be considered in terms of the sensitivity of the biodiversity receptor (ie. habitats, species or communities).* **Negligible** – the impact on the environment is not detectable. **Low** – the impact affects the environment in such a way that natural functions and processes are not affected. **Medium** – where the affected environment is altered but natural functions and processes continue, albeit in a modified way. **High** – where natural functions or processes are altered to the extent that it will temporarily or permanently cease. ***Where appropriate, national and/or international standards are to be used as a measure of the impact.*** *Specialist studies should attempt to quantify the magnitude of impacts and outline the rationale used.* SOCIO-ECONOMIC ENVIRONMENT: *Intensity can be considered in terms of the ability of project affected people/communities to adapt to changes brought about by the Project.* **Negligible** – there is no perceptible change to people's livelihood **Low** - People/communities are able to adapt with relative ease and maintain pre-impact livelihoods. **Medium** - Able to adapt with some difficulty and maintain pre-impact livelihoods but only with a degree of support. **High** - Those affected will not be able to adapt to changes and continue to maintain-pre impact livelihoods.
Impact likelihood (Probability)	
Negligible	The impact does not occur.
Low	The impact may possibly occur.
Medium	Impact is likely to occur under most conditions.
High	Impact will definitely occur.

Once a rating is determined for magnitude and likelihood, the following matrix can be used to determine the impact significance.

- ***Table A.3 Example of significance rating matrix***

SIGNIFICANCE RATING					
	LIKELIHOOD	Negligible	Low	Medium	High
MAGNITUDE	Negligible	Negligible	Negligible	Low	Low
	Low	Negligible	Negligible	Low	Low
	Medium	Negligible	Low	Medium	Medium
	High	Low	Medium	High	High

In *Table A.4*, the various definitions for significance of an impact is given.

- ***Table A.4 Significance definitions***

Significance definitions	
Negligible significance	An impact of negligible significance (or an insignificant impact) is where a resource or receptor (including people) will not be affected in any way by a particular activity, or the predicted effect is deemed to be 'negligible' or 'imperceptible' or is indistinguishable from natural background variations.
Minor significance	An impact of minor significance is one where an effect will be experienced, but the impact magnitude is sufficiently small (with and without mitigation) and well within accepted standards, and/or the receptor is of low sensitivity/value.

Moderate significance	An impact of moderate significance is one within accepted limits and standards. The emphasis for moderate impacts is on demonstrating that the impact has been reduced to a level that is as low as reasonably practicable (ALARP). This does not necessarily mean that 'moderate' impacts have to be reduced to 'minor' impacts, but that moderate impacts are being managed effectively and efficiently.
Major significance	An impact of major significance is one where an accepted limit or standard may be exceeded, or large magnitude impacts occur to highly valued/sensitive resource/receptors. A goal of the EIA process is to get to a position where the Project does not have any major residual impacts, certainly not ones that would endure into the long term or extend over a large area. However, for some aspects there may be major residual impacts after all practicable mitigation options have been exhausted (i.e. ALARP has been applied). An example might be the visual impact of a development. It is then the function of regulators and stakeholders to weigh such negative factors against the positive factors such as employment, in coming to a decision on the Project.

Once the significance of the impact has been determined, it is important to qualify the **degree of confidence** in the assessment. Confidence in the prediction is associated with any uncertainties, for example, where information is insufficient to assess the impact. Degree of confidence can be expressed as low, medium or high.

Appendix 2: Curriculum Vitae

Dr David Jury McDonald Pr.Sci.Nat.

Name of Firm: Bergwind Botanical Surveys & Tours CC. (Independent consultant)
Work and Home Address: 14 A Thomson Road, Claremont, 7708
Tel: (021) 671-4056 **Mobile:** 082-8764051 **Fax:** 086-517-3806
E-mail: dave@bergwind.co.za
Website: www.bergwind.co.za
Profession: Botanist / Vegetation Ecologist / Consultant / Tour Guide
Date of Birth: 7 August 1956

Employment history:

- 19 years with National Botanical Institute (now SA National Biodiversity Institute) as researcher in vegetation ecology.
- Five years as Deputy Director / Director Botanical & Communication Programmes of the Botanical Society of South Africa
- Twelve years as private independent Botanical Specialist consultant (Bergwind Botanical Surveys & Tours CC)

Nationality: South African (ID No. 560807 5018 080)
Languages: English (home language) – speak, read and write
Afrikaans – speak, read and write

Membership in Professional Societies:

- South Africa Association of Botanists
- International Association for Impact Assessment (SA)
- South African Council for Natural Scientific Professions (**Ecological Science, Registration No. 400094/06**)
- Field Guides Association of Southern Africa

Key Qualifications :

- Qualified with a M. Sc. (1983) in Botany and a PhD in Botany (Vegetation Ecology) (1995) at the University of Cape Town.
- Research in Cape fynbos ecosystems and more specifically mountain ecosystems.
- From 1995 to 2000 managed the Vegetation Map of South Africa Project (National Botanical Institute)
- Conducted botanical survey work for AfriDev Consultants for the Mohale and Katse Dam projects in Lesotho from 1995 to 2002. A large component of this work was the analysis of data collected by teams of botanists.

- **Director: Botanical & Communication Programmes** of the Botanical Society of South Africa (2000—2005), responsible for communications and publications; involved with conservation advocacy particularly with respect to impacts of development on centres of plant endemism.

- Further tasks involved the day-to-day management of a large non-profit environmental organisation.

- **Independent botanical consultant** (2005 – to present) over 400 projects have been completed related to environmental impact assessments in the Western, Southern and Northern Cape, Karoo and Lesotho. A list of reports (or selected reports for scrutiny) is available on request.

Higher Education

Degrees obtained
and major subjects passed:

B.Sc. (1977), University of Natal, Pietermaritzburg
Botany III
Entomology II (Third year course)

B.Sc. Hons. (1978) University of Natal, Pietermaritzburg
Botany (Ecology /Physiology)

M.Sc. - (Botany), University of Cape Town, 1983.
Thesis title: 'The vegetation of Swartboschkloof, Jonkershoek, Cape Province'.

PhD (Botany), University of Cape Town, 1995.
Thesis title: 'Phytogeography endemism and diversity of the fynbos of the southern Langeberg'.

Certificate of Tourism: Guiding (Culture: Local)
Level: 4 Code: TGC7 (Registered Tour Guide: WC 2969).

Employment Record:

January 2006 – present: Independent specialist botanical consultant and tour guide in own company: **Bergwind Botanical Surveys & Tours CC**
August 2000 - 2005 : Deputy Director, later Director Botanical & Communication Programmes, Botanical Society of South Africa
January 1981 – July 2000 : Research Scientist (Vegetation Ecology) at National Botanical Institute
January 1979—Dec 1980 : National Military Service

Further information is available on my company website: www.bergwind.co.za

Appendix 3: Botanical Assessment Content Requirements of Specialist Reports, as prescribed by Appendix 6 of GN R326

Regulation	Content as required by NEMA	Specialist Report Section/Annexure Reference
1 (1) (a)	Details of- (i) The specialist who prepared the report; and	Cover & Page 2
	(ii) The expertise of that specialist to compile a specialist report, including a CV	Page 2 & Appendix 2
1 (1) (b)	A declaration that the specialist is independent in a form as may be specified by the competent authority.	Page 4
1 (1) (c)	An indication of the scope of, and purpose for which, the report is prepared.	Page 6
1 (1)(cA)	An indication of the quality and age of base data used for the specialist report.	Pages 10—22
1 (1)(cB)	A description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change.	Page 26
1 (1) (d)	The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment.	Page 7
1 (1) (e)	A description of the methodology adopted in preparing the report or carrying out the specialized process inclusive of equipment and modelling used.	Pages 13 &14
1 (1) (f)	Details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives.	Pages 18 & 19
1 (1) (g)	An identification of any areas to be avoided, including buffers.	Not applicable
1 (1) (h)	A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers.	Pages 10--11
1 (1) (i)	A description of any assumptions made and any uncertainties or gaps in knowledge.	Page 7
1 (1) (j)	A description of the findings and potential implications of such findings on the impact of the proposed activity or activities.	Pages 17--22
1 (1) (k)	Any mitigation measures for inclusion in the EMPr.	Page 26
1 (1) (l)	Any conditions for inclusion in the environmental authorization.	Not applicable
1 (1) (m)	Any monitoring requirements for inclusion in the EMPr or environmental authorization.	Not applicable
1 (1) (n)	A reasoned opinion- (i) whether the proposed activity, activities or portions thereof should be authorised; and	Page 25
	(iA) regarding the acceptability of the proposed activity or activities; and	Page 25

Regulation	Content as required by NEMA	Specialist Report Section/Annexure Reference
	(ii) If the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan.	Not applicable
1 (1) (o)	A description of any consultation process that was undertaken during the course of preparing the specialist report.	Not applicable
1 (1) (p)	A summary and copies of any comments received during any consultation process and where applicable, all responses thereto.	Not applicable
1 (1) (q)	Any other information requested by the competent authority.	None

Appendix 4. Co-ordinates of Boscia sp. recorded in the 34 ha development area at Renosterkop 'Extension'. (Photos not provided but on record). The plants highlighted in red are the only two records for *Boscia albitrunca*.

Photo Reference	Longitude	Latitude	Species
20180604-WA0010	S 28° 41' 35.8188"	E 20° 26' 9.9816"	*Boscia foetida*
20180604-WA0011	S 28° 41' 35.1744"	E 20° 26' 10.1904"	*Boscia foetida*
20180604-WA0015	S 28° 41' 34.6524"	E 20° 26' 10.9932"	*Boscia foetida*
20180604-WA0004	S 28° 41' 37.968"	E 20° 26' 9.708"	*Boscia foetida*
20180604-WA0007	S 28° 41' 38.4"	E 20° 26' 9.6576"	*Boscia foetida*
20180604-WA0028	S 28° 41' 38.7852"	E 20° 26' 9.3156"	*Boscia foetida*
20180604-WA0009	S 28° 41' 35.16"	E 20° 26' 13.038"	*Boscia foetida*
20180604-WA0014	S 28° 41' 34.6812"	E 20° 26' 13.74"	*Boscia foetida*
20180604-WA0013	S 28° 41' 33.9828"	E 20° 26' 13.9668"	*Boscia foetida*
20180604-WA0005	S 28° 41' 33.3312"	E 20° 26' 14.5572"	*Boscia foetida*
20180604-WA0030	S 28° 41' 34.1664"	E 20° 26' 16.9188"	*Boscia foetida*
20180604-WA0032	S 28° 41' 35.2788"	E 20° 26' 16.0908"	*Boscia foetida*
20180604-WA0006	S 28° 41' 36.636"	E 20° 26' 15.1584"	*Boscia foetida*
20180604-WA0029	S 28° 41' 37.5072"	E 20° 26' 14.6904"	*Boscia foetida*
20180604-WA0012	S 28° 41' 38.4432"	E 20° 26' 13.5888"	*Boscia foetida*
20180604-WA0033	S 28° 41' 39.1776"	E 20° 26' 13.5816"	*Boscia foetida*
20180604-WA0037	S 28° 41' 39.876"	E 20° 26' 13.1352"	*Boscia foetida*
20180604-WA0031	S 28° 41' 37.986"	E 20° 26' 14.9712"	*Boscia foetida*
20180604-WA0076	S 28° 41' 34.2384"	E 20° 26' 18.0636"	*Boscia foetida*
20180604-WA0036	S 28° 41' 36.9636"	E 20° 26' 17.1384"	*Boscia foetida*
20180604-WA0035	S 28° 41' 37.5432"	E 20° 26' 16.7676"	*Boscia foetida*
20180604-WA0008	S 28° 41' 38.4756"	E 20° 26' 18.24"	*Boscia foetida*
20180604-WA0034	S 28° 41' 38.3172"	E 20° 26' 18.42"	*Boscia foetida*
20180604-WA0038	S 28° 41' 35.9016"	E 20° 26' 19.0752"	*Boscia foetida*
20180604-WA0040	S 28° 41' 37.3668"	E 20° 26' 20.2308"	*Boscia foetida*
20180604-WA0063	S 28° 41' 38.0256"	E 20° 26' 21.9948"	*Boscia foetida*
20180604-WA0052	S 28° 41' 36.9636"	E 20° 26' 23.8884"	*Boscia foetida*
20180604-WA0065	S 28° 41' 37.8276"	E 20° 26' 25.4544"	*Boscia albitrunca*
20180604-WA0042	S 28° 41' 38.832"	E 20° 26' 25.2708"	*Boscia foetida*
20180604-WA0062	S 28° 41' 39.1164"	E 20° 26' 24.6408"	*Boscia foetida*
20180604-WA0051	S 28° 41' 40.0704"	E 20° 26' 25.3968"	*Boscia foetida*
20180604-WA0043	S 28° 41' 40.29"	E 20° 26' 25.368"	*Boscia foetida*
20180604-WA0041	S 28° 41' 41.388"	E 20° 26' 23.9676"	*Boscia foetida*
20180604-WA0048	S 28° 41' 43.0044"	E 20° 26' 23.6832"	*Boscia foetida*
20180604-WA0045	S 28° 41' 43.7172"	E 20° 26' 22.6176"	*Boscia foetida*
20180604-WA0059	S 28° 41' 44.3688"	E 20° 26' 22.4448"	*Boscia foetida*
20180604-WA0039	S 28° 41' 45.3408"	E 20° 26' 23.2836"	*Boscia foetida*
20180604-WA0057	S 28° 41' 45.0096"	E 20° 26' 24.6912"	*Boscia foetida*
20180604-WA0047	S 28° 41' 44.4264"	E 20° 26' 25.2996"	*Boscia foetida*
20180604-WA0072	S 28° 41' 43.1412"	E 20° 26' 26.1888"	*Boscia foetida*
20180604-WA0075	S 28° 41' 42.306"	E 20° 26' 26.214"	*Boscia albitrunca*
20180604-WA0071	S 28° 41' 41.9604"	E 20° 26' 27.2148"	*Boscia foetida*
20180604-WA0061	S 28° 41' 40.776"	E 20° 26' 27.5964"	*Boscia foetida*
20180604-WA0049	S 28° 41' 41.208"	E 20° 26' 28.2516"	*Boscia foetida*
20180604-WA0054	S 28° 41' 40.9128"	E 20° 26' 28.4928"	*Boscia foetida*

20180604-WA0055	S 28° 41' 38.1084''	E 20° 26' 29.9112''	*Boscia foetida*
20180604-WA0058	S 28° 41' 37.536''	E 20° 26' 29.9364''	*Boscia foetida*
20180604-WA0056	S 28° 41' 37.0644''	E 20° 26' 30.1488''	*Boscia foetida*
20180604-WA0064	S 28° 41' 36.7584''	E 20° 26' 30.6132''	*Boscia foetida*
20180604-WA0068	S 28° 41' 35.9088''	E 20° 26' 30.786''	*Boscia foetida*
20180604-WA0044	S 28° 41' 35.6388''	E 20° 26' 30.4548''	*Boscia foetida*
20180604-WA0060	S 28° 41' 35.178''	E 20° 26' 30.1452''	*Boscia foetida*
20180604-WA0070	S 28° 41' 34.7388''	E 20° 26' 30.3756''	*Boscia foetida*
20180604-WA0046	S 28° 41' 34.3068''	E 20° 26' 30.7176''	*Boscia foetida*
20180604-WA0074	S 28° 41' 34.4976''	E 20° 26' 31.4052''	*Boscia foetida*
20180604-WA0069	S 28° 41' 33.4608''	E 20° 26' 32.0496''	*Boscia foetida*
20180604-WA0053	S 28° 41' 34.35''	E 20° 26' 32.7336''	*Boscia foetida*
20180604-WA0067	S 28° 41' 33.6408''	E 20° 26' 33.9''	*Boscia foetida*
20180604-WA0066	S 28° 41' 30.9048''	E 20° 26' 33.378''	*Boscia foetida*
20180604-WA0050	S 28° 41' 30.408''	E 20° 26' 34.1124''	*Boscia foetida*
20180604-WA0016	S 28° 41' 31.2936''	E 20° 26' 34.6164''	*Boscia foetida*
20180604-WA0017	S 28° 41' 32.8344''	E 20° 26' 41.8524''	*Boscia foetida*
20180604-WA0019	S 28° 41' 34.6992''	E 20° 26' 45.6936''	*Boscia foetida*
20180604-WA0018	S 28° 41' 34.458''	E 20° 26' 43.7244''	*Boscia foetida*
20180604-WA0020	S 28° 41' 36.0204''	E 20° 26' 43.7676''	*Boscia foetida*
20180604-WA0021	S 28° 41' 37.3092''	E 20° 26' 39.2136''	*Boscia foetida*
20180604-WA0023	S 28° 41' 38.0112''	E 20° 26' 38.5008''	*Boscia foetida*
20180604-WA0022	S 28° 41' 38.904''	E 20° 26' 37.9392''	*Boscia foetida*
20180604-WA0024	S 28° 41' 39.93''	E 20° 26' 37.2084''	*Boscia foetida*
20180604-WA0025	S 28° 41' 41.028''	E 20° 26' 34.548''	*Boscia foetida*
20180604-WA0073	S 28° 41' 43.89''	E 20° 26' 33.4176''	*Boscia foetida*
20180604-WA0027	S 28° 41' 44.4228''	E 20° 26' 32.046''	*Boscia foetida*
20180604-WA0026	S 28° 41' 43.7064''	E 20° 26' 31.722''	*Boscia foetida*

11.3.2 Archaeological Impact Assessment, including Paleontological Letter

11.3.2.1 Archaeological Impact Assessment

ARCHAEOLOGICAL IMPACT ASSESSMENT

Proposed citrus development, Renosterkop Extension (Kakamas South Settlement No. 2185 & 2193) Augrabies, Northern Cape

Assessment conducted under Section 38 (3) of the National Heritage Resource Act (No. 25 of 1999)

Prepared for:

PIETER BADENHORST PROFESSIONAL SERVICES
PO Box 1058, Wellington, 7654
E-mail: pbps@iafrica.com

Applicant:

Oseiland Eiendomme (Pty) Ltd

By

ACRM
5 Stuart Road, Rondebosch, 7700
Ph/Fax: 021 685 7589
Mobile: 082 321 0172
E-mail: acrm@wcaccess.co.za

DECEMBER 2017

Executive summary

1. Introduction

ACRM was appointed to conduct a Phase 1 Archaeological Impact Assessment (AIA) for a proposed citrus development near the small town of Augrabies in the Northern Cape Province.

The proposed development site (Kakamas South Settlement No. 2185 & 2193) is located ± 2.5kms south east of Augrabies and will cover a footprint area of about 32ha. Water for the new citrus trees will be supplied from pump stations located on the banks of the Orange River. The trees will be supplied with water via buried pipelines placed alongside existing gravel farm roads. Existing access roads will be used, and no new access roads will need to be constructed. The property is currently zoned Agriculture.

The proposed site, which is situated south of the R64 as one enters the town, has been heavily grazed in the past, but has not yet been physically developed. Existing infrastructure include a powerline, servitude, old farm roads and twee spoor gravel tracks. The site is therefore already partially transformed and degraded.

The proposed activity is an extension of a recently approved vineyard development on the Farm Renosterkop situated directly adjacent to the subject property, and north of the R64 as one enters the town.

Pieter Badenhorst Professional Services is the appointed independent Environmental Assessment Practitioner (EAP) responsible for facilitating the EIA process.

A Palaeontological Impact Assessment has been commissioned as part of a wider Heritage Impact Assessment (or HIA) for the proposed development. Indications, however, are that the subject property and surrounding area, are of low palaeontological sensitivity.

2. Legal requirements

In terms of Section 38 (1) (c) (iii) of the National Heritage Resources Act 1999 (Act 25 of 1999), a Heritage Impact Assessment (HIA) of the proposed project is required if the footprint area of the proposed development is more than 5000m² in extent.

3. *Aim of the study*

The overall purpose of the study is to assess the sensitivity of archaeological resources in the affected area, to determine the potential impacts on such resources, and to avoid and/or minimize such impacts by means of management and/or mitigation measures.

The significance of archaeological resources was assessed in terms of their content and context. Attributes considered in determining significance include artefact and/or ecofact types, rarity of finds, exceptional items, organic preservation, potential for future research, density of finds and the context in which archaeological traces occur

4. Limitations

There were no limitations associated with the study. Ground visibility was excellent.

5. Findings

A 2-day foot survey of the proposed development site was undertaken by ACRM in December 2017, in which the following observations were made:

Despite the relatively large (32ha) footprint area, only small traces of archaeological resources (i.e. stone tools) were recorded during the field study, which, are spread very thinly and unevenly over the surrounding landscape. The majority of the implements comprise single, isolated finds which constitutes an extremely low density scatter of pre-colonial resources. More than 80% of the tools encountered are assigned to the Later Stone Age (LSA), while a small number of Middle Stone Age (MSA) flakes and retouched blade tools were also noted. No Early Stone Age (ESA) tools were noted.

More than 95% of the lithics documented are made on locally available, fine grained banded ironstones, which is a favoured raw material on many sites in the Northern Cape because of its superior flaking qualities. The remainder are in quartz and quartzite. Quartz outcrops locally, and large patches were encountered during the field assessment. No pebbles of banded ironstone were noted, which likely explains the very ephemeral scatter of tools across the landscape.

The majority of the implements recorded comprise utilised and retouched flakes, and chunks, while 13 cores were also counted. These included a vein quartz bipolar core and a high backed banded ironstone bladelet core. At least a dozen chunks with one or two flake scars were also identified, which might constitute residual cores.

With regard to formally retouched tools, three possible scrapers were found, although many of the flakes display secondary (scraper) retouch, and are best described as unstandardized utilitarian tools. One step-flaked piece on an older MSA flake was also noted. An anvil and a broken/split hammerstone were found, possibly indicating low levels of stone tool knapping across the affected landscape No organic remains such as pottery, bone or ostrich eggshell were encountered during the field assessment.

As archaeological sites are concerned, the occurrences are lacking in context. No evidence of any factory or workshop site, or the result of any human settlement was identified within the proposed development site. No significant landscape features such as rocky outcrops, caves or shelters occur within the proposed site, or were noted in the surrounding landscape, which, apart from the imposing Renosterkop Peak north of the R64, is generally flat and featureless. It is maintained that most of the archaeological resources recorded during the study therefore comprise discarded flakes and flake debris (i. e. chunks & cores).

It is noted that large numbers of lithics were recorded north of the R64, on the Farm Renosterkop during the 2016 assessment, while pebbles of banded ironstone, derived from an older gravel/Dwyka tillite flushed from an area on top of Renosterkop, cover much of the development site, which most likely explains the large number of tools documented during the study.

6. Grading

Overall, the relatively small numbers, isolated and disturbed context in which they were found, means that the archaeological resources recorded on Kakamas South Settlement No. 2185 and 2193, have been rated as having *low* (Grade 3C) significance.

7. Built environment/historical structures

In terms of the built environment, no old buildings, historical structures or features, or any old equipment was found on the proposed development site.

8. Graves

No graves or typical grave markers were encountered during the field study.

9. Palaeontology

According to the South Africa Heritage Resources Information System (SAHRIS) fossil-sensitivity map, the proposed development site is of insignificant/zero palaeontological importance. Almond's 2017 PIA desktop study of the proposed Renosterkop vineyard development confirms the `very low palaeontological sensitivity of the study region'.

10. Impact statement

Overall, the results of the study indicate that the proposed activity (i. e. a citrus field development) will not have an impact of great significance on pre-colonial archaeological heritage, as these are expected to be limited. Only a small number of tools were documented during the study which, occur in an isolated, and transformed context.

11. Conclusion

The study has captured a good record of the archaeological heritage present on the proposed development site.

Indications are that, in terms of archaeological heritage, the receiving environment is not a sensitive or threatened landscape.

The impact significance of the proposed development on important archaeological heritage is assessed as LOW.

Therefore, there are no objections to the authorization of the proposed Renosterkop extension, development.

12. Recommendations

1. No archaeological mitigation is required prior to proposed activities commencing.

2. Should any unmarked human burials/remains or ostrich eggshell water flask caches be uncovered, or exposed during preparation of the lands for cultivation, these must immediately be reported to the archaeologist (Jonathan Kaplan 082 321 0172), or the

South African Heritage Resources Agency (Ms Natasha Higgit 021 462 4502). Burials, etc. must not be removed or disturbed until inspected by the archaeologist.

3. The above recommendations must be incorporated into the Environmental Management Plan (EMP) for the proposed development

Table of Contents

1. INTRODUCTION

ACRM was by appointed by Oseiland Eiendomme (Pty) Ltd to conduct a Phase 1 Archaeological Impact Assessment (AIA) for a proposed citrus development near the small Northern Cape town of Augrabies (Kai! Garib Municipality) in the Northern Cape Province (Figures 1-3).

The proposed development (Kakamas South Settlement No. 2185 & 2193), will cover a footprint area of about 32ha. Water for the new citrus trees will be supplied from a pump station located on the banks of the Orange River about 3kms to the north of the R64. The trees will be supplied with water via buried pipelines placed alongside existing gravel farm roads. Existing access roads will be used, and no new access roads will need to be constructed. The property is currently zoned Agriculture, but has not yet been physically developed.

The proposed activity is an extension of a recently approved vineyard development on the Farm Renosterkop directly adjacent to the subject property, for which an AIA has already, been conducted (Kaplan 2016).

A PIA desktop study has been commissioned as part of the wider Heritage Impact Assessment (or HIA) for the proposed development. Indications are, however, that the region is of `very low palaeontological sensitivity' (Almond 2017:1).

Pieter Badenhorst Professional Services is the appointed independent Environmental Assessment Practitioner (EAP) responsible for facilitating the EIA process.

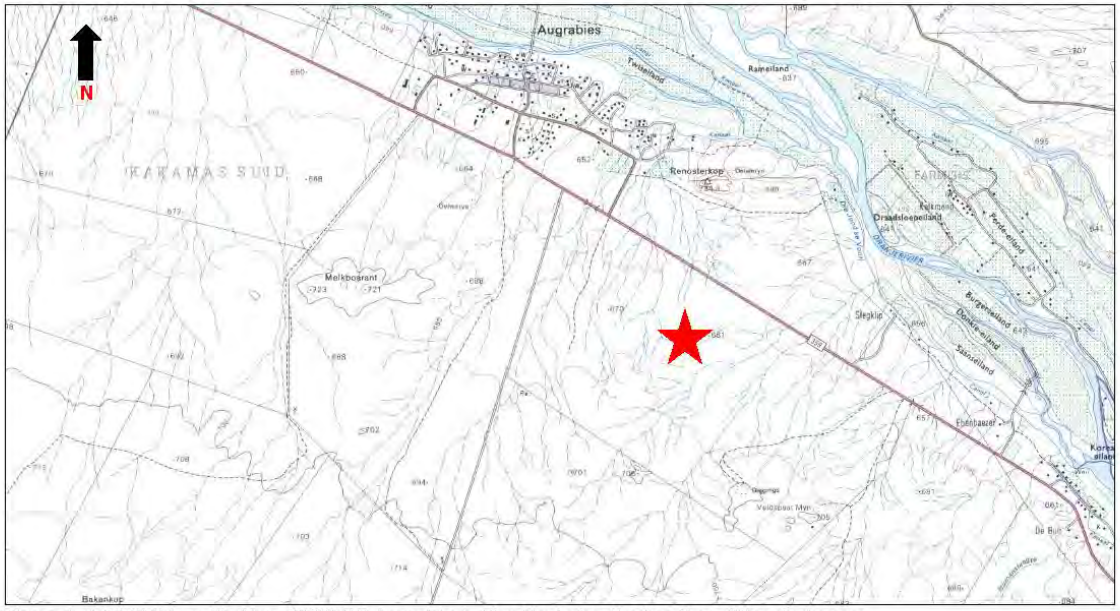

Figure 1. 1:50 000 Locality Map (2820 CB Augrabies). Star illustrates the location of the study area

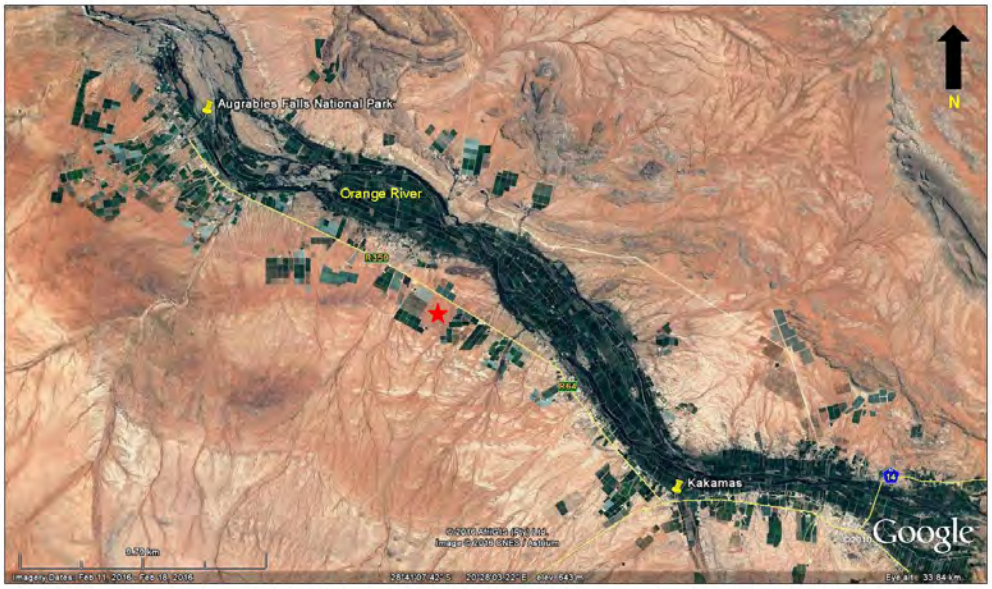

Figure 2.Google satellite map indicating the location of the proposed development site (red star) in relation to Augrabies Falls National Park and Kakamas.

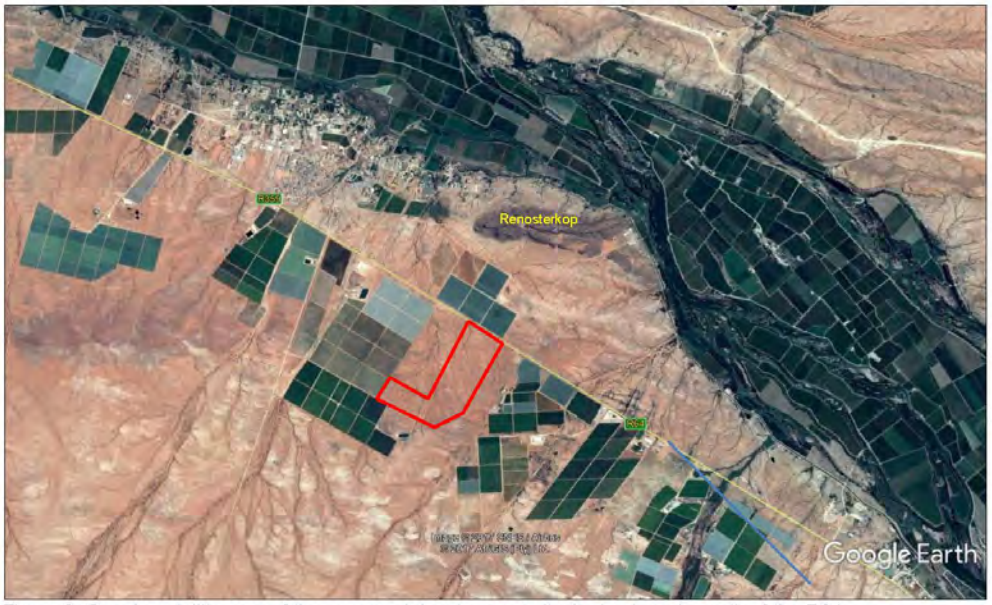

Figure 3. Google satellite map of the proposed development site (red polygon), south of the R64.

2. HERITAGE LEGISLATION

The National Heritage Resources Act (Act No. 25 of 1999) makes provision for a compulsory Heritage Impact Assessment (HIA) when an area exceeding 5000 m² is being developed. This is to determine if the area contains heritage sites and to take the necessary steps to ensure that they are not damaged or destroyed during development.

The NHRA provides protection for the following categories of heritage resources:

- Landscapes, cultural or natural (Section 3 (3))
- Buildings or structures older than 60 years (Section 34);
- Archaeological sites, palaeontological material and meteorites (Section 35);
- Burial grounds and graves (Section 36);
- Public monuments and memorials (Section 37);
- Living heritage (defined in the Act as including cultural tradition, oral history, performance, ritual, popular memory, skills and techniques, indigenous knowledge systems and the holistic approach to nature, society and social relationships) (Section 2 (d) (xxi)).

3. TERMS OF REFERENCE

The terms of reference for the archaeological study were to:

- Determine whether there are likely to be any important archaeological resources that may potentially be impacted by the proposed development;

- Indicate any constraints that would need to be taken into account in considering the development proposal;

- Identify potentially sensitive archaeological areas, and

- Recommend any further mitigation action.

4. DEVELOPMENT SITE

The proposed development site is situated on the left hand side (i. e. south) of the R64, ± 2.5kms before one enters the small town of Augrabies (Figure 4). The site lies immediately south east of the town and south west of the settlement known as Marchand. The terrain is generally flat and featureless sloping gently from the south alongside the tar road. Soils consist of shallow red sandy top soils, with large patches of wind eroded gravels (Figures 5-10). Several small outcrops of rocks are present in places, but no significant landscape features occur. Historically, the farm was used mainly for grazing, but has not been physically developed in the past. A, powerline servitude cut across the northern portion of the site alongside the R64, while numerous gravel farm roads and tracks intersect the property. Several drainage channels are also present, but are more visible in the south, where the soils are a little deeper. Twenty-five deep profile soil test pits have also been excavated across the property. Surrounding land use is agriculture (vineyards & citrus), social housing and large tracts of vacant

agricultural land. The Orange River is located ± 3kms north of the R64. The proposed site is located directly adjacent the farm Renosterkop which was subjected to an AIA in 2016 (Kaplan 2016).

Figure 4. Google satellite map of the proposed development site (green polygon)

Figure 5. View of the proposed development site facing north. Renosterkop Peak is located in the background of the plate

Figure 6. View of the proposed development site facing north west

Figure 7. View of the site facing east. Renosterkop is in the far distance to the left of the plate

Figure 8. View of the site facing northwest

Figure 9. View of the site facing west with the R354 to the right of the plate

Figure 10. View of the site facing south west

5. STUDY APPROACH

5.1 Method of survey

The overall purpose of the HIA is to assess the sensitivity of archaeological resources in the affected area, to determine the potential impacts on such resources and to avoid and/or minimize such impacts by means of management and/or mitigation measures.

The significance of archaeological resources was assessed in terms of their content and, context. Attributes considered in determining significance include artefact and/or ecofact types, rarity of finds, exceptional items, organic preservation, potential for future research, density of finds and the context in which archaeological traces occur.

Survey track paths were captured and the position of identified archaeological occurrences was fixed by a hand held GPS unit set on the map datum WGS 84. A literature survey was also carried out to assess the archaeological context surrounding the proposed development site.

5.2 Constraints and limitations

There were no constraints associated with the study. Access to the site via a farm gate alongside R64 was easy, and archaeological visibility was very good.

5.3 Identification of potential risks

The results of the study indicate that there are no potential archaeological risks associated with the proposed vineyard development. Archaeological density across the 32ha footprint area is overall very low.

5.4 Results of the desk top study

Some archaeological work has been done in the Augrabies area. Morris and Beaumont (1991) undertook a combined impact assessment and mitigation of sites on Renosterkop Peak, also known (historically), to pre-colonial local Namneiqua pastoralists as !Nawabdanas. Several, low-density surface scatters of Middle (MSA) and Later Stone Age (LSA) material were identified on and around the hill, which is also the site of the historic Renosterkop Tin Mine (circa 1940). Archaeological investigation of a Ceramic LSA surface scatter (Renosterkop 1) and a small LSA rock shelter (Renosterkop 2) were undertaken by Morris and Beaumont (1991), who showed that the two sites likely pre-date the late 18th Century.

Morris and Beaumont (1991) were also able to show, based on extensive historical research, a rapidly changing cultural and linguistic landscape from as early as the mid 1700's, up until the violent Northern Border (frontier) War of 1869/9.

Large numbers of LSA and MSA implements were also recorded on the farm Renosterkop during an impact assessment for a proposed vineyard development (Kaplan 2016).

In the wider region, Orton (2012) recorded low density scatters of LSA, MSA and ESA tools during a survey for a proposed solar energy farm near the Augrabies Falls National Park about 12kms from Renosterkop. Orton (2012) also describes a Stone Age sequence in the Augrabies Falls area where much of the information has been generated by excavations of open scatters containing stone tools, pottery and ostrich eggshell, as well as excavations of several small shelters near the falls, and the town of Augrabies (Morris & Beaumont 1991).

Small numbers of MSA tools were also documented by Van Schalkwyk (2013) during a HIA for a township development near Augrabies, while Pelser (2012) recorded small numbers of LSA as well as ESA implements during an AIA for a solar energy farm near the National Park. Kaplan (2018 in prep) also documented relatively large numbers of LSA and MSA lithics, including activity areas, on the farm Orange Falls, a few kilometres south of Augrabies. Several other impact assessment reports were not available on the SAHRIS website at the time of writing (e.g. Van Schalkwyk 2011, & Beaumont 2008).

Morris and Beaumont (1991) also note that many skeletons, most dating to the 18th and 19th Centuries were exhumed from the area, along the banks of the Orange River near Augrabies in the late 1930s. A pre-colonial grave was also recorded at the base of the hill, outside the development site during the Renosterkop vineyard survey (Kaplan 2016).

Finally, Morris (2014; Morris & Beaumont 1991) notes that there are substantial herder encampments along the floodplain of the Orange River, but these tend to be short duration visits by small groups of hunter-gatherers. Most of these camps have, however, been destroyed by intensive farming alongside the river.

6. FINDINGS

A 2-day foot survey of the proposed development site undertaken in December 2017.

Survey track paths and the position of archaeological occurrences recorded during the field study are illustrated in Figures 11-13.

A spreadsheet of waypoints and a description of archaeological finds are presented in Table 1.

Overall, despite the relatively large (32ha) footprint area, small numbers of archaeological resources (i.e. stone tools) were recorded during the study, which, are spread very thinly and unevenly over the surrounding landscape. Almost all of the implements comprise single, isolated finds, which constitute an extremely low density scatter of pre-colonial archaeological resources.

More than 80% of the tools encountered are assigned to the Later Stone Age (LSA), while a small number of Middle Stone Age (MSA) flakes, and retouched blade tools (e.g. Sites 6781 & 6811) were also noted. A pointed retouched flake (Site 6711) was also found. No Early Stone Age (ESA) tools were encountered.

More than 95% of the lithics documented are made on fine grained banded ironstone, which is a favoured raw material on many sites in the Northern Cape because of its superior flaking qualities. The remainder are in quartz and quartzite. Quartz outcrops locally, and large patches were encountered during the field assessment. No pebbles, or scatters, of banded ironstone were noted, which probably explains the low density scatter of tools across the affected landscape.

The majority of the tools comprise utilised and retouched flakes and chunks, while 13 cores were also found. These included a vein quartz bipolar core (Site 7421) and a high backed banded ironstone bladelet core (Site 7311). At least a dozen chunks with one or two flake scars were identified, which might constitute residual cores.

With regard to formally retouched tools, three scrapers (Site 6961 & 7051) were found, including a lovely round disc scraper (Site 7471), although many of the flakes display secondary (scraper) retouch, and are best described as unstandardized utilitarian tools. One step flaked piece on an older MSA flake (Site 7241) was also noted.

An anvil (Site 7181) and one broken/split hammerstone (Site 7021) were found, indicating low levels of stone tool knapping across the footprint area.

No organic remains such as pottery, bone or ostrich eggshell were encountered.

As archaeological sites are concerned, the occurrences are lacking in context. No evidence of any factory or workshop site, or the result of any human settlement was identified within the proposed development site. No significant landscape features such as rocky outcrops, caves or shelters occur within the proposed site, or were noted in the surrounding landscape, which, apart from the imposing Renosterkop Peak north of the R64, is generally flat and featureless. It is maintained that most of the archaeological remains recorded during the study comprise discarded flakes, and flake debris (i. e. chunks & cores).

It is noted that large numbers of lithics were recorded north of the R64, on the Farm Renosterkop during the 2016 assessment (Kaplan 2016), while pebbles of banded ironstone, derived from an older gravel/Dwyka tillite flushed from an area on top of Renosterkop, cover much of the vineyard development site. This most likely explains the relatively high density of tools documented during the study.

A collection of implements recorded during the study, and the context in which they were found are illustrated in Figures 14-21.

6.1 Grading of archaeological resources

Overall, the very small numbers, isolated and disturbed context in which they were found, means that the archaeological remains have been rated as having *low* (Grade 3C) significance.

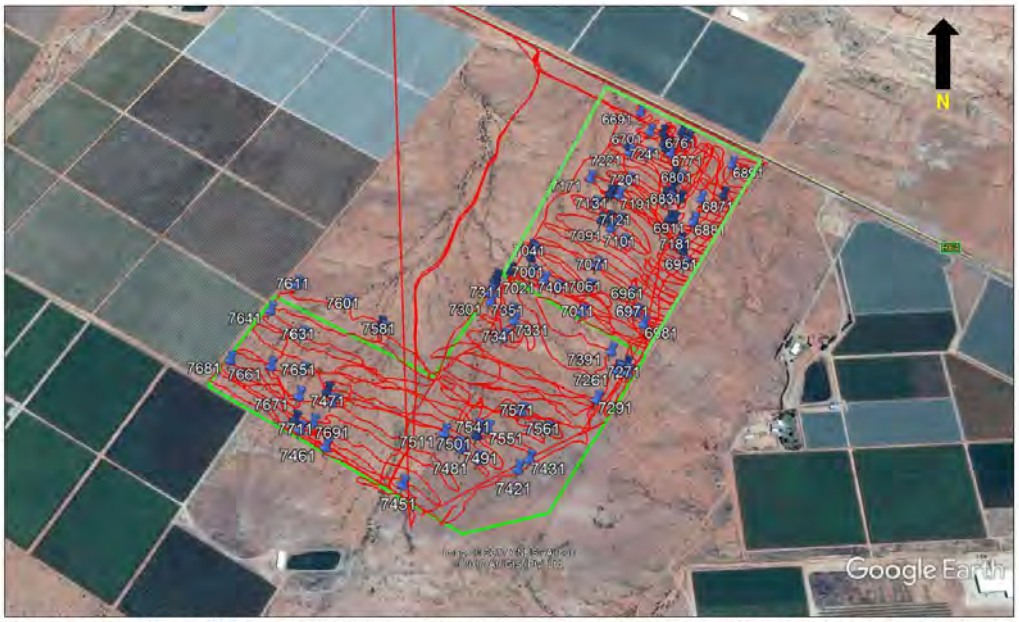

Figure 11. Google satellite map of the proposed development site, including waypoints of archaeological finds and survey track paths (in red)

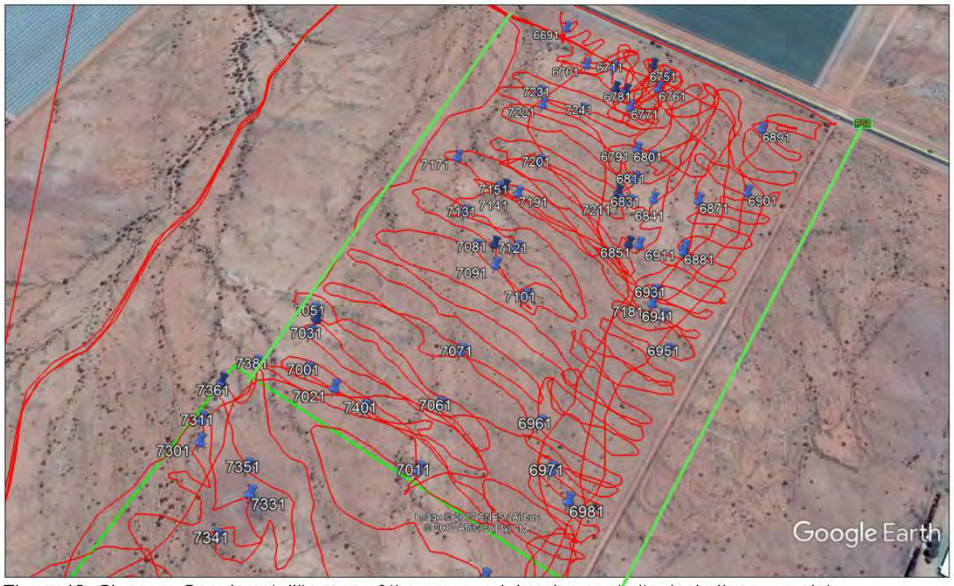

Figure 12. Close-up Google satellite map of the proposed development site, including waypoints of archaeological finds and survey track paths (in red)

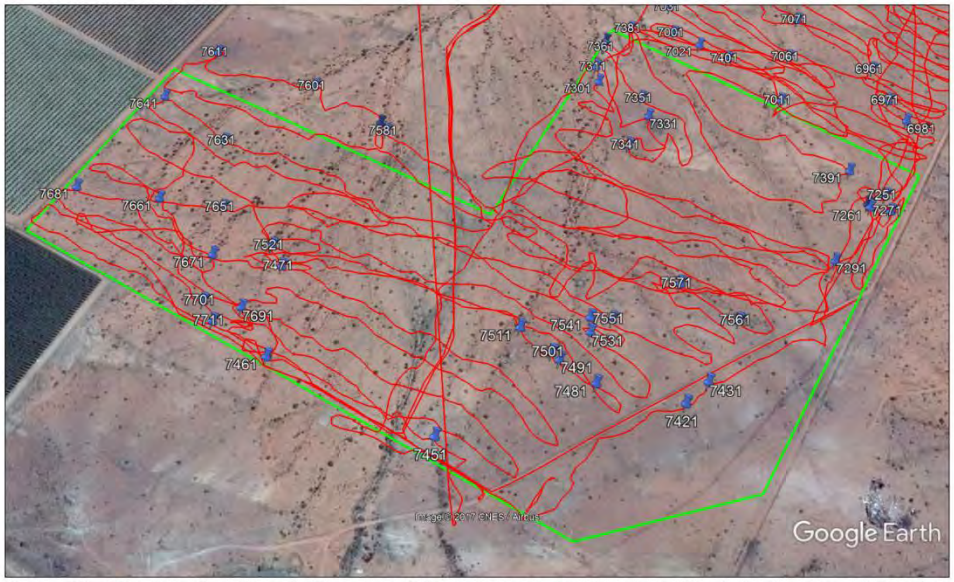

Figure 13. Close-up Google satellite map of the proposed development site, including waypoints of archaeological finds and survey track paths (in red)

Site	Farm name	Lat/long	Description of finds	Grading	Suggested mitigation
	Kakamas South Settlement Nos 2185 & 2193		All in banded ironstone unless otherwise stated		
6691		S28° 41.238' E20° 26.768'	A few flakes, including utilized/modified cobble flakes, chunks, and a quartz chunk/flake.	3C	None required
6701		S28° 41.271' E20° 26.781'	x 2 utilized cortex flakes, 1 utilized chunk, on a large patch of coarse sandy gravel	3C	None required
6711		S28° 41.274' E20° 26.802'	Utilized chunk and pointed retouched flake	3C	None required
6721		S28° 41.272' E20° 26.832'	Snapped blade/bladelet	3C	None required
6731		S28° 41.293' E20° 26.810'	Chunk	3C	None required
6741		S28° 41.292' E20° 26.802'	Chunk and chunky MSA flake on large patch of coarse gravel/sand	3C	None required
6751		S28° 41.282' E20° 26.841'	Utilized flake alongside powerline servitude	3C	None required
6761		S28° 41.292' E20° 26.834'	Chunky cortex utilized/retouched flake	3C	None required
6771		S28° 41.307' E20° 26.811'	Vein quartz MSA flake	3C	None required
6781		S28° 41.299' E20° 26.805'	Utilized & retouched MSA blade	3C	None required
6791		S28° 41.341' E20° 26.813'	?Round hammer stone	3C	None required
6801		S28° 41.347' E20° 26.823'	Pressure flaked, snapped utilized flake on rocky patch of ground – large patch of surrounding surface quartz	3C	None required
6811		S28° 41.364' E20° 26.809'	Large utilized, partially retouched MSA blade	3C	None required
6821		S28° 41.374' E20° 26.797'	Blade on cobble chunk	3C	None required
6831		S28° 41.381' E20° 26.803'	Large round core	3C	None required
6841		S28° 41.379' E20° 26.820'	Thin, utilized blade/flake	3C	None required
6851		S28° 41.411' E20° 26.807'	Large utilized rounded blade (cortex)	3C	None required
6861		S28° 41.410' E20° 26.800'	Small chunk	3C	None required
6871		S28° 41.380' E20° 26.852'	Large, utilized/retouched cortex flake	3C	None required
6881		S28° 41.416' E20° 26.837'	Large utilized/retouched cortex flake	3C	None required
6891		S28° 41.325' E20° 26.906'	Cortex flake	3C	None required
6901		S28° 41.374' E20° 26.887'	Weathered chunk with some retouch	3C	None required
6911		S28° 41.413' E20° 26.837'	Retouched chunky quartz flake	3C	None required
6921		S28° 41.445' E20° 26.856'	Chunk	3C	None required
6931		S28° 41.442' E20° 26.814'	Chunk	3C	None required
6941		S28° 41.458' E20° 26.817'	Quartzite chunk	3C	None required
6951		S28° 41.479' E20° 26.818'	Broken quartz flake	3C	None required
6961		S28° 41.521' E20° 26.736'	Small weathered flake ?MRP/convex scraper	3C	None required
6971		S28° 41.546' E20° 26.742'	Round quartz core on large coarse sand gravel patch	3C	None required

6981		S28° 41.562' E20° 26.751'	Small, weathered core	3C	None required
6991		S28° 41.580' E20° 26.756'	Thin snapped, retouched flake	3C	None required
7001		S28° 41.491' E20° 26.591'	Large cortex chunk	3C	None required
7011		S28° 41.546' E20° 26.663'	Large quartzite MSA flake on large gravel patch	3C	None required
7021		S28° 41.501' E20° 26.610'	Split/broken quartzite cobble hammer stone	3C	None required
7031		S28° 41.468' E20° 26.591'	Large, flat, smooth broken cobble chunk/flaked	3C	None required
7041		S28° 41.459' E20° 26.594'	Chunk	3C	None required
7051		S28° 41.454' E20° 26.592'	MRP/scraper	3C	None required
7061		S28° 41.511' E20° 26.675'	A few isolated flakes/chunks on large patch of quartz	3C	None required
7071		S28° 41.479' E20° 26.687'	Chunk/?core	3C	None required
7081		S28° 41.412' E20° 26.697'	Broken utilized, snapped blade, & chunk on edge of gravel patch	3C	None required
7091		S28° 41.425' E20° 26.710'	Cortex/cobble chunk	3C	None required
7101		S28° 41.445' E20° 26.729'	Cortex core	3C	None required
7111		S28° 41.410' E20° 26.710'	Chunk	3C	None required
7121		S28° 41.413' E20° 26.724'	Utilized/misc. retouched flake	3C	None required
7131		S28° 41.388' E20° 26.690'	Chunk	3C	None required
7141		S28° 41.371' E20° 26.712'	Large cortex chunk	3C	None required
7151		S28° 41.372' E20° 26.712'	Chunk/core	3C	None required
7161		S28° 41.369' E20° 26.717'	Quartzite chunk and large flat MSA flake	3C	None required
7171		S28° 41.347' E20° 26.684'	Quartzite core	3C	None required
7181		S28° 41.449' E20° 26.812'	Anvil	3C	None required
7191		S28° 41.374' E20° 26.726'	Wide, flat MSA utilized/retouched flake	3C	None required
7201		S28° 41.351' E20° 26.742'	MSA quartz flake and utilized & misc. retouched cortex flake	3C	None required
7211		S28° 41.381' E20° 26.797'	MSA flake	3C	None required
7221		S28° 41.305' E20° 26.747'	?Quartz core	3C	None required
7231		S28° 41.295' E20° 26.745'	Small, weathered MSA retouched flake on gravel patch	3C	None required
7241		S28° 41.310' E20° 26.776'	LSA step retouch on weathered older, chunky MSA flake,	3C	None required
7251		S28° 41.617' E20° 26.723'	Quartz flake on large patch of quartz gravel	3C	None required
7261		S28° 41.625' E20° 26.710'	Quartz flake	3C	None required
7271		S28° 41.628' E20° 26.724'	Large, white fine grained misc. retouched quartzite flake	3C	None required
7281		S28° 41.623' E20° 26.709'	Round, smooth, lump of pitted pink quartz	3C	None required
7291		S28° 41.661' E20° 26.679'	Large patch of quartz	3C	None required
7301		S28° 41.531' E20° 26.531'	Weathered, retouched MSA flake	3C	None required
7311		S28° 41.519' E20° 26.530'	High blade/let core	3C	None required

7321		S28° 41.564' E20° 26.545'	Utilized/retouched, classic triangular shaped MSA flake with convergent dorsal scar	3C	None required
7331		S28° 41.558' E20° 26.565'	Round quartz core	3C	None required
7341		S28° 41.580' E20° 26.549'	Weathered retouched MSA flake	3C	None required
7351		S28° 41.545' E20° 26.562	Side/end retouched weathered MSA flake	3C	None required
7361		S28° 41.503' E20° 26.537'	Broken cobble	3C	None required
7371		S28° 41.497' E20° 26.539'	White quartz core	3C	None required
7381		S28° 41.487' E20° 26.559'	Pebble chunk with single flake scar	3C	None required
7391		S28° 41.599' E20° 26.702'	Broken weathered retouched MSA flake	3C	None required
7401		S28° 41.512' E20° 26.629'	Embedded chunk	3C	None required
7411		S28° 41.805' E20° 26.467'	Misc. retouch cortex flake	3C	None required
7421		S28° 41.747' E20° 26.570'	Vein quartz bladelet core	3C	None required
7431		S28° 41.735' E20° 26.585'	Cobble/chunk cortex core	3C	None required
7441		S28° 41.710' E20° 26.661'	Cobble chunk with flake scar	3C	None required
7451		S28° 41.765' E20° 26.416'	Cobble chunk with flake scar	3C	None required
7461		S28° 41.720' E20° 26.309'	Large round core	3C	None required
7471		S28° 41.664' E20° 26.312'	Round disc scraper	3C	None required
7481		S28° 41.736' E20° 26.516'	Weathered chunk	3C	None required
7491		S28° 41.722' E20° 26.494'	Large MSA quartzite flake	3C	None required
7501		S28° 41.718' E20° 26.489'	Utilized pebble flake	3C	None required
7511		S28° 41.703' E20° 26.469'	Quartz core	3C	None required
7521		S28° 41.651' E20° 26.304'	MSA flake	3C	None required
7531		S28° 41.706' E20° 26.514'	Small chunk	3C	None required
7541		S28° 41.697' E20° 26.515'	Round milky white quartz core	3C	None required
7551		S28° 41.698' E20° 26.528'	Weathered chunk with single flake scar	3C	None required
7561		S28° 41.699' E20° 26.610'	Weathered chunk	3C	None required
7571		S28° 41.676' E20° 26.575'	Weathered retouched flake	3C	None required
75781		S28° 41.570' E20° 26.377'	Embedded chunk	3C	None required
7591		S28° 41.563' E20° 26.372'	Cortex core/chunk	3C	None required
7601		S28° 41.535' E20° 26.322'	Broken milky white quartz core	3C	None required
7611		S28° 41.507' E20° 26.246'	Chunk	3C	None required
7621		S28° 41.514' E20° 26.223'	Utilized flake	3C	None required
7631		S28° 41.577' E20° 26.262'	Retouched broken flake	3C	None required
7641		S28° 41.543' E20° 26.213'	Weathered utilized/misc. retouched flake	3C	None required
7651		S28° 41.625' E20° 26.268'	x 2 quartz chunk/residual cores	3C	None required
7661		S28° 41.619' E20° 26.223'	Chunk	3C	None required
7671		S28° 41.657' E20° 26.265'	Broken flake/chunk	3C	None required
7681		S28° 41.610' E20° 26.164'	Chunk	3C	None required
7691		S28° 41.691' E20° 26.289'	Retouched & utilized flake/chunk	3C	None required
7701		S28° 41.686' E20° 26.264'	Chunk	3C	None required
7711		S28° 41.699' E20° 26.272'	Chunk	3C	None required

Table 1. Spreadsheet of waypoints and description of archaeological finds

Figure 14. Collection of cores. Scale is in cm


Figure 15. Collection of flake tools. Scale is in cm

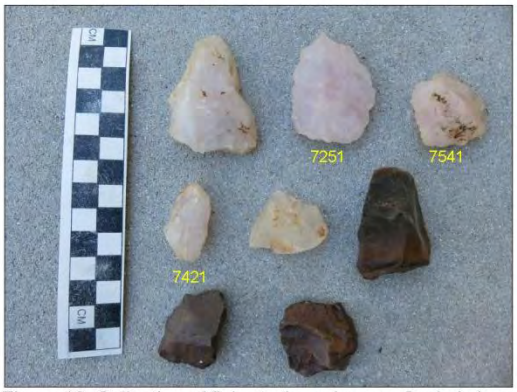

Figure 16. Collection of flake tools and cores. Scale is in cm

Figure 17. Collection of tools. Scale is in cm

Figure 18. Collection of tools. Scale is in cm

Figure 19. Collection of tools. Scale is in cm

Figure 20. Context in which some of the tools were found

Figure 21. Context in which some of the tools were found. Renosterkop Peak is in the distance

6.2 Built environment/historical structures

In terms of the built environment, no old buildings, structures or features, or any old equipment was found on the proposed development site.

6.3 Graves

No graves, or typical grave features were recorded during the study.

7. ASSESSMENT OF IMPACTS

In the case of the proposed citrus development (Renosterkop Extension) on Kakamas South Settlement No. 2185 & 2193, it is expected that some archaeological impacts will occur during the Construction Phase, but that the overall impact on archaeological resources will be *LOW* (Table 2).

Potential impacts on archaeological heritage	
Extent of impact:	Site specific
Duration of impact;	Permanent
Intensity	Low
Probability of occurrence:	Probable
Significance without mitigation	Low
Significance with mitigation	Negative
Confidence:	High

Table 2. Assessment of archaeological impacts.

8. CONCLUSION

The baseline study has captured a good record of the archaeological heritage present on the proposed development site.

Indications are that, in terms of archaeological heritage, the affected environment is not a sensitive or threatened landscape.

The impact significance of the proposed development on important archaeological heritage is assessed as LOW.

Therefore, there are no objections to the authorization of the proposed development.

9. RECOMMENDATIONS

With regard to the proposed development (Renosterkop Extension) on Kakamas South Settlement No. 2185 and 2193, the following recommendations are made:

1. No mitigation is required prior to proposed development activities commencing.

2. Should any unmarked human burials/remains or ostrich eggshell water flask caches be uncovered, or exposed during proposed activities, these must immediately be reported to the archaeologist (Jonathan Kaplan 0823210172), or the South African Heritage Resources Agency (Ms Natasha Higgit 021 4624502). Burials, particularly, must not be removed or disturbed until inspected by a professional archaeologist.

3. The above recommendations must be incorporated into the Environmental Management Plan (EMP) for the proposed development.

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PALAEONTOLOGICAL ASSESSMENT: RECOMMENDED EXEMPTION FROM FURTHER PALAEONTOLOGICAL STUDIES

Proposed new citrus development on Farms Kakamas South Settlement No. 2185 & 2193 near Augrabies, Kai! Garib Municipality, Northern Cape

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January 2018

Executive summary

The proposed agricultural development comprises new citrus orchards and short buried pipelines on Farms Kakamas South Settlement No. 2185 & 2193 near Augrabies, *c.* 2.5 km south of the River Orange, Northern Cape. The development footprint is underlain by (1) ancient Precambrian igneous and metamorphic bedrocks that do not contain fossils as well as (2) sparsely fossiliferous or unfossiliferous superficial sediments (alluvium, aeolian sands, surface gravels) of probable Quaternary to Recent age. Diamond prospecting has occurred in the area previously, but substantial older alluvial terraces (potentially fossiliferous High Level Gravels) are not mapped in the study area. In view of the small development footprint and the generally low palaeontological sensitivity of the study region, no further specialist studies or mitigation are considered necessary for this project, as far as fossil heritage is concerned. However, should significant fossil remains (*e.g.* vertebrate bones and teeth) be encountered during construction, the responsible ECO should inform SAHRA at the earliest opportunity to consider possible mitigation, measures.

1. Project description

Oseiland Eiendomme (Pty) Ltd is proposing to develop new citrus orchards on Farms Kakamas South Settlement No. 2185 & 2193, situated on the south side of the R64 and *c.* 12 km NW of Kakamas, Kai! Garib Municipality, Northern Cape (Fig. 1). The proposed agricultural development will cover a footprint area of about 32 ha and is located about 2.5 km south of the River Orange and 2.4 km due southeast of Augrabies settlement. Water for the new citrus orchards will be supplied *via* buried pipelines alongside existing gravel farm roads leading from pump stations located on the banks of the Orange River. Existing access roads will be used, and no new access roads will need to be constructed. The property is currently zoned for Agriculture.

An EIA for this agricultural development proposal is being co-ordinated by Pieter Badenhorst Professional Services (PO Box 1058, Wellington, 7654. Cell: 0827763422. Fax: 0866721916. E-mail: pbps@iafrica.com). The present report contributes to the HIA component being compiled by Jonathan Kaplan of ACRM (5 Stuart Road, Rondebosch, 7700. Ph/Fax: 021 685 7589. Cell: 082 321 0172. E-mail: acrm@wcaccess.co.za). The proposed citrus project is an extension of a recently approved vineyard development on the Farm Renosterkop directly adjacent to the present property, for which a palaeontological assessment (PIA) has already, been submitted (Almond 2017).

Figure 1. Google earth© satellite image showing the new citrus orchard study site (red polygon) on Farms Kakamas South Settlement No. 2185 & 2193, situated on the southern side of the Orange River just east of Augrabies settlement and *c.* 12 km NW of Kakamas, Northern Cape (Image abstracted from the AIA for this project by Kaplan 2017).

2. Geological context

Field photos (Kaplan 2017) and satellite images (Fig. 1) show arid, sparsely-vegetated, fairly flat-lying terrain in the study area at 660-680 m amsl that is mantled in orange-brown sandy soils and gravels and drained by numerous dendritic ephemeral stream systems. These are tributaries of the Orange River that runs about 2.5 kilometres to the north, on the far side of a small, west-east trending hill called Renosterkop.

The geological setting of the study area is shown on the 1: 250 000 geology sheet 2820 Upington (Fig. 2; Council for Geoscience, Pretoria) (Moen 2007). The underlying bedrocks are ancient Precambrian granite-gneisses assigned to the **Riemvasmaak Gneiss** of the **Namaqua-Natal Province** that are some 1.5 billion years old and entirely unfossiliferous (Cornell *et al.* 2006, Almond & Pether 2008).

The study area lies well south of the present course of the River Orange (Gariep), so ancient (Tertiary - Quaternary), consolidated alluvial gravels of the Orange River system – which are known to be highly fossiliferous elsewhere along the Orange (*e.g.* Partridge *et al.* 2006) - are unlikely to be present here; High Level Gravels are not mapped in the Renosterkop region on the 1: 250 000 geological sheet (Fig. 2). However, it is noted that the broader region has been disturbed in part by trenching for alluvial diamonds (Red DA symbols on the geological map, Fig. 2), suggesting that significant thicknesses of alluvial sediments (relict terraces) may be present here, at least locally.

Superficial sediments away from the main drainage courses largely comprise surface gravels (mainly alluvial, sheetwash and deflation deposits), scree breccias derived from local elevated exposures of bedrock), reddish-hued aeolian and locally-derived sands and perhaps near-surface calcretes, the last especially over lime-rich bedrock. The red sands may in part be assigned to the

upper part of the **Kalahari Group** (**Gordonia Formation**) of late Caenozoic (Neogene / Quaternary) age and the remaining alluvial sediments are probably of a similar, geological youthful age. Although fossil remains are occasionally encountered in these younger fluvial and terrestrial units – for example reworked mammalian bones and teeth, freshwater molluscs, calcretised root casts, termitaria, ostrich egg shells, land snail shells (Almond 2008, Almond & Pether 2008 and refs. therein) - they are sparsely distributed and occur over a very wide area, so the chances of serious impacts on unique fossil heritage resources here are only slight.

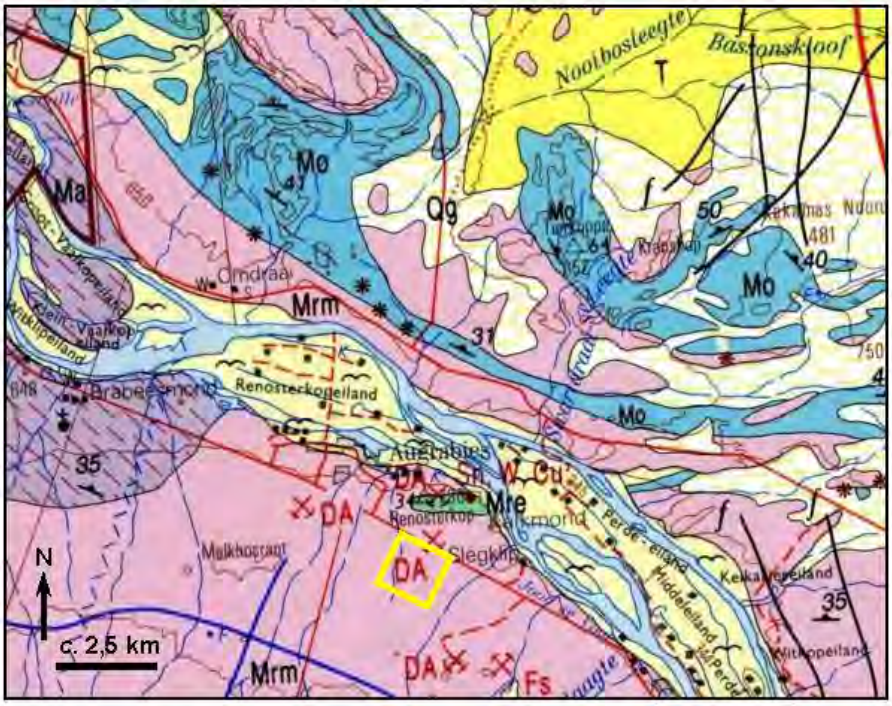

Figure 2. Extract from 1: 250 000 sheet 2820 Upington (Council for Geoscience, Pretoria) showing the geology of the Renosterkop citrus project study area (yellow rectangle) on the southern side of the Orange River and *c.* 12 km NW of Kakamas, Northern Cape. Bedrocks beneath the study area comprise Riemvasmaak Gneiss (Mrm, pink) forming part of the Precambrian (Proterozoic) Namaqua-Natal Metamorphic Province. Renosterkop ridge to the north is likewise built of gneissose Precambrian rocks (Mre, pale green, Renosterkop Gneiss). Thin surface sands and gravels overlying the basement bedrocks are evident from satellite images and field photographs (Kaplan 2017) but High Level Gravels are not mapped here. Note, however, evidence for previous trenching for diamonds (DA) in the region, suggesting that substantial alluvial deposits might be preserved locally.

3. Conclusions & recommendations

In view of the negligible palaeontological sensitivity of the ancient Precambrian bedrocks as well as the low sensitivity of the geologically recent superficial sediments along the Orange River in the Kakamas – Augrabies region, the proposed agricultural development – including new citrus orchards and buried pipelines - is not considered to pose a significant threat to palaeontological heritage. Although diamond prospecting has occurred in the Renosterkop region, substantial, potentially-fossiliferous older alluvial deposits are not mapped here.

Pending any significant new fossil discoveries in the area, no further specialist studies or mitigation are considered necessary for this agricultural project.

All South African fossil heritage is protected by the National Heritage Resources Act, 1999. Should substantial fossil remains - such as vertebrate bones and teeth, or petrified logs of fossil wood - be encountered at surface or exposed during construction, the ECO should safeguard these, preferably *in situ*. They should then alert the relevant provincial heritage management authority as soon as possible - *i.e.* SAHRA (Contact details: Dr Ragna Redelstorff, SAHRA, P.O. Box 4637, Cape Town 8000. Tel: 021 202 8651. Email: rredelstorff@sahra.org.za). This is to ensure that appropriate action (*i.e.* recording, sampling or collection of fossils, recording of relevant geological data) can be taken by a professional palaeontologist at the developer's expense.

These mitigation recommendations should be incorporated into the Environmental Management Programme (EMPr) for this agricultural project. Please note that:

- All South African fossil heritage is protected by law (South African Heritage Resources Act, 1999) and fossils cannot be collected, damaged or disturbed without a permit from SAHRA or the relevant Provincial Heritage Resources Agency;

- The palaeontologist concerned with potential mitigation work will need a valid fossil collection permit from SAHRA and any material collected would have to be curated in an approved depository (*e.g.* museum or university collection);

- All palaeontological specialist work should conform to international best practice for palaeontological fieldwork and the study (*e.g.* data recording fossil collection and curation, final report) should adhere as far as possible to the minimum standards for Phase 2 palaeontological studies developed by SAHRA (2013).

4. References

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5. Qualifications & experience of the author

Dr John Almond has an Honours Degree in Natural Sciences (Zoology) as well as a PhD in Palaeontology from the University of Cambridge, UK. He has been awarded post-doctoral research fellowships at Cambridge University and in Germany, and has carried out palaeontological research in Europe, North America, the Middle East as well as North and South Africa. For eight years he was a scientific officer (palaeontologist) for the Geological Survey / Council for Geoscience in the RSA. His current palaeontological research focuses on fossil record of the Precambrian - Cambrian boundary and the Cape Supergroup of South Africa. He has recently written palaeontological reviews for several 1: 250 000 geological maps published by the Council for Geoscience and has contributed educational material on fossils and evolution for new school textbooks in the RSA.

Since 2002 Dr Almond has also carried out palaeontological impact assessments for developments and conservation areas in the Western, Eastern and Northern Cape, Limpopo, Mpumalanga, Northwest, Free State and KwaZulu-Natal under the aegis of his Cape Town-based company *Natura Viva* cc. He was a long-standing member of the Archaeology, Palaeontology and Meteorites Committee for Heritage Western Cape (HWC) and an advisor on palaeontological conservation and management issues for the Palaeontological Society of South Africa (PSSA), HWC and SAHRA. He is currently compiling technical reports on the provincial palaeontological heritage of Western, Northern and Eastern Cape for SAHRA and HWC. Dr Almond is an accredited member of PSSA and APHP (Association of Professional Heritage Assessment Practitioners – Western Cape).

Declaration of Independence

I, John E. Almond, declare that I am an independent consultant and have no business, financial, personal or other interest in the proposed project, application or appeal in respect of which I was appointed other than fair remuneration for work performed in connection with the activity, application or appeal. There are no circumstances that compromise the objectivity of my performing such work.

John E Almond

Dr John E. Almond
Palaeontologist (*Natura Viva* cc)

11.3.3 Socio-Economic BBBEE Report

AgriBEE MANAGEMENT REPORT

in compliance to National Water Act (1998)

for

Oseiland Boerdery

The farm Reingeluk 107

Rooipad

Augrabies

District of Kakamas

February 2017

Contact Details: **Ms. Retha Steyn** **Tel. 054 451 7005** **Fax. 054 451 7006** **e-mail: retha@oseiland.co.za**

CONTENTS

ACRONYMS

AgriBEE: The current finalised B-BBEE Sector Code for Agriculture co-signed by Departments Agriculture and Water Affairs (Government Gazette, 28 December 2012)

BEE: Black Economic Empowerment (Narrow Based Approach)

B-BBEE: Broad-Based Black Economic Empowerment (2007)

DTI: Department of Trade and Industry

EE: Employment Equity

QSE: Qualifying Small Enterprise (annual turnover between R5 and 35 million)

SETA: Sector Education Training Authority

WSP: Work Skills Plan

Black: As per definition in the finalised B-BBEE Codes of Good Practice of 2007: all Black, Coloured and Indian people that are South African Citizens by birth or prior to the elections of 1994

M: Male

F: Female

Oseiland Boerdery: The farming operation on the property portion farm Reingeluk 107, Rooipad in Augrabies district of Kakamas is operated under the name Oseiland Boerdery. The farming operation Oseiland Boerdery is therefor called the *measured entity* in terms of the AgriBEE Scorecard in this report. (See explanation under *Introduction)*

1 INTRODUCTION

The farm Reingeluk 107, Rooipad, near Kakamas district of Augrabies was bought by the Du Plessis family in 1980. It was at that time totally undeveloped land which was previously owned by the Trans-Hex mining company. The late Burger du Plessis (father of the current owners) was one of the first farmers in this area that experimented and started to plant and produce table grapes on this undeveloped land. His two sons, Jan and Piet took the development of this farming operation further after his death and developed a successful farming operation. More land was acquired over time and also citrus farming included. The entities Sitrusdal, Alkantrand Boerdery and Renosterkop Druiwe (grapes) are also today part of Oseiland Boerdery. The farming entity is therefore today one of the major employers of black people in the region.

The farming operation, Oseiland Boerdery (hereafter referred to as *Oseiland*) is the entity that employs all the employees and is therefore the AgriBEE measured entity in this report. This farming operation is now to be developed to its full potential, thus the need for the new water application.

The farming operation is from an AgriBEE perspective currently a QSE (Qualifying Small Enterprise). They were as such recently (September 2016) measured against 5 of the 7 elements of the existing AgriBEE QSE Scorecard as published in the Government Gazette of 28 December 2012.

The entity is aware of the fact that the generic B-BBEE Codes were recently amended and that alignment of the AgriBEE Sector Codes may follow in future. The entity is prepared to adjust to any amendments to the applicable sector Code as far as such amendments are economically viable.

The entity has committed itself to become AgriBEE compliant to an above average level of at least Level 3 (110% BEE Recognition based on the existing Codes) and has succeeded in this already by following a strict BEE strategy. The AgriBEE level of compliance for this entity was recently verified by the accredited BEE auditor NCB (Northern Cape BEE Verifications Pty Ltd). See attached certificate dated 9 September 2016.

This report will now summarise the result of the above-mentioned BEE audit and also outline their planned initiatives to keep and sustain this above-average level of compliance based on the current finalised AgriBEE Sector Codes.

The future strategic planning for the AgriBEE compliance of Oseiland is for now thus based on the targets as set out in the AgriBEE QSE Scorecard as published in the Government Gazette of 28 December 2012.

1.1 Background to this project

Efficient Empowerment Consultants has been appointed to assist Oseiland Boerdery with their farming operation in Augrabies near Kakamas in complying with the requirements in terms of reporting in the National Water Act (Act 36 of 1998). This was done to include a thorough insight into the current AgriBEE status of Oseiland in line with the most recent finalised legislation in this regard (*AgriBEE Codes of Good Practice, Dec. 2012).*

1.2 Purpose of this report

The National Water Act (NWA) came into operation in 1998. The purpose of the NWA is amongst others to ensure that South Africa`s water resources "*.. are protected, used, developed, conserved, managed*

and controlled in ways which take into account amongst other factors:

1.1.1 Promoting equitable access to water
1.1.2 Redressing the results of past racial and gender discrimination
1.1.3 Promoting the efficient, sustainable and beneficial use of water in public interest
1.1.4 Facilitating social and economic development"
(Act no 36, 1998, page 18, Government Gazette, 26 September 1998)

The Act also makes it very clear that when considering this socio-economic element, not only the impact if the application is authorised must be taken into account, but also the impact on "*the failure to authorise the water use or uses"* (27(1)(d)(ii))

This report thus aims to:
- Report on the social and economic management of access to a new water use licence as part of this specific farm and land area,
- Outline an AgriBEE Strategy that is aimed at employment, promoting and development of people, with specific emphasis on previously disadvantaged black people, inclusive of black women and rural people.

1.3 Submission of this AgriBEE Management Report

This AgriBEE Management Report details a summary of their current status, as well as a transformation programme where Oseiland sets out exactly how progress is going to be made in all the above-mentioned content areas and applicable elements on the AgriBEE Scorecard.

Compliance to the current finalised *AgriBEE Codes of Good Practice,* now also plays a part next to the existing EE (Employment Equity) and SD (Skills Development) legislation, in their current and future transformation initiative.

This document details the three programmes that form the heart of the report, namely:
- AgriBEE compliancy,
- EE and SD compliancy
- Local Economic Development (in the farm`s locality as well as in the communities from which the bulk of its workforce is drawn and live)

With a proper AgriBEE strategy in place *Oseiland* now has the opportunity to not only sustain their above-average level of compliance, but also to correct any shortages they currently might have.

Breakdown of employees per sending area:
- All permanent employees are from the rural areas around Augrabies.
- Should this application for new water be successful, some seasonal positions will become permanent positions. It will also open up the opportunity for the owners to create new permanent employment and supervisory positions and a number of new seasonal positions. Preference will be given to appoint local new black applicants from the areas around Augrabies for these positions.

1.4 Vision for Oseiland

Oseiland wishes to obtain access to a new water use licence for the further development of the farming operation in a sustainable, environmental sensitive and socially responsible manner.

1.4.1 Farming

The farm is currently mostly planted with table grapes and citrus. The cultivatable portion of this farm is very favourable for the cultivation of high quality table grapes and citrus and can be further developed if more water is allocated. The intention is to develop and plant more vineyards and citrus trees on the farm for the production of table grapes and citrus fruit for mainly the export market. This will have a direct influence on sustainable profitability and employment opportunities on the farm.

1.4.1.1 Value-adding activities on the farm

Two value-adding initiatives were over years developed on the farm and the neighbouring portions to increase profitability as well as to increase and lengthen employment opportunities.

- **Packing facility**
  A facility was developed over years to pack table grapes as well as citrus fruit mainly for the export market. This initiative favours the employment of women, with the result that much needed employment and also supervisory opportunities for black females were created. If more water can become available, more cultivars with different harvest times may be planted to further lengthen the season of employment for these mainly female black workers.

- **Raisin production**
  The entity also developed an initiative to produce raisins from grapes not used to pack. These raisins are also now produced and packed for the export market. This initiative further lengthens seasonal employment opportunities for mainly black female workers.

Table grape production is very labour-intensive, even more so if packed as well. It creates around 4 new employment positions per hectare if also packed on the farm. Citrus production plus the raisin plant creates another 1 position per hectare.

More sustainable water will thus directly create more employment opportunities and also ensure growth in production and a lengthening of seasonal work for mainly black female workers and supervisors at both the value-adding facilities.

Oseiland aims to enhance the positive management of its operations, whilst supplying demand commodities for the local and export markets and as such creating more sustainable employment opportunities, mainly for rural black people inclusive of black females.

1.5 Objectives for utilisation of water

Application for this new water use licence to *Oseiland* is being made for the expansion of agricultural development and the value-adding initiatives on the farm.

The objectives for additional agricultural development include:

- Expansion of economic activity
- To create sustainable profitability to farming at *Oseiland*

- To create and ensure sustainable employment opportunities at *Oseiland*
- Increased inflow of revenue to a rural community with high poverty rate amongst black people
- *Oseiland* will also use this opportunity to create and sustain a farming entity that will be AgriBEE compliant, in line with the applicable AgriBEE Scorecard and a proper AgriBEE strategy

2 AgriBEE (Agri Black Economic Empowerment)

2.1 Commitment to the Broad-Based Approach

In line with the most recent finalised legislation, Act 53 of 2003, and the B-BBEE Codes of Good Practice of 2007, The AgriBEE Codes of 28 December 2012, as well as the alignment of the *Preferential Procurement Policy Framework Act* (PPPFA of 2000) by Government with the Broad-Based approach to BEE (2011), *Oseiland* has embraced the Broad-Based approach to BEE as aligned with the AgriBEE Sector Codes. All current and future staff appointments, career progression, procurement of goods and/or services, skills development, enterprise development (including mentorship) and socio-economic development planning and spend, will be aligned with the objectives of their respective AgriBEE strategies.

2.2 AgriBEE Scorecard

As discussed under Introduction, the entity was recently measured against the latest finalised target of at least 5 of the 7 elements of the AgriBEE QSE Scorecard.

The following 6 elements emerged as the current best ones to concentrate on to maximise their level of compliance:

- Management Control
- Employment Equity
- Skills development
- Preferential Procurement
- Enterprise Development
- Socio-economic Development

The entity already started in the past to actively participate in B-BBEE initiatives.
They contracted our B-BBEE Consultancy to do a proper assessment of the current level of compliance for *Oseiland*, as well as a strategy on how to sustain and improve on this above-average level in future. The attached AgriBEE QSE Scorecard for *Oseiland* was verified by the B-BBEE approved registered Auditor Northern Cape BEE Verifications (Pty) Ltd in September 2016. This AgriBEE Scorecard was done not only as a starting point with the process of transformation, but is also now also used as an assessment on which their future AgriBEE initiatives will be based.

AgriBEE QSE Scorecard: 9 September 2016			
Name of company	Oseiland	Boerdery	
VAT Number	4940114475		
Total BEE Score	75,47		
BEE Status	LEVEL 3	Recognition:	125%
Ownership Fulfillment		**20**	

Category	Weighting Points	Compliance targets	Actual Level	Score
Voting rights:				
Exercisable Voting Rights in the Enterprise in the hands of black People	5	25% + 1vote	0	0
Economic Interest:				
Economic Interest of Black People in the enterprise	9	25%	0	0
Realization points:				
Ownership Fulfillment	1		0	0
Net Equity Interest:	9		0	0
10% of the Target (Year 1)				
20% of the Target (Year 2)				
40% of the Target (Year 3,4)				
60% of the Target (Year 5,6)				
80% of the Target (Year 7,8)				
100% of the Target (Year 9,10)				
Bonus points:				
Involvement of black women in the ownership of the Enterprise	2	10%	0	0
Land Ownership:				
Commercial agricultural land transferred or sold to black people	20	30%	0	0
Bonus points:				
Contribution to achieving in excess of 30% land transfer. Bonus point per each percentage >30%	5	>30%	0	0
If full 20 points here add 25% to element				
Sub Total				**0**
Management Control/Top management			**20**	
Owner-Manager Participation	**Weighting points**	**Compliance targets**	**Actual Level**	**Score**
Black representation at owner/top manager level	20	50.10%	30%	11,98
Bonus points:				
Black women representation at owner/top manager	2	25%	0	0
Sub Total				**11,98**
Employment Equity			**20**	
Criteria	**Weighting points**	**Compliance targets**	**Actual Level**	**Score**
Black representation at Controller/Supervisor level as a total of all management	6	60%	80%	6
Black women representation at Controller/Supervisor level as a total of all management	6	30%	22%	4,40
Black employees as percentage of all employees	4	70%	95,38%	4
Black women as percentage of all employees	4	35%	36,36%	4
Bonus point for meeting or exceeding the EAP targets in each of the above categories	2	EAP	Yes	1

Sub Total				**19,40**
Skills Development			**20**	
Skills Development Element	**Weighting points**	**Compliance targets**	**Actual Level**	**Score**
Employee enrollment/involvement in Recognised Training Programs	5	30%	0,55	4,09
Skills development spend on black employees as a percentage of Leviable Amount (85% of spend focused on core skills as identified and accredited by the relevant SETA)	15	2%	0%	0
Percentage of employees participating in ABET level 3 training as a percentage of all employees	2	2%	0	0
Sub Total				**4,09**
Preferential Procurement			**20**	
Criteria	**Weighting points**	**Compliance targets**	**Actual Level**	**Score**
BEE Procurement Spend from all Suppliers based on the BEE Procurement Recognition Levels as a percentage of total measured procurement spend	20	50%	51,13%	20
Sub Total				**20**
Enterprise Development			**20**	
Criteria	**Weighting points**	**Compliance targets**	**Actual Level**	**Score**
Average annual value of all Enterprise Development Contributions and Sector Specific Programs made by the Measured Entity as a percentage of target	20	3% of NPAT	0%	0
Sub Total				**0**
Socio-Economic Development			**20**	
Criteria	**Weighting points**	**Compliance targets**	**Actual Levels**	**Score**
Average annual value of all SED Contributions and Sector Specific Programs made by the Measured Entity as a percentage of target **and/ or** Land made available to farm workers measured from the commencement date of this Sector Code or the inception date over 10 years of the Code period. The inception date chosen by the measured entity must not be earlier than 5 years before the commencement date of this statement, but binds the measured entity for the duration of this statement	20	1% of NPAT **or** 10% (land for farm workers)	6,36%	20
Bonus Points:				

Lease of 20% land or capital assets on a long term basis to black persons which meets the criteria of a qualifying transaction (par.5.1.1.2)			0	0
Sub Total				**20**
		Total		**75,47**

2.3 AgriBEE Status and Strategy

The current AgriBEE status for *Oseiland* as measured against the current AgriBEE QSE Scorecard is Level 3 which represents an AgriBEE recognition percentage of 125%.

Based on this information, the following 6 elements emerged as the ones that will be addressed in the immediate future to maintain and maximise the AgriBEE level of compliance for *Oseiland*:

2.3.1 Management Control

This element measures the representation of black managers on Top Management Level, with a target of 50,1% and a separate target for black females in such positions of 25%. The entity has black male employees on this level (30%), but currently no black female employees on this level.

2.3.2 Employment Equity

- **Management (Controller/Supervisory positions)**

On the current QSE AgriBEE Scorecard the first category of this element measures the percentage of black people and black females in **controller** and/or **supervisor positions**. The previous Adjusted Recognition of Gender (ARG) principle has now been replaced with a separate category to also measure the percentage of black females in such positions. The previous target of 40% black managers has now increased to 60%. Should this water application be successful, and the amount of workers and managers on the farm increase as expected, the measured entity will have to appoint and train black managers in a planned way, to make sure at least 60% of all managers are black. The separate target for black female employees in these positions is now 30%.
The entity has currently more (80%) than the target (60%) black men on this level, but not enough black women (22%, target 30%) in such supervisory positions. The entity will need to address this ratio when any supervisory positions needs to be created or filled in future.

- **Black employees**

The second category of this element measures the percentage of **black employees**. Again was the ARG replaced with a separate target for black female employees. This farming operation is currently employing more black employees (95,38%) than the target (70%), as well as more black female employees (36,36%) than the target of 35%. The entity plans to sustain this ratio with any new appointments.

Potential new positions

It is envisaged that *Oseiland* will need to create some new permanent and a number of new seasonal employee positions in the near future should the new water use be allocated. The entity also plans to convert some of the current seasonal positions to permanent positions should this water licence use

application be successful.

As mentioned before, table grape production is very labour-intensive, even more so if packed as well. It creates around 4 new employment positions per hectare if also packed on the farm. Citrus production plus the raisin plant creates another 1 position per hectare.

The new water use licence will therefore create an immediate need to appoint more workers and supervisors.

The new water use licence will lead to the expansion of the farming operation, and will create a demand for new staff and new skills, eg.

- Skilled agricultural labourers
- Specific knowledge of vineyards and citrus fruit production will be needed
- Specific knowledge of fruit packing will be needed
- Support staff will be needed: Admin, forklift drivers, tractor operators and Code 14 drivers.

Preference will be given to black/coloured people for these positions, and more specific black/coloured women where possible.

Existing employees with experience on the farm, plus the potential to be leaders, will in the first place be identified for new supervisory positions.

To identify candidates for career progression, the following methodology will be employed:

- Performance management process
- Informal discussions regarding career options
- Observation of performance of individuals whilst performing current tasks
- Review of years in service and likelihood of progressing further
- Review of performance via formalised performance assessment process

Commitment to Employment Equity and AgriBEE

Oseiland has now AgriBEE and EE strategies in place and all appointments are made in the spirit of EE and AgriBEE legislation, ensuring that people from previously disadvantaged groups are afforded the opportunity to obtain as far as possible permanent employment through the expansion and sustainability of the farming operation.

All employees employed by *Oseiland* are employed:

1. within the parameters of the Basic Conditions of Employment Act of 1997
2. as per the definition of "black person" in the B-BBEE Codes and AgriBEE Sector Codes
3. in accordance with Section 15 of the EE Act

In doing so, the following will thus always be taken into account in the employment process:

- Compliance to the race and gender targets/ratios as per AgriBEE Scorecard
- Demographic profile of the local population as per EE targets
- Inclusion of measures to identify and eliminate employment barriers
- Inclusion of measures to address and avoid unfair discrimination on the grounds of gender, sexual orientation or cultural background

- Ensuring that suitably qualified people from designated groups have equal employment opportunities
- Ensuring that people from designated groups are equally represented in all levels of the workforce
- Inclusion of measures designed to further diversity in the workplace based on equal dignity and respect for all people
- Retention and development of people from designated groups and implementation of appropriate training measures and skills development for all staff

Should there be vacancies in future positions will be filled to ensure that there is equitable representation from designated groups and all advertising for such positions shall state that *Oseiland* is an equal opportunity employer.

2.3.3 Skills development

A considerable effort was put into training and the transfer of skills to unskilled black employees, with measurable success. A huge portion of salaries and wages were spend on employees per definition *temporary* with the result that a relative high target were created for this element. The percentage compliance on this scorecard does not therefor reflect the correct picture for training to permanent employees. All future training will be correctly documented according to the guidelines of the *B-BBEE Verification Manual* and the regulations of the SD legislation. As in the past, care will also be taken in future to only use SETA accredited training providers as far as possible to ensure that employees gain the maximum benefit through the selection of suitable, tested providers and receive quality course material in line with accepted standards and current best practice. Efforts to comply with the SD Legislation and the Skills element on the AgriBEE Scorecard, will in future be aligned to ensure the maximum transfer of skills to black people. Again the previous ARG principle was replaced with a separate target for black female employees, which will result in the correct percentage of training and transfer of skills to black women. Training was last year done to improve technical as well as life skills of workers.

The primary objective of their Skills development programme is to ensure the availability of farming specific skills and competencies of the workforce, and also mentorship and skilling of employees for portable skills utilisable by the employees outside the context of agriculture.

Skills development of all staff is managed by *Oseiland,* who oversees and facilitates training. *Oseiland* provides all financial and logistical resources required to deliver such training and skills transfer.

As with the current staff, any new to be appointed staff will consist of skilled agricultural employees. Where skilled people are not available, unskilled workers will be recruited and then in-house trained to become skilled.

Training and development

Oseiland endorses a policy of undertaking training and development of its employees on a proactive basis, in order to:

- Ensure that employees have the core potencies required to carry out agricultural practices,
- Ensure that employees are in possession of transferable skills that can be used in other similar operations
- Ensure employees are in possession of life skills that would enable them to function in their day-to-day lives without difficulty, and

- Enable staff to reach realistic development aspirations, whilst encouraging them to grow and develop their personal capacity.

Identification of training courses and sources

Suitable training courses are sourced through the AgriSETA. Specific product- and technical training are also available from suppliers who supply products, seedlings, fertilizers, equipment, etc. to the farm, and workers are encouraged to do this training on an on-going basis.
Training is continuously to be aligned with the AgriSETA Sector Skills plan to ensure scarce and critical skills are addressed.

Historical training done for 2015/6:

Training intervention	Percentage spend on Black employees
In-house training	100%
SETA accredited training	100%

The following training was done:

- Occupational Health and Safety
- Forklift operator
- Team leaders
- Tractor driver
- Tractor maintenance/basic mechanics
- Fire fighting
- Vineyard preparation, pruning, monitoring and harvesting
- Orchard monitoring, pruning and harvesting
- Hygiene
- Pump operator
- Irrigation operator
- Hazardous substances

Focus on life skills training

Oseiland has currently set a training and development objective focusing also on the main problem areas in this community, namely:

- First aid and Occupational Health and Safety: This is not only necessary in the work environment, but also an important skill for workers living in a rural community where family and neighbours cannot always afford the basic medical attention needed.
- Literacy and numeracy skills development for all employees: The current employees are all literate, but it is expected that some of the seasonal workers needed, will not have the same literacy and numeracy skills. A percentage of people from the rural region do not have a secondary school education and cannot read or write properly. The new AgriBEE Codes has now a specific target for ABET training and *Oseiland* will now identify candidates that will qualify to do this.
- HIV/Aids and TB (tuberculosis) are constant health problems in rural areas: There is a clinic on the farm and the farm subsidises the services of a qualified nurse who visits the clinic every week. From

this clinic she also gives preventative information in this regard to workers and their families.

Life Skills training by accredited service providers are done annually where needed.

Beneficiaries per population group

Whereas the previous SD legislation measured the training of all workers, the current AgriBEE Scorecard more specifically now only award points for training and skills transfer of people per definition black and/or black women. Therefore the beneficiaries of training for compliance reasons will be in the ratio of the employees for SD purposes, but then predominantly black as per AgriBEE definition and targets.

To motivate individuals to participate in training programmes, the following incentives are set in place:

- Training is offered free of charge
- Employees are transported free of charge to training venues, if not on the farm
- Facilitated training sessions are provided
- Employees could schedule training during work hours so that no leave benefits are used up.
- Where possible and relevant, training is provided also free to spouses and registered dependents of employees.

Focus on non-farming skills for staff

Oseiland implements a strategy whereby employees are also equipped with portable skills to assist them in everyday life outside of the farming environment. Examples of such training include:

- Forklift licences
- Vineyard management and monitoring
- Orchard management and monitoring
- Health and safety
- Gardening skills
- First aid Skills
- Hygiene
- Basic mechanics
- Fire fighting

Mentorship Plan

Mentorship will now be approached in 2 areas:

a.) In-house mentorship focussing on the transfer of general life skills to existing employees,
b.) Mentorship outside the business to pre-identified suppliers/sub-contractors/service providers as part of the Enterprise development and Preferential Procurement initiatives of *Oseiland* in their efforts to comply with the relevant AgriBEE legislation (more about this under *Enterprise Development*)

The **mentorship plan for employees**, will be aligned with their WSP, and will be part of the budget for SD in direct relation to and as a percentage of salaries and wages. Through mentorship the management of *Oseiland* will ensure that employees with potential and drive are equipped with the necessary skills to maximise their potential.

Mentorship shall involve in-house training and guidance, together with motivation being provided for the individual to further his skills and interest on a personal basis. Whilst the SDP aims to assist the individual in the development of skills to be used in-house, the mentorship plan aims to improve general life skills

to be applied outside of the farming environment. Ultimately it is hoped that the individual would pass on these skills to people at home and in his/her community and in so doing improve his/her standard of living as well as those around them.
Identification of individuals to receive mentorship will be based on the level of interest shown by the individual.

2.3.4 Preferential Procurement

This element measures the percentage of procurement from B-BBEE compliant and black- and black-women owned suppliers. The previous target of 40% increased to 50% on the current Scorecard. The enterprise did well on this element and exceeded the previous and current targets, because of their procurement from mostly B-BBEE compliant suppliers. Care will be taken in future to procure as far as possible only goods and services from B-BBEE compliant suppliers and sub-contractors to not only sustain, but also increase their level of compliance. It is expected that this target will increase to 70% once the AgriBEE Sector Code is aligned with the Revised Generic Codes. As part of this new procurement policy, a bigger effort will be made to find, help develop and support upcoming black owned and black women owned enterprises. This also now unlocks the potential to develop such enterprises in their vicinity as part of their future Enterprise Development strategy and mentorship initiatives.

2.3.5 Enterprise Development

Although this element was not measured now, the entity now needs to start planning initiatives in this regard in anticipation of the expected alignment of the Agri Sector Codes with the already finalised Revised Generic Codes.

The finalised Revised Generic Codes, that is currently not applicable to the Agri Sector, combines the existing Preferential Procurement element with the existing Enterprise Development element to form a new element Supplier Development. It is expected that the AgriBEE Sector Code will in future also follow this route.

Mentorship and support to upcoming entrepreneurs, and then using the same entrepreneurs as suppliers/sub-contractors/service providers to the farm, will have therefor in the near future a considerable influence on the AgriBEE level of compliance of this measured entity.

The target and **budget** for this element went up from the previous 2% to a new target of **3% of NPAT** on the current AgriBEE QSE Scorecard.

2.3.6 Socio-economic Development

The measured entity did well on this element, and exceeded the target of 1% of NAPT. They made qualifying contributions to the following projects:

- Fully subsidised (free) transport to and from work as well as for sport and church attendance.
- Subsidised housing, electricity and water for workers living on the farm.
- Sport fields and facilities on the farm build and maintained by the farm.

Socio-economic projects will now be planned in advantage with a proper budget as per AgriBEE Scorecard targets, to achieve the goals in the spirit of AgriBEE, in such a way that at least 75% of the benefit will go to black people.

It should be noted that the following applies to the current farming operation, and will also apply in future:

- Protective clothing provided
- Access to products from the farm at a subsidised price or free.
- A funeral plan for all permanent workers and their immediate families

4. SOCIAL PROVISION

4.1 Measures to address housing and living conditions

- Most permanent employees live on the farm in subsidised housing with subsidised water and electricity.
- Workers not living on the farm and seasonal workers live in the nearby town and are transported daily to and from work.
- To increase the income of households, spouses of farm workers are used whenever possible for extra temporary and/or seasonal work on the farm.
- Workers are encouraged to establish vegetable gardens at their homes.

4.2 Measures to provide medical assistance

- All employees have easy access to medical clinic services. There is a permanent clinic on the farm and the farm has contracted a qualified nurse to visit this clinic every week.
- If more medical attention is needed than the clinic can supply, employees are taken to doctor/hospital. *Oseiland* subsidises medical cost by paying the service provider upfront and the workers can then pay back interest free.
- HIV/Aids and TB are a problem in the community, so regular information and training sessions are held on the farm by the nurse as a preventative measure.

4.3 Measures to address educational facilities and opportunities

- Children have easy access to a crèche on the farm.
- There are two Primary Schools in the nearby town Augrabies. Augrabies is only 5km from the farm and a Government subsidised bus transport primary school children from the farm on a daily basis to and from school.
- The nearest High school is in Kakamas, about 30km from the farm. A subsidised bus service also transport these high school learners on a daily basis to and from school.

5. FINANCIAL PROVISION

5.1 Budget for 2017/18 training and development

To align their Skills Development efforts with that of the Skills Development element on the AgriBEE Scorecard, the current target to spend 1% of salaries and wages on Skills Development, will now increase to 2% of salaries and wages (inclusive of directors fees).

The budget for training will thus be in direct relation to salaries and wages, inclusive of Directors fees, in the following percentages:

Training budget in compliance to Skills Development legislation	1% of salaries, wages, directors fees
Training budget in compliance to AgriBEE QSE Scorecard	A further 1% (i.e. 2% in total) of salaries, wages, director`s fees.

5.2 Budget for 2017/18 Enterprise Development

As per target in the applicable AgriBEE QSE Scorecard, the annual budget for this element will be at least, but not less than the new target of 3% of the NPAT of the farming operation, and will only count in as far as only black people/black women benefit. It is expected that the future revised Agri Code will have a new target of at least 1% of NPAT to be spend on Supplier Development alone.

5.3 Budget for 2017/18 Socio-economic Development including staff welfare

As per target specified in the AgriBEE Scorecard, the annual budget for Socio-economic Development will be at least, but not less than 1% of the NPAT of the farming operation. As prescribed by the AgriBEE Codes, this amount will be spend in such a way that at least 75% of the benefit will go to black people. It is expected that this target will stay the same in future.

6 INFLUENCE OF NEW WATER RIGHT ON LOCAL ECONOMY

In a rural area such as this with a high unemployment rate, any new employment positions have a huge impact on the immediate and extended families of such new workers. Add then also the impact of more people with proper housing, undergoing skills training and going to church, sport, etc. and children going to school, to understand the positive impact on this rural community. Even seasonal work opportunities has the advantage of extra income plus the opportunity to gain skills that can in future be used to gain permanent employment on the farm or elsewhere.

Not only are the new employment opportunities important, but also the fact that:

- Existing jobs can be secured: Enough water will directly secure existing and new job opportunities.
- More sustainable water will immediately create the opportunity to proceed with the expensive exercise to plant new varieties that can spread the preparation, pruning, harvesting and packing seasons over longer periods. This will support the entity in their efforts to convert as much as possible seasonal job opportunities into permanent job opportunities. Especially black females from the farm and neighbouring towns will benefit here. The positive impact on their lives will even be more as more of them will now also be promoted to supervisor level to help manage the increased production as well as the increase in value-adding volume.
- The increase in production of export produce will bring more foreign capital to South Africa which is much needed to strengthen our economy and as such fully supported by Government.

7 UNDERTAKING

I, ... the undersigned and duly authorised thereto by

Oseiland farming operation (measured entity) undertook to adhere to the information, requirements, commitment and conditions a set out in this AgriBEE Management Report.

Signed at ..... on this ..... day of 2017

Signature: .....

Designation: .....

References

Oseiland AgriBEE QSE Certificate issued by NCB Pty Ltd dated 9 September 2016
National Water Act, Act 36 of 1998

11.3.4 Water Use Licence Application

DRAFT

INTEGRATED WATER USE LICENSE APPLICATION REPORT

PROPOSED TRANSFER OF WATER FROM VARIOUS PROPERTIES AND THE CONSTRUCTION OF VINEYARDS ACROSS STREAMS ON KAKAMAS SOUTH SETTLEMENT NO 2193 AND 2185, AUGRABIES, NORTHERN CAPE

Prepared by:
Elanie Kühn
Pieter Badenhorst Professional Services
October 2018

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SYNOPSIS

Application for a license in terms of the National Water Act, 1998 (NWA) is made by the developer, Oseiland Eiendomme PTY Ltd for the transfer of water from various properties and to transfer the water rights to Kakamas South Settlement no 2185 and 2193 (see tables below) all owned under the affiliation of Oseiland Eiendomme (PTY) Ltd to rectify the water allocations to the said properties. Approval is also necessary for the development of agricultural areas across small ephemeral streams/drainage areas that already took place. The application is summarised for the following water usages:

(a) taking water from a water resource;	[transfer of water between properties] The transfer of water various properties.
(c) impeding or diverting flow of water in a watercourse	For the construction of agricultural areas across ephemeral streams/natural drainage areas.
(i) altering the bed, banks, course or characteristics of a watercourse	For the construction of agricultural areas across ephemeral streams/natural drainage areas.

The applicant, Oseiland Eiendomme PTY Ltd, wishes to transfer 849 900m³/a of water from three other properties, two owned by the applicant and another property owner Mr. Wian Van Rensburg, which are currently fully utilised with additional water allocations, to Portion the two said properties Kakamas South Settlement no 2185 and 2193, to rectify the water allocations to the above mentioned properties. To further rectify is also a transfer of water from Kakamas South Settlment no 2180, owned by the applicant to Kakamas South Settlement no 2092. See Table below:

	TRANSFER FROM (DONOR)						**TRANSFER TO (RECEIVING)**				
Nr	PROPERTY DESCRIPTION	OWNER	EXISTING WATER RIGHTS (HA)	HA PLANTED	SURPLUS	TRANSFER FROM (HA)	PROPERTY DESCRIPTION	OWNER	EXISTING WATER RIGHTS (HA)	HA PLANTED /TO BE PLANTED	TRANSFER TO (HA)
1	Kakamas South Settlement 172o	Du Plessis Familie Trust	73.2 (New application 123.5)	55ha (new development 50ha)	18.5ha	17ha	Kakamas South Settlement 2193	Du Plessis Familie Trust	4.4ha	23ha	17ha
	1794	Wian Van Rensburg				2ha	Kakamas South Settlement 2193	Du Plessis Familie Trust			2ha
							TOTAL: 19ha + 4.4 =**23.4**				19ha
2.	Kakamas South Settlement 2180	Du Plessis Familie Trust	20.2ha	0	20.2	13.2ha	Kakamas South Settlement 2185	Du Plessis Familie Trust	4.3ha	11ha	13.2
							TOTAL: 13.2 +4.3 = **17.5**				13.2
							Renosterkop new Total water use rights: 40.9ha				**32.2ha**
3	Kakamas South Settlement 2180	Du Plessis Familie Trust	20.2ha	0	20.2	7ha	Kakamas South Settlement 2092	Du Plessis Familie Trust	108	118.45	7ha

		TOTAL: **115ha**		
		TOTAL WATER TO BE TRANSFERRED	**New total allocation 159.35 (2390250 m³)**	**Transfer 39.2ha (588 000m³)**

The farms are currently irrigating their vineyards with water that is pumped directly from the Orange River at an existing abstraction point and at the Canal via an existing new pump station.

It has already been confirmed by the Kakamas WUA that the additional water allocation can be accommodated and that they have no objections to the abstraction from the Orange River and Canal, note the abstraction will be at the same points, they will just follow further with new pipelines to Kakamas South Settlement no 2185 and 2193. The additional water will have little or no effect on the quantity of available water from the water resources within the immediate vicinity. It should be noted that 2ha of water on the property of Mr. Wian Van Rensburg was sold to Oseiland Eiendomme PTY Ltd.

The intention is to further establishment orchards/vineyards on Kakamas South Settlement no 2185 and 2193 across small sections of the unnamed drainage system that is located on site. The drainage system is classified as an ephemeral course as it will only flow sporadically after rain. These watercourses are not considered to be seasonal rivers which will regularly contain water in a seasonal pattern.

The drainage channel system on site has not been mapped (as a watercourse) on any of the maps that are available of the study area. However, upon request from DENC and DWS, the drainage system is seen as a watercourse. Please note: There will be NO planting of vineyards within the **larger drainage channels** as far as possible and a buffer of at least 20m of the larger drainage systems will be kept at all times. It is also the intension to keep the northern section of the site with the larger stream as an onsite offset area and will be maintained in its natural state.

The unnamed drainage system is therefore classified as an ephemeral course as it will only flow sporadically after rain. These watercourses are not considered to be seasonal rivers which will regularly contain water in a seasonal pattern. However, it does fall within an area outlined as **CBA1.**

The proposed agricultural development areas fall within the Lower Orange River catchment area. It however does not fall within any NEFPA catchment priority areas.

1. THE APPLICATION AND TECHNICAL DETAIL

1.1 The applicant

The applicant, Oseiland Properties PTY Ltd is applying for a section 21 (c) and (i) for the construction of orchards/vineyards across small streams. Further applying for the section 21 (a) for transfer of water from various small properties to Kakamas South Settlement no 2193 and 2185 to allow for additional water for the new proposed 34ha of irrigation area and the transfer of water rights to Kakamas South Settlement no 2092 for the rectification of use.

1.2 The property on which the water use is intended

The proposed properties on which the expansion of agricultural activities, pipelines and associated infrastructure and transfer of water uses will take place are situated on three properties namely Kakamas South Settlement no 2193, 2092 and 2185, Augrabies. The farms are situated on the left side of the R64 approximately 2km before you enter the small town of Augrabies in the Northern Cape Province, see Figure 1. The site lies north of the R64 (MR 359) and south and west of Renosterkop Peak, a prominent inselberg in an otherwise flat landscape, and south of the Orange/Gariep River. Small ephemeral streams cross the site. See Figure 2. Accesses to the farms are via existing gravel roads that gain access off the R64. The property is currently zoned Agriculture. The owner of the properties is Oseiland Eiendomme (PTY) Ltd/Burger Du Plessis Familie Trust and has appointed PBPS as the independent consultant to undertake the EIA process.

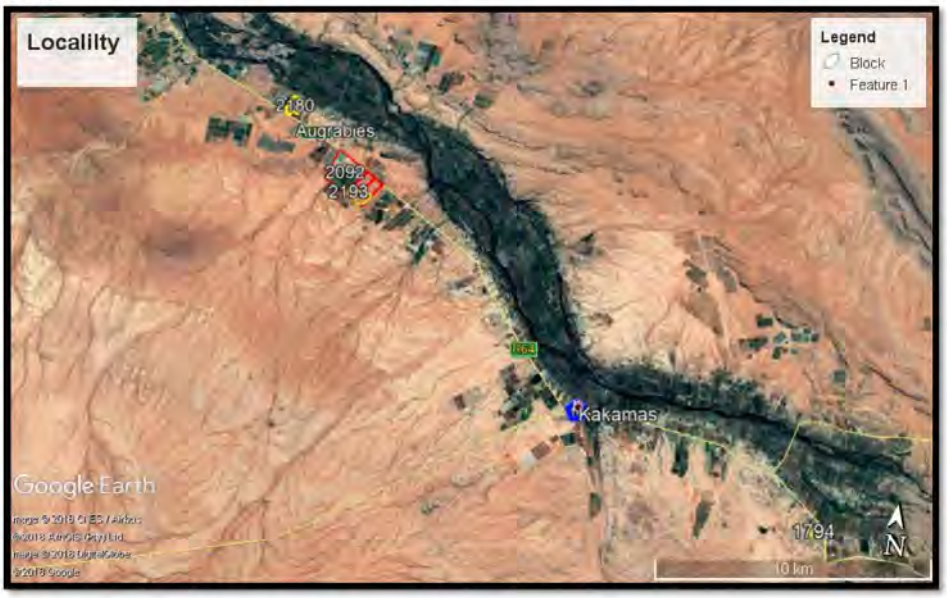

Figure 1: Project Locality

1.3 Water Use License Application

Application for a license in terms of the National Water Act, 1998 is made by the developer, Oseiland Eiendomme PTY Ltd, for the following water usages:

(a) taking water from a water resource;	[transfer of water between properties]
(c) impeding or diverting flow of water in a watercourse	For the construction of agricultural areas across ephemeral streams/natural drainage areas.
(i) altering the bed, banks, course or characteristics of a watercourse	For the construction of agricultural areas across ephemeral streams/natural drainage areas.

Table 1: Water Use License activities triggered

1.4 Existing lawful water use and development on the property

The applicant has the following existing water use rights: Please see Appendix B for the Water Use Allocation confirmations.

Kakamas WUA			
Property	**Canal (ha)**	**m³/ha**	**m³/a**
Kakamas South Settlement 2092	108ha	15 000	1620000
Kakamas South Settlement no 2185	4.3ha	15 000	64500
Kakamas South Settlement no 2193	4.4ha	15 000	66000
Kakamas South Settlement no 2180	20.2ha	15 000	303000
Kakamas South Settlement no 1726	123.5ha	15 000	1852500
Total			

Table 2: Existing water allocation

1.5 Details of the water use intended

1.5.1 Section 21 a – Transfer of the water

The applicant, Oseiland Eiendomme PTY Ltd, wishes to transfer 588 000m³/a of water from three other properties, two owned by the applicant and another property owner Mr. Wian Van Rensburg, which are currently fully utilised with additional water allocations, to Portion the two said properties Kakamas South Settlement no 2185 and 2193, to rectify the water allocations to the above mentioned properties with proposed agricultural expansion activities. To further rectify is also a transfer of water from Kakamas South Settlement no 2180, owned by the applicant to Kakamas South Settlement no 2092. See Table 3 below:

	TRANSFER FROM (DONOR)						TRANSFER TO (RECEIVING)				
Nr	PROPERTY DESCRIPTION	OWNER	EXISTING WATER RIGHTS (HA)	HA PLANTED	SURPLUS	TRANSFER FROM (HA)	PROPERTY DESCRIPTION	OWNER	EXISTING WATER RIGHTS (HA)	HA PLANTED /TO BE PLANTED	TRANSFER TO (HA)
1	Kakamas South Settlement 1726	Du Plessis Familie Trust	73.2 (New application 123.5)	55ha (new development 50ha)	18.5ha	17ha	Kakamas South Settlement 2193	Du Plessis Familie Trust	4.4ha	23ha	17ha
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3	Kakamas South Settlement 2180	Du Plessis Familie Trust	20.2ha	0	20,2	7ha	Kakamas South Settlement 2092	Du Plessis Familie Trust	108	118.45	7ha
							TOTAL: **115ha**				
							TOTAL WATER TO BE TRANSFERRED			**New total allocation 159.35 (2390250 m²)**	**Transfer 39.2ha (588 000m²)**

Table 3: Proposed transfer and new water allocations

1.5.1.1 Irrigation of any land

The additional water allocation (588 000m3/a from the Kakamas WUA from the various properties) will be pumped directly from the canal and irrigated onto the vineyards/orchards or pumped to the existing storage dam on Kakamas South Settlement no 2092. The new irrigation areas will be located on Kakamas South Settlement no 2185 and 2193. The new development on Kakamas South Settlement 2185 is 11ha in size and the new proposed development on Kakamas South Settlement no 2193 is 23ha in size, see Figure 3 below.

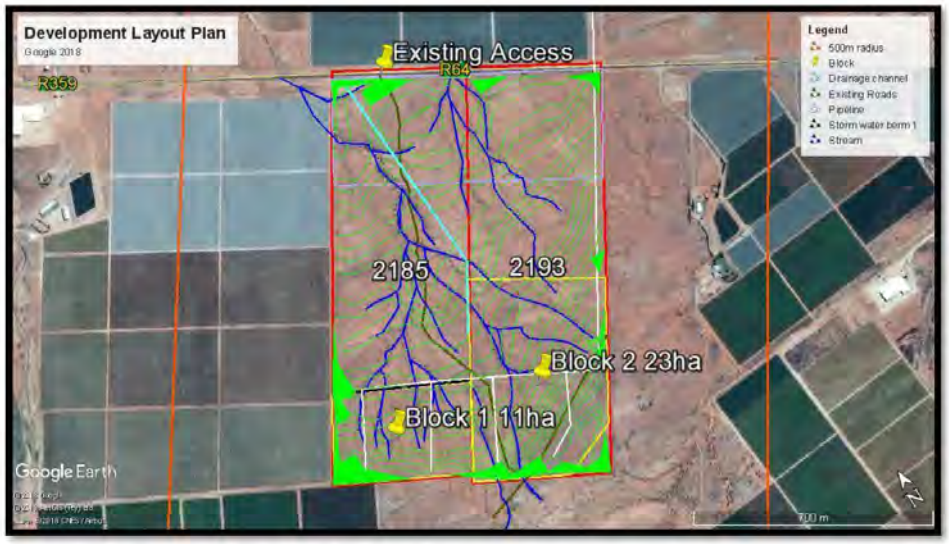


Figure 2: New Irrigation on KKS 2193 and 2185

1.5.2 Section 21c –impeding and diverting flow in a watercourse and Section 21i - altering the bed, banks, course or characteristics of a watercourse.

1.5.2.1 Kakamas South Settlement no 2185 and 2193

The drainage channel system on site has not been mapped (as a watercourse) on any of the maps that are available of the study area. However, upon request from DENC and DWS, the drainage system is seen as a watercourse. See Figure 3. Please note: There will be NO planting of vineyards within the **larger drainage channels** as far as possible and a buffer of at least 20m of the larger drainage systems will be kept at all times. It is also the intension to keep the northern section of the site with the larger stream as an onsite offset area and will be maintained in its natural state.

The unnamed drainage system is therefore classified as an ephemeral course as it will only flow sporadically after rain. These watercourses are not considered to be seasonal rivers which will regularly contain water in a seasonal pattern**. However, it does fall within an area outlined as CBA1.**

The proposed agricultural development areas fall within the Lower Orange River catchment area. It however does not fall within any NEFPA catchment priority areas.

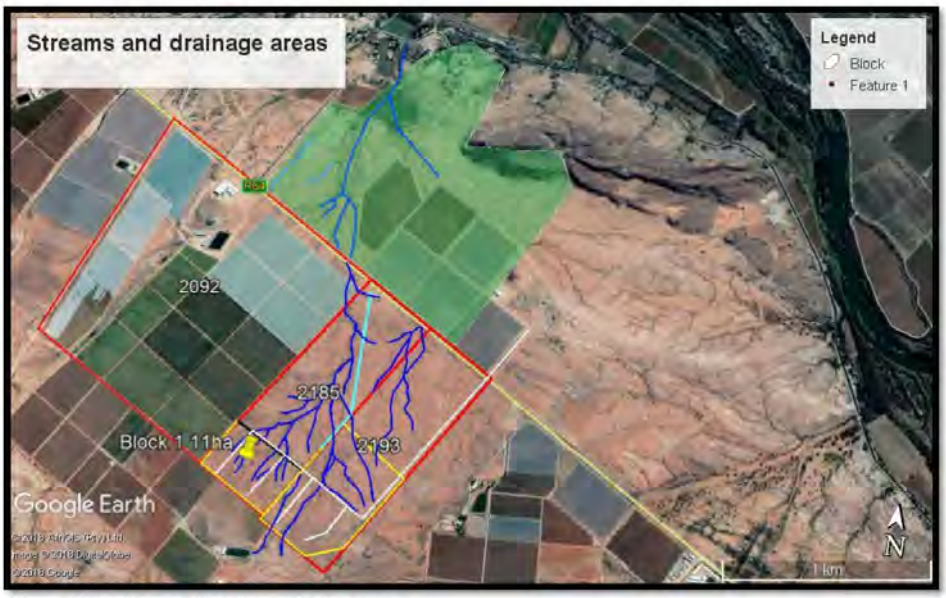


Figure 3: Ephemeral streams/drainage areas

1.5.2.2 Present Ecological Status (PES) & Ecological Importance Sensitivity (EIS)

Reference is made to the Draft Department of Water and Sanitation (DWS) Report (dated August 2016): "Determination of Ecological Water Requirements for Surface Water (rivers, estuaries and wetlands) and groundwater in the Lower Orange WMA; Report No. RDM/WMA06/00/CON/COMP/2016)1.

This Report provides the PES and EIS of the Orange River at EWR 02, located upstream of the confluence of the water courses that flow into the Orange River from the project site, and at EWR 03, downstream of the Augrabies Falls and downstream of the confluence of the watercourses that flow into the Orange River from the project sites.

Refer to Figure 4 below for the location of the Project Site (Kakamas South Settlement no 2185 and 2193,) in relation to EWR 02 and EWR 03.

EWR 02 and EWR 03 both have a:

□ PES of C (Moderately Modified); and,

□ EIS as High (the river in terms of biota and habitat may be sensitive to flow modifications but in some cases may have a substantial capacity for use.)

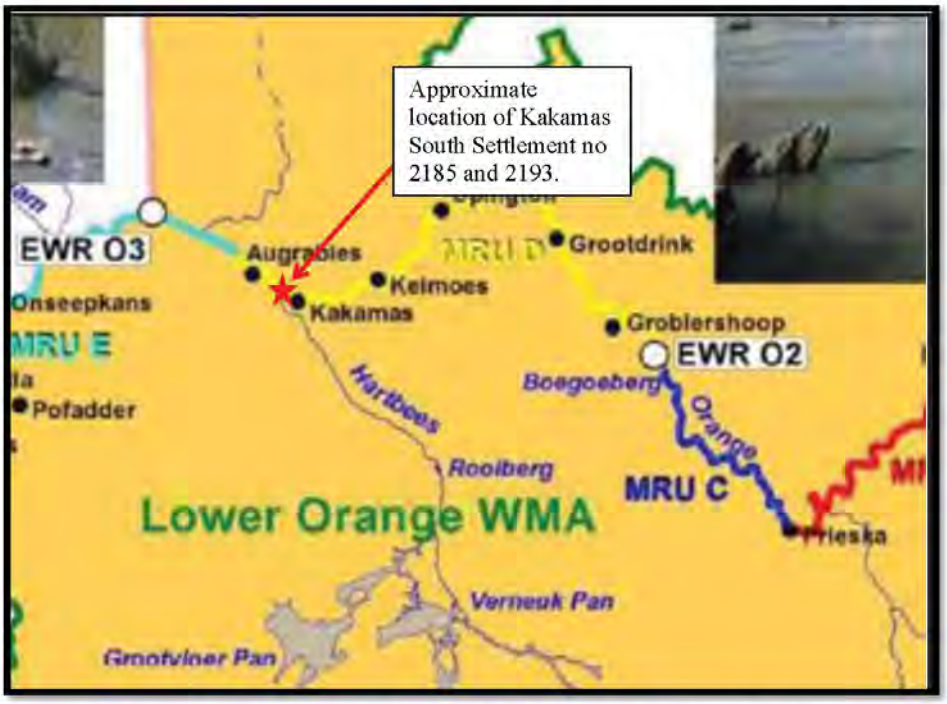


Figure 4: Extract of map that shows the locality of the EWR sites in context of the MRUs (referenced from Figure 3.1 in Report No. RDM/WMA06/00/CON/COMP/2016).

The drainage channel system is located in a sub-catchment of an unnamed tributary, the tributary is not really a river, but more fits the description of a mostly dry drainage line. The overall all analysis according to DWS:PES & EIS Desktop Assessment is that the site was not assessed and the ecological importance of the River is very low. Because it was not assessed fall back to the overall assessment for the EWR:02, which refers to moderately modified.

1.6 Storm water Management

1.6.1 Introduction

This section in the report is intended to provide the Department of Water Affairs with all necessary information to assess the suitability of the measures to be taken by Oseiland Eiendomme PTY Ltd regarding the successful storm water management of the proposed irrigation/agricultural development. This section describes the various infrastructure items that are/were to be constructed and the storm water management objectives that the land-owner will undertake to ensure sustainable management of the constructed storm water infrastructure. Find attached F2 the Storm water Management Plan.

1.6.2 Mitigation Measures:

The main issues to be addressed with mitigation measures include

1. Design

2. Irrigation
3. Nutrients (fertilisers)
4. Spraying (pesticides)
5. Storm water channels
6. Pipelines
7. Erosion control
8. River pump station

1.6.2.1 Design

The design of vineyard blocks took into account the natural flows and minimise impacts on the ephemeral streams. A storm water channels divert flow around the planted blocks towards the diversion channel, see Figure 6. Flow entering the diversion channel will then flow downstream and naturally enter an existing stream.

1.6.2.2 Irrigation

In order to prevent over irrigation, which might lead to water flows creating erosion and or transporting nutrients to the retained ephemeral streams, good farming practises such as irrigation on demand should be utilised.

In addition, the use of mulching should be used to reduce evaporation losses. The mulch also serves to retain moisture and prevent erosion near the plants at the source of irrigation; microjet or drip.

A typical example with mulching along the planted rows and planting between rows is shown below in Figure 5.

Figure 5: Mulching and planting between rows

1.6.2.3 Nutrients

Nutrients are usually applied in the irrigation water. Every effort must be made to only apply as required by the plant and soil.

Should fertiliser powder or pellets be used and applied by hand or machine it must only be placed along the vine plants and no mess or waste between rows should be allowed.

Powder or pellet fertiliser may not be spilled between vine rows or on access roads between the vine blocks. Should this happen it must be picked up and removed immediately.

1.6.2.4 Spraying

Spraying of pesticide is normally applied by machine as a vapour. The main potential source of pollution would be from spillages. Therefore, filling of the spray machine must be done in a safe area where pollution of the soil would not be possible. The best place would be on a concrete area where the pesticide is mixed with water.

1.6.2.5 Storm water channels

As shown in the Storm water management Layout Plan, the black lines indicated are the storm water channels constructed to accumulate the storm water, the red/brown lines indicate the drainage pipes from the agricultural areas that flow towards the storm water channels. The storm water channel flows towards a natural drainage area, from where it flows towards the Orange River.

It should be noted that no dissipation/retention structures other than the storm water channels and drainage pipelines are included to prevent erosion and storm water accumulation. However, natural vegetation has over time accumulated within the channels and does reduce flow. The storm water channels are deep enough to prevent overflow and erosion.

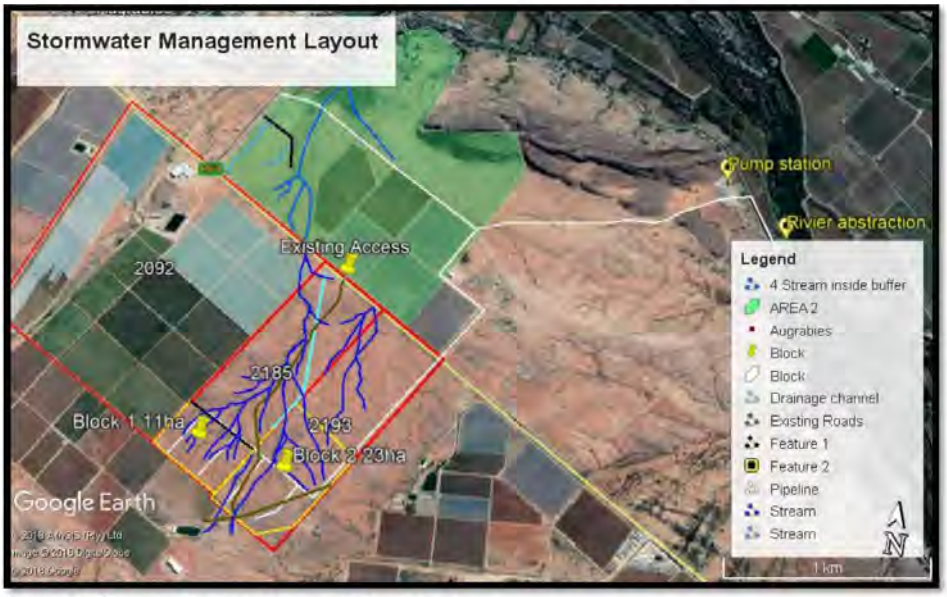


Figure 6: Storm water management plan layout

1.6.2.6 Pipelines

The proposed new pipelines to the irrigation areas will run along the site boundary, the only section of the pipeline that will affect one of the streams is shown in Figure 6, this is within the new proposed development areas. Care will be taken to prevent any future impediment of flow related to this pipe, as the pipes were constructed below the ground. Find included in Appendix C the pipeline method statement for construction of pipelines (PVC Pipes) below ground. The following mitigation measures should be implemented for work on the pipelines:

- Care will be taken to only construct the pipelines during the dry seasons

- As far as possible the section of the pipeline across/within the stream should be done manually, no machinery, resulting in the lowest possible impact.
- Infilling with original soils (as per method statement)
- Flow meters must be equipped on the pipelines.-protective measurement on water losses. This must be monitored on a regular basis and records kept on site.

1.6.2.7 Erosion control

Erosion would normally occur with the following:

1. Over irrigation which create water flows from the planted rows to the area between the rows and then to roads between the blocks.
    a. For mitigation see (3) below.
2. Pipe breakages where water will wash from the plants to the area between the rows to the roads between blocks and from where water can flow towards the retained ephemeral streams – thereby causing erosion gulleys.
    a. For mitigation see (3) below.
3. Rain events where the water will flow down slope to reach the ephemeral streams and along the way cause erosion where development took place; that is – between the planted rows and along the roads between blocks.
    a. Mitigation include the following:
        i. Mulching and planting/mulching between rows – see Figure 7 for typical example.
        ii. Scarifying of soil between planted blocks and roads to create a soft/rough area to retain moisture and prevent erosion – see Figure 8.

Figure 7: Scarifying of soil

        iii. Create a buffer with natural vegetation between the planted blocks and roads as shown in Figure 8.

Figure 8: Buffer areas with natural vegetation between blocks and roads

Overall therefore, the natural approach is preferred whereby mulching, planting and natural buffer areas are used to serve as mitigation to prevent flows that could create erosion. This has the further advantage that it also acts against spreading of nutrients and pesticides.

1.6.2.8 River pump station

The existing pump station located on KKS 1572, and existing pipelines on KKS 1726, crossing the R64 onto KKS 2193, see Figure 6.

1.7 Plough certificate

There is an existing plough certificate for Kakamas South Settlement no 2092 and an application will be lodged for Kakamas South settlement no 2193 and 2185. Find included in Appendix N the existing Plough certificate, the requirements will be discussed with Department of Agriculture, Forestry and Fisheries.

2. CONSIDERATIONS AND ASSESSMENT CRITERIA

Management actions in the Development of an Integrated Water Quality Management Strategy for the Upper and Lower Orange Water Management Areas for the Lower Orange Water Management Area include the following:

Area 1: Boegoeberg to Kanon Islands

It is the vision of all interested and affected parties within Visioning Area 1:

To contribute towards the integrated management of the surface and groundwater resources in all LOWMA catchments between Douglas and Boegoeberg Dam, to secure sufficient water that is fit for all beneficial uses, specifically including domestic and variable agricultural use, and to support a healthy aquatic ecosystem, particularly for ecological sensitive areas such as the Douglas Conservancy.

Area 2: Boegoeberg to Kanon Islands

It is the vision of all interested and affected parties within Visioning Area 2:
(Kakamas/Augrabies/Keimoes falls within this area)

To contribute towards securing suitable water supplies of qualities for all LOWMA catchments between Boegoeberg and Kanon Islands, that will sustain:

- a thriving table grape export marked and wine production;
- local agricultural activities via an extensive irrigation canal system;
- a thriving stock farming industry;
- domestic and light industrial water use in all towns, specifically including Upington;
- supplying water to rural communities via both the Kalahari West and Karos- Geelkoppan water supply schemes.

Area 3: Kanon Islands to Pella It is the vision of all interested and affected parties within *Visioning Area 3:* To promote the participatory and integrated management of all water resources pertaining to the LOWMA catchments situated between Kanon Islands and Pella in order to ensure that water supplies are of an acceptable quality to all water users, in particular to sustain a prominent conservation and ecotourism industry, as well as livestock and private game farming, while allowing room for beneficial water use.

Other legislation and guidelines that have been considered includes the following:

- The Constitution Of South Africa Act No.108 Of 1996
- The National Environmental Management Act, 1998 (Act No. 107 Of 1998)
- The National Heritage Resources Act, 1999 (Act No. 25 Of 1999)
- Conservation Of Agricultural Resources Act No 43 Of 1983
- Subdivision Of Agricultural Land Act, 1970 (Act No. 70 Of 1970)
- Urban Structure Plan for the Cape Metropolitan Area, Volume 4:Paarl/Wellington Region
- National Environmental Management: Biodiversity Act (Act 10 Of 2004)
- Planning Legislation And Guideline

2.1 The reserve

The Department of Water Affairs and Forestry have recently completed the reserve determination for the Berg River: Directorate of Scientific Services in Pretoria.

From the reserve determination it could now be ascertained by your department as to the availability of water for the allocation of the water usages requested as per the issue of a license to the applicant. This application is for the transfer of water between two Irrigation Boards and the transfer from Farm 1794 outside the WUA jurisdication, managed by DWS: Upington, will have little effect on the quantity of water available from within the catchment.
Please see attached (Appendix B) letter from the Kakamas Water Users Associations a confirmation letter that the water allocation can be handled within the systems.

2.2 The class and resource quality objectives of the water resource
These aspects could only be addressed and commented on by the Department of Water Affairs.

2.3 The strategic importance of the water to be authorized
This water use has no strategic importance.

2.4 The existing lawful water use in the catchment under consideration
This authorization will have no impact on any existing lawful water use within the investigation area. Please see attached letter from the Kakamas Water Users Associations confirming that the water allocation can be transferred (Appendix B).

2.5 The likely effect of the water use to be authorized on the water resource and on other water users in the catchment
This application is for the transfer of water between two Irrigation Boards and the transfer from Farm 1794 outside the WUA jurisdication, managed by DWS: Upington, will have little effect on the quantity of water available from within the catchment.

2.6 The impact on the environment
The transfer of the water between the said properties will not have a negative impact on the existing water use within the catchment region. The water can be accommodated, as confirmed by the Kakamas Water Users Association. The impacts and mitigation measures are summarised in the table below:

Water Uses	Potential Impact on	Proposed Mitigation Measures	Review of the adequacy of suggested mitigation measures
Section 21(a)	Impact on existing properties for transfer of water rights	Impact is deemed low negative • The listed properties are partially/fully planted. However, these properties have sufficient water allocated and for Farm 1794 property the water sold will not have a negative impact on the said propertt • No mitigation	No mitigation

	New irrigation areas associated with the additional water use rights	Low positive • Measures should be implemented to reduce water use within the proposed development, such as the use of tension meters to avoid over irrigation of the soils. • Environmental education programs for workers will ensure that they will be sensitive to the environment and report incidents such as leaking taps, broken irrigation systems, etc. • The irrigation system to be used is DFM method along with irri-check calibrations and recommendations. • Test pits and data collections from these pits are taken on a regular basis to determine the moisture content for soil etc. • Soil coverage within the vineyards with chaff. • Regular monitoring and checks from specialists in the field to introduce best possible irrigation practices.	Mitigation measures adequate to ensure positive impact takes place.
Section 21 (c&i)	Water Quality	• No impact on water quality, as construction will be conducted outside the rainfall season. (Replanting) • No flow from agricultural areas as storm water berms will be constructed as far as possible. (Replanting) • Measures should be implemented to reduce water use within the proposed development, such as the use of tension meters to avoid over irrigation of the soils.	Mitigation measures adequate to ensure impacts are fully mitigated.
	Impeding and diverting flow within ephemeral streams.	Low negative • The natural drainages areas and small ephemeral stream will be filled in and vineyards established on these areas, therefore a low negative impact on surface water flow. • This will however be	Mitigation measures adequate to ensure impacts are fully mitigated.

		mitigated by establishing a storm water management mitigation measures, outlined in the SWMP.	

Table 4: Impacts table

2.6.1 Assessment of the impacts associated with the water use:

The transfer of the water (588 00m³/a) from the three properties, two owned by the applicant and the other sold from Mr. Wian Van Rensberg, on to Kakamas South Settlement no 2193, 2185 and 2092 will not have a negative impact on the existing water use within the catchment area. The water can be accommodated, as confirmed by the Kakamas Water Users Association (Appendix B).The impacts associated with the development (already took place) of agricultural areas across stream is low negative, however mitigation measure taken into account can prevent any further negative impacts, see Table 4 above.

2.7 The need to redress the results of the past racial and gender discrimination

It is envisaged that Oseiland will need to create some new permanent and a number of new seasonal employee positions in the near future should the new water use be allocated. The entity also plans to convert some of the current seasonal positions to permanent positions should this water licence use application be successful.

As mentioned before, table grape production is very labour-intensive, even more so if packed as well. It creates around 4 new employment positions per hectare if also packed on the farm. Citrus production plus the raisin plant creates another 1 position per hectare.

The new water use licence will therefore create an immediate need to appoint more workers and supervisors.

The new water use licence will lead to the expansion of the farming operation, and will create a demand for new staff and new skills, eg.

- Skilled agricultural labourers
- Specific knowledge of vineyards and citrus fruit production will be needed
- Specific knowledge of fruit packing will be needed
- Support staff will be needed: Admin, forklift drivers, tractor operators and Code 14 drivers.

Preference will be given to black/coloured people for these positions, and more specific **black/coloured women** where possible.

Existing employees with experience on the farm, plus the potential to be leaders, will in the first place be identified for new supervisory positions.

No. of persons for employment	No. of persons for accredited training
Semi-skilled: 76 (Spesialis werkers) Unskilled: 250 (Tydelike/Seisoen werkers)	Semi-skilled: 46 Unskilled: 30
Men: 147 (±45%) Women: 179 (±55%)	Men: 28 Women: 28
Youth: 230 (±70% onder 30 Jaar) Adult: 96 (±30% ouer as 30 Jaar)	Youth: 53 Adult: 23

Table 5: New employment opportunities

2.8 Efficient and beneficial use of the water in public interest

The new water use will have the following benefits:

Enough water will directly secure existing and new job opportunities.

- More sustainable water will immediately create the opportunity to proceed with the expensive exercise to plant new varieties that can spread the preparation, pruning, harvesting and packing seasons over longer periods. This will support the entity in their efforts to convert as much as possible seasonal job opportunities into permanent job opportunities. Especially black females from the farm and neighbouring towns will benefit here. The positive impact on their lives will even be more as more of them will now also be promoted to supervisor level to help manage the increased production as well as the increase in value-adding volume.
- The increase in production of export produce will bring more foreign capital to South Africa which is much needed to strengthen our economy and as such fully supported by Government.

2.9 Socio economic impact of water use to be authorized

In a rural area such as this with a high unemployment rate, any new employment positions have a huge impact on the immediate and extended families of such new workers. Add then also the impact of more people with proper housing, undergoing skills training and going to church, sport, etc. and children going to school, to understand the positive impact on this rural community. Even seasonal work opportunities has the advantage of extra income plus the opportunity to gain skills that can in future be used to gain permanent employment on the farm or elsewhere.

Not only are the new employment opportunities important, but also the fact that:

- Existing jobs can be secured: Enough water will directly secure existing and new job opportunities.
- More sustainable water will immediately create the opportunity to proceed with the expensive exercise to plant new varieties that can spread the preparation, pruning, harvesting and packing seasons over longer periods. This will support the entity in their efforts to convert as much as possible seasonal job opportunities into permanent job opportunities. Especially black females from the farm and neighbouring towns will benefit here. The positive impact on their lives will even be more as more of them will now also be promoted to supervisor level to help manage the increased production as well as the increase in value-adding volume.
- The increase in production of export produce will bring more foreign capital to South Africa which is much needed to strengthen our economy and as such fully supported by Government. See Appendix H for the Agri-BEE Report.

2.10 Investment already made and to be made by the water user in respect of the water use in question

The following investments have been made:

1. The water allocations are from small properties currently owned. The purchase of 2ha of water by another property owner.
2. All investments made already as this is part of an existing farming unit with existing infrastructure. New pipelines and new agricultural areas on Kakamas South Settlement no 2193 and 2185.

The future investments to be made:
1. No additional investments, other than mentioned above.

2.11 The period for which the license is to be issued

The license should be issued for the maximum possible period, as the water use will be of a permanent nature.

2.12 Failure to authorize the water use

Failure to authorize the water use will result in the following:

- Financial loss due to existing investments already made, buying of properties and water use rights,
- The design and processes implemented to obtain authorisation also has a high financial implication that will be lost.
- Loss in current and future employment opportunities and skills development and training opportunities.

3. CONCLUSION

The transfer of the water (588 00m³/a to the Kakamas WUA from the various properties) to Kakamas South Settlement no 2193, 2185 and 2092 will not have a negative impact on the existing water use within the catchment or the Water Users Association region. The water can be accommodated, as confirmed by the Kakamas Water Users Association.

The authorisation of the farm and procurement of the correct rights on each property, thereby complying with the necessary legislation will have numerous positive socio-economical impacts not only on the farm but also the region and result in job creations, skills development, social upliftment and earning of foreign currency.

4. CONDITIONS

When instructed to do so by the Responsible Authority the user must fit a self- registering meter at the user's expense to measure water use and the user at his expense must maintain the meter in satisfactory working condition.

Officers from the Department of Water Affairs will at all times have free access to the property and the water works for supervision and control purposes.

The Department's or Responsible Authority's local representative will issue the necessary instructions to the user with regard to the keeping of proper registers of water use and quality, and the owner must at all times comply with such instructions.

The Department accepts no liability for any damage, loss or inconvenience, of whatever nature, suffered as a result of: shortage of water: inundation or flood; siltation of the river or dam basin; and/or the shifting of water work in the event of a rise or drop in the water level of river or dam.

The quality or suitability of the water for any purpose is not guaranteed.

The water abstracted/used in terms of this license may only be used for the authorized purposes.

This license is not a permanent, lawful right and is not transferable from one user to another or from one property to another.

The user must take every possible precaution to the satisfaction of the Department, to prevent pollution of water resources.

The Department of Water Affairs reserves the right to withdraw this license in the event of failure to comply with any of the said conditions or provisions.

The applicant has a period of 2 (two) years within which to commence/implement this water use, failing which, the license will lapse.

5. RECOMMENDATION

The following recommendations should be adhered to:

- Any further recommendations outlined in the Environmental Authorisation and the Water Use License issued.
- When instructed to do so by the Responsible Authority the user must fit a self- registering meter at the user's expense to measure water use and the user at his expense must maintain the meter in satisfactory working condition.
- Officers from the Department of Water Affairs will at all times have free access to the property and the water works for supervision and control purposes.
- The Department's or Responsible Authority's local representative will issue the necessary instructions to the user with regard to the keeping of proper registers of water use and quality, and the owner must at all times comply with such instructions.
- The Department accepts no liability for any damage, loss or inconvenience, of whatever nature, suffered as a result of: shortage of water; inundation or flood; siltation of the river or dam basin; and/or the shifting of water work in the event of a rise or drop in the water level of river or dam.
- The quality or suitability of the water for any purpose is not guaranteed.
- The water abstracted/used in terms of this license may only be used for the authorized purposes.
- This license is not a permanent, lawful right and is not transferable from one user to another or from one property to another.
- The user must take every possible precaution to the satisfaction of the Department, to prevent pollution of water resources.
- The Department of Water Affairs reserves the right to withdraw this license in the event of failure to comply with any of the said conditions or provisions.
- The applicant has a period of 2 (two) years within which to commence/implement this water use, failing which, the license will lapse.

It is recommended that the permanent transfer of water (588 00m³/a to the Kakamas WUA from the various properties) to Kakamas South Settlement no 2193, 2185 and 2092 be approved. It is also recommended that the irrigation area across small ephemeral streams on Kakamas South Settlement no 2193 and 2185 be allowed.

6. APPENDICES

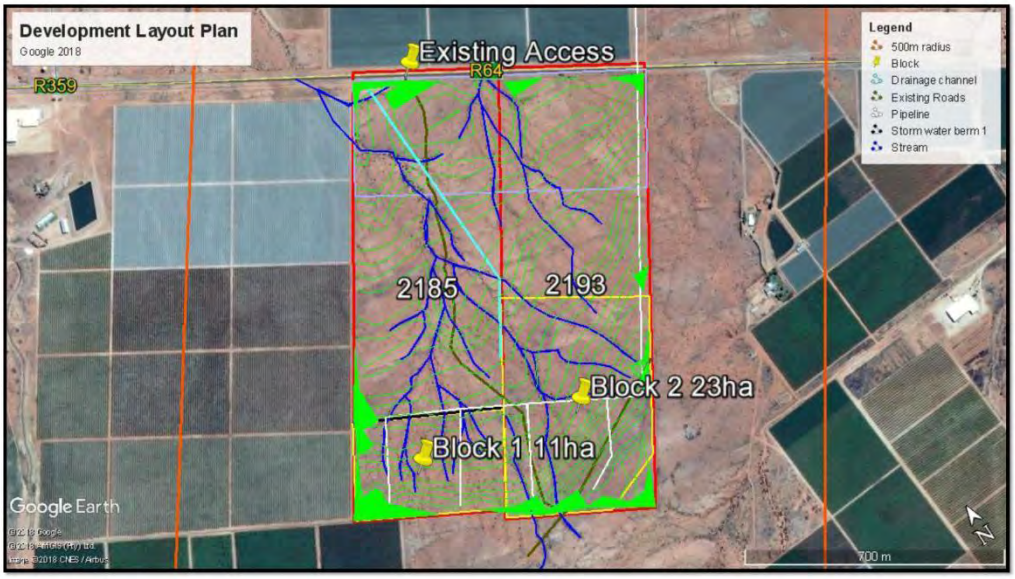
APPENDIX A: Completed License Application Forms

APPENDIX B: Existing Water Use Confirmation

APPENDIX C: Deed Search and Title Deeds

APPENDIX D: Power of Attorney

APPENDIX E1: **Proposed Locality and Development layout**
Mater Development Layout Plan



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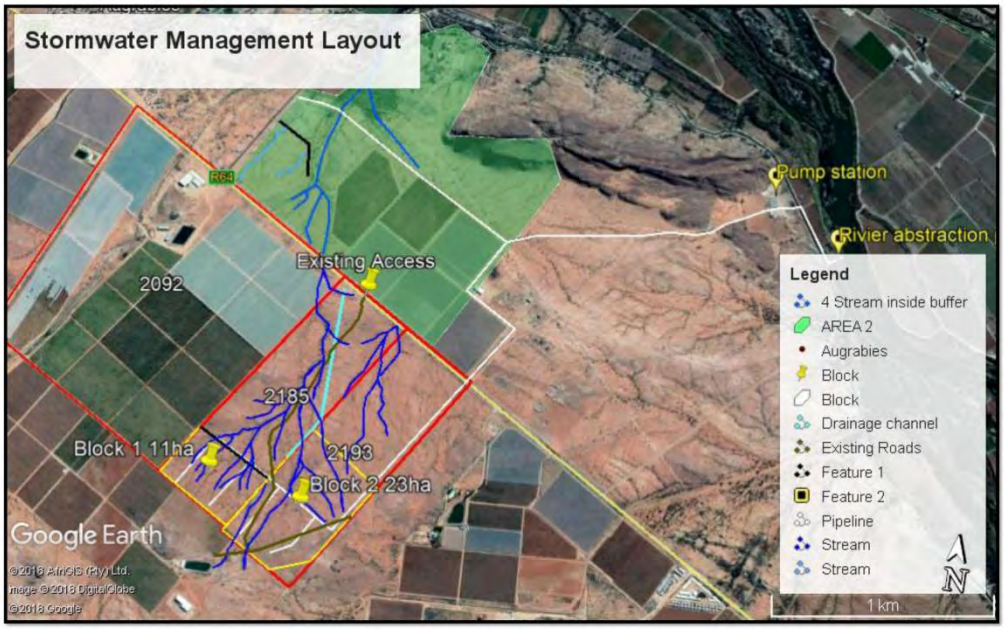
Storm Water Management Plan Layout



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APPENDIX F: Technical Documents
Appendix F.1: Environmental Impact Report
EIR has been submitted to DENC, approval is awaited. Find included on the cd.

Appendix F.2: Storm water Management Plan

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APPENDIX G: Proof of Public Participation

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APPENDIX H: AGriBEE Report

APPENDIX I: Certified copy of ID

APPENDIX J: Company Registration certificates and Organogram

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APPENDIX K: Copy of Receipt

APPENDIX L: Section 21 c and i list of drainage lines coordinates and Risk Matrix

APPENDIX M: Lands Claim confirmation

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APPENDIX N: Plough Certificate

APPENDIX O: Motivation for transfer of water from various properties

Appendix P: Permanent Transfer Forms

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APPENDIX Q: Indemnity Forms

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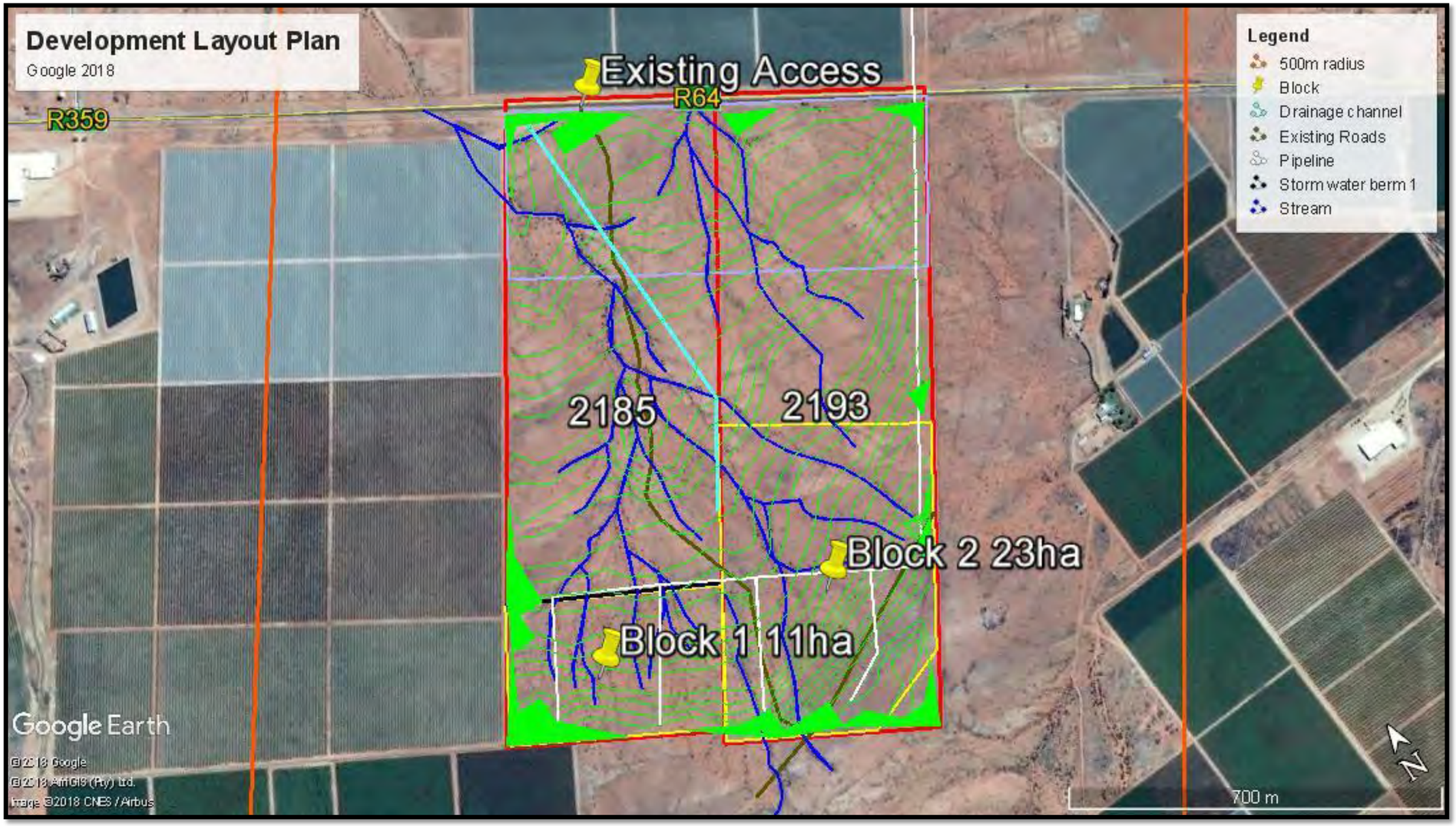
APPENDIX R: Termination in terms of Section 25 Forms

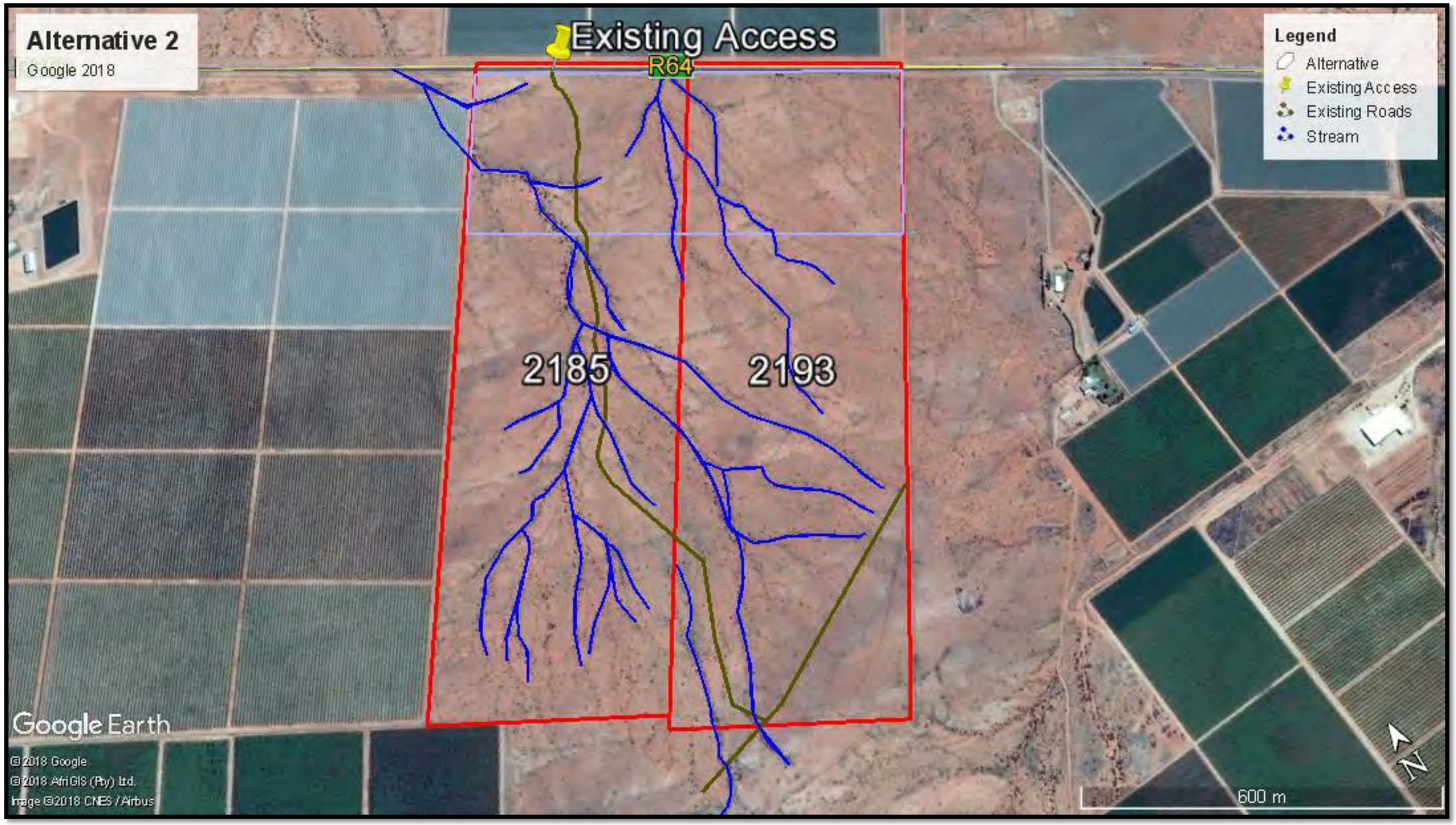
11.4 Alternatives

11.4.1 Alternative Layouts:

11.4.1.1 Alternative layout 1: Preferred layout



11.4.1.2 Alternative layout 2



12 ENVIRONMENTAL MANAGEMENT PROGRAMME

Application for Authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, December 2014, as amended March 2017

CONSTRUCTION & OPERATIONAL MANAGEMENT PLAN FOR

PROPOSED CONSTRUCTION OF AGRICULTURAL AREAS, PIPELINES AND ASSOCIATED INFRASTRUCTURE ON KAKAMAS SOUTH SETTLEMENT NO 2193 AND 2185, AUGRABIES, NORTHERN CAPE

DENC Ref: NC/EIA/04/ZFM/KAI/KAK1/2018

Prepared by:
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Environmental Assessment Practitioner
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Date: October 2018

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List of Figures

List of abbreviations

CA	Competent Authority
DENC:NC	Department of Environment and Nature Conservation: Northern Cape
DEAT	Department of Environmental Affairs and Tourism
dSR	Draft Scoping Report
fSR	Final Scoping Report
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer as per the environmental authorisation
EIA	Environmental Impact Assessment and the process to be followed in terms of the National Environmental Management Act, Act 107 of 1998
EIR	Environmental Impact Report
ELU	Existing Lawful Use
EMF	Environmental Management Framework
EMP	Environmental Management Programme
EO	Environmental officer as appointed by the client or contractor
GG	Government Gazette
GN	Government Notice
I&AP	Interested and Affected Party
IAIAsa	International Association for Impact Assessment for South Africa
NEMA	National Environmental Management Act, Act 107 of 1998
NID	Notice of Intent to Develop
PoSfEIA	Plan of Study for EIA
RE/Engineer	Resident Engineer overseeing the construction activity
ROD	Record of Decision
SDF	Spatial Development Framework
SR	Scoping Report
TOR	Terms of Reference

Definitions

For the purposes of this Specification the following definitions shall apply:

Construction site, working area or Site - means any area within the boundaries of the property(ies) where construction is taking place.

No-Go area - means any area where no access is allowed.

Refuse - refers to all solid waste, including construction debris (cement bags, wrapping materials), waste and surplus food, food packaging, organic waste etc.

Expertise of the EAP

Pieter Badenhorst

The name and details of the EAP are provided in the front of the report. He has more than 43 years' experience in project management and report writing. He worked at the CSIR in environmental, coastal and estuarine management for 16 years. During that time he was part of the team that developed coastal management guidelines, the first process for EIAs and undertook numerous environmental studies for DEAT in collaboration with a team of ecologists. The last17 years he has worked mainly in environmental control and environmental impact assessments and has completed EIAs for many projects. He has also undertaken an EIA peer review on a major development for DEAT.

He has a B.Sc. Civil Engineering Degree as well as B.Honours Degree (Irrigation), M. Engineering (Civil) and an MBA from Stellenbosch University.

The consultant is a member of the Engineering Council of South Africa and the South African Institute of Civil Engineers, as well as a member of the International Association for Impact Assessment (South Africa).

The consultant has organized many meetings/workshops/open days to identify issues for similar projects at the CSIR; Blue Flag for DEAT as well as other DEAT projects. The Blue Flag and other projects required interaction with large groups of stakeholders.

Elanie Kühn

The consultant has 11 years' experience in project management and report writing. She has worked for two other environmental assessment companies prior to this. She completed her BSc degree and after this gained an Honours Degree in Environmental Management from the North West University in Potchefstroom. She has been working with Pieter Badenhorst for the last six years working on environmental impact assessments.

1 Introduction

1.1 Locality:

The proposed properties on which the expansion of agricultural activities, pipelines and associated infrastructure will take place are situated on two properties namely Kakamas South Settlement no 2193 and 2185, Augrabies. The farms are situated on the left side of the R64 approximately 2km before you enter the small town of Augrabies in the Northern Cape Province, see Figure 1. The site lies north of the R64 (MR 359) and south and west of Renosterkop Peak, a prominent inselberg in an otherwise flat landscape, and south of the Orange/Gariep River. Small ephemeral streams cross the site. Accesses to the farms are via existing gravel roads that gain access off the R64. The property is currently zoned Agriculture. The owner of the properties is Oseiland Eiendomme (PTY) Ltd/Burger Du Plessis Familie Trust and has appointed PBPS as the independent consultant to undertake the EIA process.

Figure 1: Locality

Proposed development:

The proposed development is to establish additional agricultural areas for the cultivation of vineyards and orchards on areas with indigenous vegetation and across small streams. It is also proposed to construct additional pipelines, which will cross streams. The farm is also approximately 2km from the Orange/Gariep River, it is separated from the Orange River via agricultural areas, the inselberg Renosterkop, the canal and the R64. The proposed agricultural areas and pipelines are shown in the Figure 2.

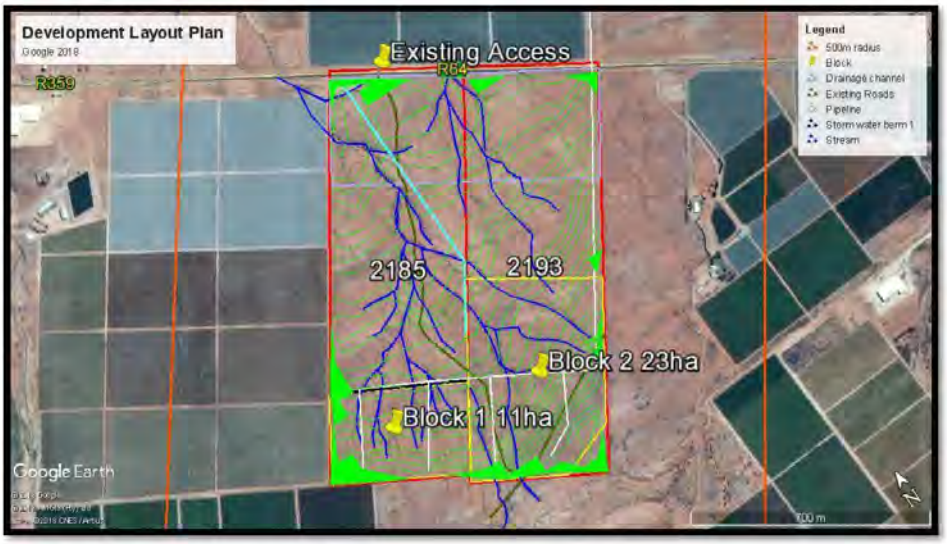

Figure 2: Proposed Agricultural areas

As per the above Figure 2, the proposed development is for the following:

1. Transformation of approximately 34ha of indigenous vegetation to vineyards,
2. Construction of approximately 3km of new pipelines, a small drainage channel and berm, within internal pipelines.

Table 1: Property details

Property details	Sizes of properties	Ha of proposed new development area.
Kakamas South Settlement no 2193	40.142ha	23ha planted
Kakamas South Settlement no 2185	50.108ha	11ha planted

The SG 21 Digit Codes of the 3 properties indicated in Figure 1 above are provided in the list below:

C	0	3	6	0	0	0	7	0	0	0	0	2	1	9	3	0	0	0	0	0
C	0	3	6	0	0	0	7	0	0	0	0	2	8	1	5	0	0	0	0	0

As per the above Figure 2 it will provide transformation of approximately 34ha of indigenous vegetation to vineyards.

This document is a requirement for environmental authorization (EA) which is shown in Appendix A. All mitigation measures included in the EA will be inserted into Appendix C. On approval by DENC the developer must ensure that its conditions are implemented by making the

document available to the contractor and also ensure that an ECO or the Resident Engineer are appointed and systems are in place to evaluate compliance. The contractor(s) is expected to familiarise himself with the contents of this document and to implement its conditions.

Overall the EMP will aim to:

- Control the construction activities in such a way that negative impacts on the physical environment, sensitive areas and surrounding residential areas are prevented or minimised.
- Ensure that mitigation and rehabilitation measures are implemented where required.

Please note that this document does not replace any other regulations, laws and bylaws that the contractor must adhere to. It specifically does not replace the regulations of the Occupational Health and Safety act of 1993 (Act No. 85 of 1993).

Funding for the implementation of the Construction EMP is the financial responsibility of the developer.

The project environmental issues are shown in section 2 with the construction EMP in section 3 and the operational EMP in section 4.

2 Environmental issues

2.1 Vegetation

As outlined in Section 5.2.1 of the Botanical Impact Assessment Report attached at Appendix 11.3.1 in the EIR. The vegetation types found on site is of low botanical sensitivity; however the proposed development will probably have low negative impact on the vegetation if the appropriate mitigation measures are implemented.

Mitigation:

Mitigation during the planning, construction and operation phases of this proposed development are as follows:

"Very little scope is available for mitigation measures to compensate for the loss of natural or near natural habitat in the study area. Wherever there is future cultivation, the vegetation and habitat would be lost. The only mitigation measures that can be proposed are, (1) Search & Rescue of Aloe claviflora, where the aloe plants would be relocated to safe sites that would not be affected by cultivation and (2) conservation of the northern part of the study area, to conserve both and area of 'open plains' and the seasonal watercourses north of the area proposed for cultivation. This would ensure that a reasonable amount of viable habitat is protected and this would offset the loss of equivalent habitat in the area targeted for citrus orchards.
Note that it would not be possible to translocate ANY trees since they would not survive disturbance. Therefore no holding facility such as a greenhouse etc. is advised. "

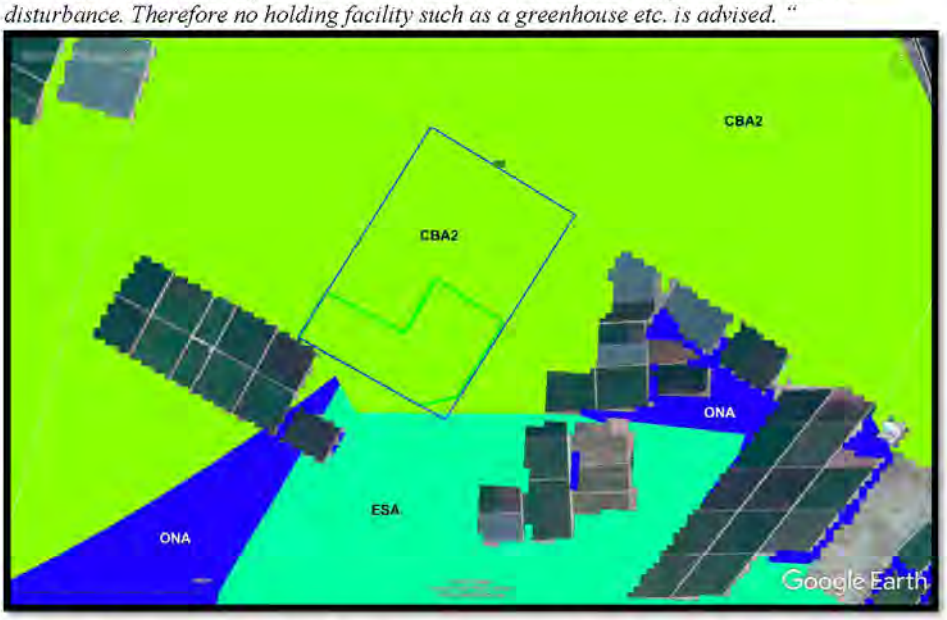

Figure 3: Portion of the Critical Biodiversity Areas map for the Northern Cape Province showing indicating that the Renosterkop Extension study area (blue boundary) falls entirely within a CBA2. ESA = Ecological Support Area; ONA = Other Natural Areas.

2.2 Fauna

Although not observed during the site visit, it is expected that small game such as klipspringer, steenbok, porcupines, baboons and dassies will be found in the area.

Habitat destruction and the possible genetic contamination of species are however all factors that can negatively impact on vertebrate species, but can be minimized through applying the following mitigation measures:

Mitigation

- Conservation of the Northern Section of the Kakamas South Settlement no 2185 and 2193 (as shown on the Environmental Sensitivity Map included as Figure 3) to provide habitat for fauna.
- Regular maintenance of the water network will minimize the damage done by porcupines.
- No hunting of small game with dogs will be allowed.
- In order to ensure that all fauna will be able to relocate to the adjacent veld, openings should be made in the fences surrounding the proposed development area before any construction work may commence
- To ensure environmentally friendly farming practices, the site manager will have to adhere to the requirements and prescriptions which will be included in the environmental management plan to be included as part of the EIA process. This plan will also deal with issues such as the prohibition of the hunting of small game etc.

2.3 Heritage, Archaeology and Palaeontology

A Heritage/Archaeological specialist Dr Jonathan Kaplan was appointed to conduct an assessment of the site and his report is attached at Appendix 11.3.2 in the EIR. It was outlined by the specialist that the impact of significance of the proposed development on important archaeological heritage is therefore assessed as LOW. The following should be implemented

"1. No mitigation is required prior to proposed development activities commencing.

2. Should any unmarked human burials/remains or ostrich eggshell water flask caches be uncovered, or exposed during proposed activities, these must immediately be reported to the archaeologist (Jonathan Kaplan 0823210172), or the South African Heritage Resources Agency (Ms Natasha Higgit 021 4624502). Burials, particularly, must not be removed or disturbed until inspected by a professional archaeologist.

3. The above recommendations must be incorporated into the Environmental Management Plan (EMP) for the proposed development."

The letter written by Dr John Almond is included in Appendix 11.3.2 in the EIR and recommended that:

"*In view of the negligible palaeontological sensitivity of the ancient Precambrian bedrocks as well as the low sensitivity of the geologically recent superficial sediments along the Orange River in the Kakamas – Augrabies region, the proposed agricultural development – including new citrus orchards and buried pipelines - is not considered to pose a significant threat to palaeontological heritage. Although diamond prospecting has occurred in the Renosterkop region, substantial, potentially-fossiliferous older alluvial deposits are not mapped here.*

Pending any significant new fossil discoveries in the area, no further specialist studies or mitigation are considered necessary for this agricultural project.

All South African fossil heritage is protected by the National Heritage Resources Act, 1999. Should substantial fossil remains - such as vertebrate bones and teeth, or petrified logs of fossil wood - be encountered at surface or exposed during construction, the ECO should safeguard these, preferably in situ. They should then alert the relevant provincial heritage management authority as soon as possible - i.e. SAHRA (Contact details: Dr Ragna Redelstorff, SAHRA, P.O. Box 4637, Cape Town 8000. Tel: 021 202 8651. Email: rredelstorff@sahra.org.za). This is to ensure that appropriate action (i.e. recording, sampling or collection of fossils, recording of relevant geological data) can be taken by a professional palaeontologist at the developer's expense."

These mitigation recommendations should be incorporated into the Environmental Management Programme (EMPr) for this agricultural project. Please note that:

- *All South African fossil heritage is protected by law (South African Heritage Resources Act, 1999) and fossils cannot be collected, damaged or disturbed without a permit from SAHRA or the relevant Provincial Heritage Resources Agency;*
- *The palaeontologist concerned with potential mitigation work will need a valid fossil collection permit from SAHRA and any material collected would have to be curated in an approved depository (e.g. museum or university collection);*
- *All palaeontological specialist work should conform to international best practice for palaeontological fieldwork and the study (e.g. data recording fossil collection and curation, final report) should adhere as far as possible to the minimum standards for Phase 2 palaeontological studies developed by SAHRA (2013).*

2.4 Socio-Economic Environment

Socio:
The farm Renosterkop as part of the Oseiland Eiendomme PTY Ltd/Bruger Du Plessis Familie Trust is a highly commercial agricultural (farming) unit, which is currently being farmed on a commercial basis. The farms are situated within an area surrounded by other farms and farming communities.
The closest town to the farm is the town of Kakamas. A very competent and motivated workforce manages the other properties as part of company. It has many success stories, which contributes positively to the local economy and the provision of job opportunities in the region and the Northern Cape Province.

It is envisaged that Oseiland will need to create some new permanent and a number of new seasonal employee positions in the near future should the new development be approved. The entity also plans to convert some of the current seasonal positions to permanent positions should this application be successful.
As mentioned before, table grape production is very labour-intensive, even more so if packed as well. It creates around 4 new employment positions per hectare if also packed on the farm. Citrus production plus the raisin plant creates another 1 position per hectare.

The new development will therefore create an immediate need to appoint more workers and supervisors.
The new development will lead to the expansion of the farming operation, and will create a demand for new staff and new skills, eg.
- Skilled agricultural labourers
- Specific knowledge of vineyards and citrus fruit production will be needed
- Specific knowledge of fruit packing will be needed
- Support staff will be needed: Admin, forklift drivers, tractor operators and Code 14 drivers.

Preference will be given to black/coloured people for these positions, and more specific black/coloured women where possible.
Existing employees with experience on the farm, plus the potential to be leaders, will in the first place be identified for new supervisory positions.

Economic:
In a rural area such as this with a high unemployment rate, any new employment positions have a huge impact on the immediate and extended families of such new workers. Add then also the impact of more people with proper housing, undergoing skills training and going to church, sport, etc. and children going to school, to understand the positive impact on this rural community. Even seasonal work opportunities has the advantage of extra income plus the opportunity to gain skills that can in future be used to gain permanent employment on the farm or elsewhere.
Not only are the new employment opportunities important, but also the fact that:
1. Existing jobs can be secured: Enough water and farming development will directly secure existing and new job opportunities.
2. More sustainable development will immediately create the opportunity to proceed with the expensive exercise to plant new varieties that can spread the preparation, pruning, harvesting and packing seasons over longer periods. This will support the entity in their efforts to convert as much as possible seasonal job opportunities into permanent job opportunities. Especially black females from the farm and neighbouring towns will benefit here. The positive impact on their lives will even be more as more of them will now also be promoted to supervisor level to help manage the increased production as well as the increase in value-adding volume.
3. The increase in production of export produce will bring more foreign capital to South Africa which is much needed to strengthen our economy and as such fully supported by Government.

The Agri-BEE report has been prepared and is attached at Appendix 11.3.3 to the EIR. This report aims to:
- Report on the social and economic management of access to a new water use license as part of this specific farm and land area,
- Outline an Agri-BEE Strategy that is aimed at employment, promoting and development of people, with specific emphasis on previously disadvantaged black people, inclusive of black women and rural people.

This Agri-BEE Management Report details a summary of the Applicant's current status, as well as a transformation programme where Oseiland sets out exactly how progress is going to be made in all the content areas and applicable elements on the Agri-BEE Scorecard.

2.5 Access

There is an existing access for all areas proposed for cultivation.

2.6 Electricity

The development falls within the capacity of Eskom. No additional capacity necessary.

2.7 Land uses

The planned development is situated within a purely agricultural area with no other land uses in close proximity. The proposed development will therefore have no impact on any surrounding land uses in the area.

2.8 Plough certificate

A plough certificate has already been applied for as part of Appendix D in the WULA included in the EIA phase of the development.

2.9 Water Use License

An application for a license in terms of the National Water Act, 1998 is being made by the developer, Oseiland Boerderye for the transfer water rights, taking of water from the Orange River, in addition to the application to impede the flow of water and to alter the beds, banks and course of the watercourses on site summarised as the followed:

Section 21(a) taking water from a water resource: Transfer of water rights

Section 21(c) impeding or diverting the flow of water in a watercourse: Impeding flow

Section 21(i): altering the bed, banks, course or characteristics of a watercourse: Altering the banks of a water course

Refer to Appendix 11.3.4 in the EIR for the WULA.

2.10 Ephemeral stream and drainage areas

The drainage lines for most of the year are dry and sandy and flow for short periods after relatively heavy rains. Refer to further details contained in the WULA referred to above in Section 2.9.

3 Management Programme – Construction

Please note that the EMP must be included in any tender documentation and all sub-contractors on the site must be made aware of this EMP and they must at all times adhere to the procedures specified.

Only those sections applicable to the specific construction activity are relevant and to be implemented.

3.1 Contractual obligations

1) The Contractor shall acknowledge receipt of copies of the EMP and confirm in writing that he has familiarised himself with the contents thereof;
2) The Contractor shall comply with all environmental obligations imposed by the RE/ECO/EO.
3) The Contractor shall co-operate fully with the RE/ECO/EO and use his best endeavours to ensure that the objectives of the EMP are fulfilled in the course of the Contractor's execution of the works or the relevant part thereof.
4) The Contractor shall erect an information board containing background information for the construction activity and listing the relevant contact details for complaint.
5) The Contractor must ensure that all workers are given environmental awareness training on the requirements of the EMP. This must form part of the Contractor's contract agreement. The RE/ECO/EO must be informed in writing of implementation.
6) Working hours will be from 7:00pm to 18:00pm Monday to Saturday. No work will be allowed on Sundays or public holidays.
7) Deliveries will only be allowed between 8:00am and 5pm.
8) Preference must be given to local labour.
9) Workers (except security guards) may not be housed on site.

3.2 Penalties

Penalties will be instituted for non-compliance. The penalty is over and above the cost of rectifying the problem and/or damage. Penalties will vary on a sliding scale from R 1 000 to R 20 000 for non-serious to serious issues as determined by the RE/ECO/EO/EO.

These penalties must be paid into a separate account to be administered by the developer. The RE/ECO/EO/EO will decide how the penalties, if any, are to be spent.

3.3 Methodology statement

A methodology statement must be compiled by the contractor(s) before any construction or activity may commence. The statement must include a site establishment plan indicating all relevant areas. The RE/ECO/EO must approve the methodology statement.

The activity indicated highlighted in yellow in the following list will as a minimum require a statement. The contractor must identify any other statements that will be required as part of the project implementation. The method statement must contain the following:

Blasting

- Details of all methods and logistics associated with blasting.

Bunding

- Method of bunding for static plant.

Camp establishment

- Layout and preparation of the construction camp.
- Method of installing fences required for "no go" areas, working areas and construction camp areas.
- Preparation of the working area.

Cement /concrete batching

- Location, layout and preparation of cement/ concrete batching facilities including the methods employed for the mixing of concrete including the management of runoff water from such areas.

Contaminated water

- Contaminated water management plan, including the containment of runoff and polluted water.

Drilling and jack hammering

- Method of drill coring with water or coolant lubricants.
- Methods to prevent pollution during drilling operations.

Dust

- Dust control.

Earthworks

- Method for the control of erosion during bulk earthwork operations.
- Method of undertaking earthworks, including hand excavation and spoil management.

Emergency

- Emergency construction method statements.

Environmental awareness course

- Logistics for the environmental awareness course for all the Contractors employees.
- Logistics for the environmental awareness course for the Contractors management staff.

Erosion control

- Method of erosion control, including erosion of spoil material

Exposed aggregate finishes

- The method of control, treatment and disposal with respect to exposed aggregate finishes.

Fire, hazardous and poisonous substances

- Handling and storage of hazardous wastes.
- Emergency spillage procedures and compounds to be used.
- Emergency procedures for fire.
- Use of herbicides, pesticides and other poisonous substances.
- Methods for the disposal of hazardous building materials including asbestos, fibre claddings, refrigerants and coolants.

Fuels and fuel spills

- Methods of refuelling vehicles.
- Details of methods for fuel spills and clean-up operations.
- Refuelling of construction vehicles in high flow areas [or in the 1 in 50 year floodplain].
- Method of refuelling dredger during dredging operations.

Solid waste management

- Solid waste control and removal of waste from Site.
- Methods for the disposal of vegetation cuttings, tree trunks, building materials or rubble generated by construction.

Sources of materials

- Details of materials imported to the site (where applicable).

Sensitive environments

- Proposed construction methods within any sensitive environments. These can include but are not limited to wetlands, intertidal zones and estuaries.

Traffic

- Traffic safety measure for entry/ exit onto/ off public roads.
- Traffic control when crossing roads or pedestrian routes with construction activities.

Vegetation clearing

- Method of vegetation clearing during site establishment.

Wash areas

- Location, layout, preparation and operation of all wash areas, including vehicle wash, workshop washing and paint washing and clearing.

3.4 Environmental awareness training

1) All the Contractors employees and Sub-Contractors employees and any suppliers employees that spend more than 1 day a week or four days in a month on site, must attend

an Environmental Awareness Training course presented by the Contractor the first of which shall be held within one week of the Commencement Date. Subsequent courses shall be held as and when required.

2) The Engineer/ECO will provide the Contractor with the course content for the environmental awareness training course, and the Contractor shall communicate this information to his employees on the site, to any new employees coming onto site, to his subcontractors and to his suppliers.
3) The Contractor shall supply the Engineer/ECO with a monthly report indicating the number of employees that will be present on site during the following month and any changes in this number that may occur during the month.
4) The Contractor shall submit a Method Statement detailing the logistics of the environmental awareness training course.

3.5 Demarcation and protection

1) The property must be fenced prior to start of construction to determine the construction/work area. Proper access control must be implemented to ensure that only authorised people obtain access to the site.
2) No-Go which include sensitive areas must be clearly demarcated prior to commencing of demolition and/or earthworks/building operations.
3) The contractor must ensure that fencing and/or demarcations are maintained for the duration of the project.
4) Although not limited to, No-Go areas.
5) No work outside of the property boundary will be allowed.
6) Special features shall be marked on a site layout plan prior to any works commencing on site. These areas may be designated "No go" areas.
7) Outcrops, rock faces, trees and natural vegetation or any other natural or special features inside and outside the Site, shall not be defaced, painted for benchmarks for survey or any other purposes or otherwise damaged in any way without the prior approval of the Engineer/ECO. These features shall be demarcated as "no go" areas and shall be fenced or similarly protected, as determined by the Engineer/ECO.

3.6 Site clearing

1) Prior to earthworks (including site clearance) starting on site, a search and rescue operation for bulbs and other indigenous plants of value, as detailed in the environmental approval shall be undertaken. This will be done in accordance with the outcome of the Application to DENC for removal of bulbs on site.
2) The stripping and separation of topsoil shall occur as stipulated by the Engineer/ECO/EO. As a guide the upper 250 mm of soil (topsoil, which includes roots and leaf litter) shall be placed separately. This soil shall be used for re-shaping and filling as required.

3.7 Aesthetics

The aesthetics measures indicated below should be implemented as required by the specific site and situated and as agreed with the RE/ECO/EO/EO.

1) The Contractor shall be required to visually screen the site.
2) Visual screening shall be aesthetically pleasing and shall be erected by the Contractor prior to commencing any activities.
3) Visual screening shall be maintained by the Contractor for the duration of the Contract.
4) Visual screening may be of the following types:
    a) Shade cloth
    b) Hessian
    c) Berms

3.8 Contractor's camp

1) The Contractor's camp, offices, and storage facilities shall not be located within an environmentally sensitive area. The camp's position must be approved by RE/ECO/EO.
2) The camp must be fenced as agreed with the RE/ECO/EO.
3) Water from the kitchens, showers, sinks etc., shall be discharged in a manner approved by the RE/ECO/EO.
4) The contractor must ensure that all temporary structures, equipment, materials, and facilities used or created on-site during the construction phase are removed and appropriately disposed of.

3.9 Sensitive environments

3.9.1 Vegetation

The measures detailed in Section 2.1 above from the Botanical Survey (Appendix C) should be implemented.

3.9.2 Heritage, Archaeology and Palaeontology

The measures detailed in Section 2.3 above outlined in the comment from SAHRA and referring to the Heritage Impact Assessment Report (Appendix D) should be implemented.

3.9.3 Ephemeral streams/drainage areas

Mitigation
As part of the construction of the development it is proposed to construct a storm water berm/canal surrounding the agricultural areas to prevent any contamination downstream into any of these ephemeral streams/drainage areas, where applicable.

3.9.4 Fauna

The measures detailed in Section 2.2 above should be implemented.

3.9.5 Sewage disposal

Chemical toilets will be provided for the workers in the vineyard/ agricultural land. These toilets will be emptied on a daily basis in the sewage tank system at the households and at the packing sheds.

Mitigation
With regard to the development work at the site it must be ensured that the applicant/ contractor provide sufficient sanitation facilities for the use of his employees during the actual construction period. The applicant/ contractor will be solely responsible for the proper use and maintenance thereof in conditions, which are to the satisfaction of both the contractor and the applicant. All facilities must be positioned within walking distance from wherever employees or labourers are at work.

Other specifications to be adhered to are, amongst others, the following;

- All facilities provided at the site must comply with the requirements of the Local Municipality.
- No sewerage facility may be erected within a radius of 100m from a water source.
- The applicant/ contractor must be held responsible for the cleaning of the sanitary facilities to prevent health hazards for the duration of the contract.
- Sanitary facilities must be provided at a ratio of one (1) facility for every fifteen (15) persons.
- All sanitation facilities must be sited, in terms of the specifications of the National Water Act no. 36 of 1998, in such a way that they do not cause water- or other pollution.

3.9.6 Solid waste disposal

The application area is located within the municipal area of Kai! Garib Municipality. No household waste will be generated as part of this application.

All facilities in use during the construction phase must be utilized and maintained in a manner that prevents pollution of any groundwater sources. No waste of any kind may be disposed of in the surrounding environment.

Mitigation
A no-nonsense approach with regard to littering on the farm exists and the neatness of the workplace as well as the residential areas is all high priorities for the management.

Sufficient provision should be made for rubbish bins on the farm to prevent workers from littering. These rubbish bins should be clearly marked and be visible.

3.9.7 Air and noise pollution

Air Pollution

During the construction phase, and due to the nature of the project, a small amount of smoke (from machines) and dust could be generated. Dust pollution may have an impact on the operational workers.

Mitigation

In order to minimize the effect of dust pollution, the construction area should be kept wet as far as possible and the workers must wear the necessary safety clothing. The applicant is referred to section 19 of the National Water Act no. 36 of 1998 with regard to the prevention of, and remedies for, the effects of pollution. In terms of this section of the Act, the person who owns controls, occupies or uses the land in question is responsible for taking measures to prevent pollution of water resources and property.

Noise Pollution

During the construction phase there may be minimal and sporadic incidents of air and noise pollution due to the construction activities such as dust and noise as a result of earthworks. Due to the fact that the area is situated within an agricultural environment, the impact is not expected to be severe.

Mitigation

The contractor should make adequate provision to prevent or minimize the possible effects of air and noise pollution. Should the noise from the construction work be found to cause problems, (which is not anticipated to be the case) work hours in these areas may be restricted between 06:00 and 20:00, or as otherwise agreed between the parties involved. Strict measures should therefore be enforced, especially in terms of the contract specifications, to prevent any negative impacts in this regard.

3.9.8 Conditions set out in the WULA

All conditions to be outlined in the approved WULA should be implemented.

3.10 Cement mixing/batching plant

1) The cement mixing or batching plant area(s) must be indicated on the Site Establishment Plan.
2) All wastewater resulting from batching of concrete shall be disposed of via the wastewater management system where available.
3) The cement/ concrete batching works shall be kept neat and clean at all times. No batching activities shall occur on unprotected substratum of any kind.
4) All runoff from batching areas shall be strictly controlled, and cement-contaminated water shall be collected, stored and disposed of at a site approved by the Engineer/ECO/EO. Dagga boards, mixing trays and impermeable sumps shall be used at all mixing and supply points. Contaminated water shall be disposed at a waste disposal site approved by the Engineer/ECO/EO.

5) Contaminated water storage facilities shall not be allowed to overflow and appropriate protection from rain and flooding shall be implemented.
6) Contaminated water treatment on Site shall require a method statement approved by Engineer/ECO/EO.
7) Unused cement bags are to be stored so as not to be effected by rain or runoff events.
8) Used bags shall be stored in weatherproof containers to prevent wind-blown cement dust and water contamination. Used bags shall be disposed of on a regular basis via the solid waste management system, and shall not be used for any other purpose.
9) Concrete transportation shall not result in spillage.
10) Cleaning of equipment and flushing of mixers shall not result in pollution of the surrounding environment: Care shall be taken to collect contaminated wash water from cleaning activities and dispose of it in a manner approved by the Engineer/ECO/EO. To prevent spillage onto roads, ready mix trucks shall rinse off the delivery shoot into a suitable sump prior to leaving Site.
11) Suitable screening and containment shall be in place to prevent wind-blown contamination associated with bulk cement silos, loading and batching.
12) With respect to exposed aggregate finishes, the Contractor shall collect all contaminated water & fines and store it in sumps for disposal at an approved waste site.
13) All visible remains of excess concrete shall be physically removed on completion of the plaster or concrete pour section and disposed of. Washing the remains into the ground is not acceptable. All excess aggregate shall also be removed. Any mixed cement (for building or plastering) at the work area must be placed on boards or container to prevent spillage or contamination of the soil.
14) During cement delivery boards or other protection material must be used to prevent spilling on the ground.
15) No mixed concrete/dagga may be placed or stored on bare surfaces. Dagga boards must be use at all times to prevent contamination of surfaces.

3.11 Surface and groundwater pollution

1) The Contractor shall take all reasonable steps to prevent pollution of surface and groundwater as a result of his activities. Such pollution could result from release (accidental or otherwise) of chemicals, oils, fuels, paint, and sewage, water from excavations, construction water, water carrying soil particles or waste products.
2) Cement or concrete mixing must take place in such a way as to prevent any cement water runoff. All pieces of cement or related material are to be stored and dumped at the approved Municipal site.
3) Bulk cement silos and storage areas must be properly lined/screened/contained to prevent windblown cement dust or pollution of water during rain events.
4) On completion, storm water catchpits must be closed with geotextile (biddim) or similar material to prevent sand or other contaminants from entering the system.

5) Ready-mix trucks are not permitted to clean chutes at the work site.
6) Adequate plastic or concrete lined cleaning pits are to be installed to facilitate washing of all cement and painting equipment. A functional, non-leaking, water point must be installed at each pit. The top 75% of the water in the pit may be disposed down the sewerage system, with approval from the Engineer. The remaining water and sludge must be disposed of at a Municipal approved site or removed by a chemical contractor.
7) The Contractor shall provide water and/or washing facilities at the construction camp for personnel.
8) In the event of any pollution entering any water body, the Contractor shall inform the RE/ECO/EO immediately.
9) The contractor will be responsible for any clean-up costs involved should pollution, erosion or sedimentation have taken place.

3.12 Pipe testing and cleaning

1) Cleaning/flushing of pipelines shall not impair (down grade) downstream baseline water quality.
2) Materials used in the sterilisation of pipelines, viz. chlorine solutions shall be treated as hazardous substances and disposed of at an approved landfill site.
3) Litter traps shall be installed and maintained at the outflow of all pipelines.

3.13 Noise control

1) Working hours will be restricted to daily normal working hours.
2) Limit the use of heavy vehicle machinery and construction activities associated with high level noise to 06h00 to 20h00 from Mondays to Saturdays, particularly to where residential areas or sensitive institutions are situated close to the site.
3) All noise and sounds generated by plant or machinery must adhere to SABS 0103 specifications for the maximum permissible noise levels for residential areas.
4) All plant and machinery are to be fitted with adequate silencers.
5) No sound amplification equipment such as sirens, loud hailers or hooters may be used on site, after normal working hours, except in emergencies.
6) If work is to be undertaken outside of normal work hours, permission must be obtained from the Local Authority. Prior to commencing any such activity the Contractor is also to advise the potentially affected neighbouring residents. Dates, times and the nature of the work to be undertaken are to be provided. Notification could include letter-drops.
7) The acceptable noise level according to SABS 10103 Code of Practice is 45dBA in rural district during the day and 35dBA at night. The applicant must comply/adhere to this requirement.

3.14 Erosion control

The Contractor shall take all reasonable precautions to prevent soil erosion resulting from a diversion, restriction or increase in the flow of storm water or water resulting from its operations and activities, to the satisfaction of the RE/ECO/EO. Possible measures that can be considered include the following:

1) Brushcut packing
2) Mulch or chip cover
3) Straw stabilising (at the rate of one bale/m² and rotated into the top 100mm of the
4) completed earthworks)
5) Watering
6) Planting / sodding
7) Hand seeding sowing
8) Hydro-seeding
9) Soil binders and anti-erosion compounds
10) Mechanical cover or packing structures
    a) Gabions & mattresses
    b) Geofabric
    c) Hessian cover
    d) Armourflex
    e) Log / pole fencing
    f) Retaining walls
11) The Contractor shall take reasonable measures to control the erosive effects of storm water runoff.
12) The Contractor shall use silt screens to prevent overland flowing water from causing erosion.
13) The use of straw bales as filters, which are placed across the flow of overland storm water flows, shall be used as an erosion protection measure.
14) The ploughing-in of straw offers limited protection against storm water runoff induced erosion and shall be used as an erosion protection measure.
15) The Contractor shall be liable for any damage to downstream property caused by the diversion of overland storm water flows.

3.15 Dust control

DUST - generated by works

1) Sand stockpiles are to be covered with hessian, shade cloth or DPC plastic.

2) Stockpiles are to be located in sheltered areas and the usable/cut face orientated away from the direction of the prevailing wind for that season.
3) Excavating, handling or transporting erodable materials in high wind or when dust plumes visible shall be avoided.
4) If high winds prevail the Engineer shall decide whether water dampening measures or cessation of activities is required, and if necessary they shall have the authority to temporarily stop certain of the works until wind conditions become more favourable.

Dust – generated by roads and vehicle movement

1) Vehicle speeds shall not exceed 40km/h along gravel roads or 20km/h on unconsolidated or non-vegetated areas. Dust plumes created by vehicle movement are to be monitored.
2) If access roads are generating dust beyond acceptable levels dust suppression measures must be initiated. These include, but are not limited to the following:
3) Reduction of travelling speeds along the road.
4) Restriction of vehicle or plant usage.
5) Application of chemical soil binders.
6) Application of a suitable sacrificial road surfacing.
7) If water is to be used for dust suppression, then only the critical areas should be watered. The use of water carts or hand watering is preferable. Overhead sprayers shall not be permitted in windy conditions, as the evaporation loss is too high. Watering is to be supervised to prevent unnecessary water wastage, and runoff into potentially sensitive areas. Preferable watering times are early morning and late afternoon/ evening. Water restrictions are to be observed if in place.

3.16 Fire management

1) No open fires or naked flames for heating or cooking shall be allowed on Site. Stoves and other electrical equipment shall only be permitted in the Contractor's camp and never be left unattended.
2) The Contractor shall take all reasonable and active steps to avoid increasing the risk of fire through their activities on Site. No fires may be lit except at places approved by the Engineer/ECO/EO.
3) The Contractor shall ensure that the basic fire-fighting equipment is to the satisfaction of the Municipal Fire Chief (where applicable).
4) The Contractor shall supply all living quarters, site offices, kitchen areas, workshop areas, materials, stores and any other areas identified by the Engineer/ECO/EO with tested and approved fire-fighting equipment.
5) Fire and "hot work" shall be restricted to a site approved by the Engineer/ECO/EO
6) A braai facility may be considered at the discretion of the Engineer/ECO/EO. The area shall be away from flammable stores. All events shall be under management supervision and a fire extinguisher shall be immediately available. "Low smoke" fuels shall be used. Smoke free zoning regulations shall be considered.

7) Cooking shall be restricted to bottled gas facilities under strict control and supervision. The sensitivity of the surrounding land uses and occurrence of natural indigenous vegetation must be considered when assessing the risk of fires.
8) The Contractor shall take precautions when working with welding or grinding equipment near potential sources of combustion. Such precautions include having a suitable, tested and approved fire extinguisher immediately at hand and the use of welding curtains.
9) The Contractor shall identify the authorities responsible for fighting fires in the area and shall liaise with them regarding procedures should a fire start. The Contractor shall ensure that his staff are aware of the fire danger at all times and are aware of the procedure to be followed in the event of a fire. The Contractor shall also ensure that all the necessary telephone numbers etc. are posted at conspicuous and relevant locations in the event of an emergency. The Contractor shall advise the relevant authority of a fire as soon as one starts and shall not wait until he can no longer control it.
10) Should a contractor be found responsible for the outbreak of a fire, he shall be liable for any associated costs.

3.17 Water management

1) The Contractor shall provide water for drinking and construction purposes until such time as it is available from the local system. Water from the local system must be used carefully and sparingly with the view of not wasting water.
2) Taps are to be attached to secure supports and leaking taps and hosepipes are to be repaired immediately.
3) Watering as dust suppression must be undertaken as a last resort. It is preferable that sand stockpiles be covered rather than watered.

3.18 Waste management

1) A waste minimisation approach must be followed. This requires recycling wherever possible. All waste therefore to be suitably contained and removed regularly from site in accordance with the municipal waste management procedures. Other examples could include the use of rubble as fill, minimisation of waste concrete and the use of brush cuttings for mulching on rehabilitated areas.
2) The Contractor shall be responsible for the establishment of a refuse control and removal system that prevents the spread of refuse within and beyond the construction sites.
3) The Contractor shall ensure that all refuse is deposited in refuse bins, which he shall supply and arrange to be emptied on a weekly basis. Refuse bins shall be of such a design that the refuse cannot be blown out and that animals or birds are not attracted to the waste and spread it around. Refuse bins shall be water tight, wind-proof and scavenger-proof and shall be appropriately placed throughout the site. Refuse must also be protected from rain, which may cause pollutants to leach out. Refuse bins shall be appropriately placed throughout the Site and shall be conspicuous (e.g. painted bright yellow).
4) Refuse shall be disposed of at an approved waste site (site and method to be agreed with Local Authority). Refuse shall not be burnt or buried on or near the Site.

5) The Contractor shall provide labourers to clean up the Contractor's camp and Site on a weekly basis.

6) The Contractor shall also clean the Contractor's camp and Site of all structures, equipment, residual litter and building materials at the end of the contract.

3.19 Toilets

1) The Contractor shall be responsible for providing all sanitary arrangements for construction and supervisory staff on the site. A minimum of one chemical toilet shall be provided per 15 persons. Toilets provided by the Contractor must be easily accessible and within a practical distance from the workers. Toilets shall be located within areas of low environmental importance. The toilets shall be of a neat construction and shall be provided with doors and locks and shall be secured to prevent them blowing over. Toilets shall be placed outside areas susceptible to flooding.

2) The Contractor shall keep the toilets in a clean, neat and hygienic condition. The Contractor shall supply toilet paper at all toilets.

3) The Contractor shall be responsible for the cleaning, maintenance, servicing and emptying of the toilets on a regular basis (by chemical contractor). No waste to be dumped in the bush or stream. The Contractor shall ensure that the toilets are emptied before the builders' or other holidays and the waste be stored and disposed of at an appropriate place off site. The Contractor shall ensure that no spillage occurs when chemical toilets are cleaned and emptied. The Contractor shall supply a contingency plan for spills from toilets.

4) Performing ablutions in any other area is strictly prohibited.

5) The location for construction camps and toilets must be approved by the ECO.

3.20 Blasting and drilling

1) A current and valid authorisation shall be obtained from the relevant authorities and copied to the Engineer/ECO/EO prior to any blasting activity.

2) A Method Statement shall be required for any blasting or drilling related activities.

3) All Laws and Regulations applicable to blasting/drilling activities shall be adhered to at all times.

4) A qualified and registered blaster shall supervise all blasting and rock splitting operations at all times.

5) The Contractor shall ensure that appropriate pre blast monitoring records are in place (i.e. photographic and inspection records of structures in close proximity to the blast area).

6) The Contractor shall allow for good quality vibration monitoring equipment and record keeping on Site at all times during blasting operations.

7) The Contractor shall ensure that emergency services are notified, in writing, a minimum of 24 hours prior to any blasting activities commencing on Site.

8) The Contractor shall take necessary precautions to prevent damage to special features and the general environment, which includes the removal of flyrock. Environmental damage caused by blasting / drilling shall be repaired at the Contractors expense to the satisfaction of the Engineer/ECO/EO.
9) The Contractor shall ensure that no pollution results from drilling operations, either as a result of oil and fuel drips, or from drilling fluid.
10) Drill coring with water or coolant lubricants shall require a Method Statement approved by the Engineer/ECO/EO.
11) The Contractor shall ensure that adequate warning is provided immediately prior to all blasting/drilling. All signals shall also be clearly given.
12) The Contractor shall use blast mats for cover material during blasting.
13) During demolition the Contractor shall ensure, where possible, that trees in the area are not damaged.
14) Appropriate blast shaping techniques shall be employed to aid in the landscaping of blast areas, and a Method Statement to be approved by the Engineer/ECO/EO, shall be required in this regard.
15) At least one week prior to blasting or drilling/jack hammering, the relevant occupants/owners of surrounding land shall be notified by the Contractor and any concerns addressed. Buildings within the potential damaging zone of the blast shall be surveyed preferably with the owner present, and any cracks or latent defects pointed out and recorded either using photographs or video. Failing to do so shall render the Contractor fully liable for any claim of whatsoever nature, which may arise. The Contractor shall indemnify the Employer in this regard.

3.21 Fuel and chemical management

1) No open fires or naked flames for heating or cooking shall be allowed on Site. Stoves and other electrical equipment shall only be permitted in the Contractor's camp and never be left unattended.
2) The Contractor shall take all reasonable and active steps to avoid increasing the risk of fire through their activities on Site. No fires may be lit except at places approved by the Engineer/ECO/EO.
3) The Contractor shall ensure that the basic fire-fighting equipment is to the satisfaction of the Municipal Fire Chief (where applicable).
4) The Contractor shall supply all living quarters, site offices, kitchen areas, workshop areas, materials, stores and any other areas identified by the Engineer/ECO/EO with tested and approved fire fighting equipment.
5) Fire and "hot work" shall be restricted to a site approved by the Engineer/ECO/EO
6) A braai facility may be considered at the discretion of the Engineer/ECO/EO. The area shall be away from flammable stores. All events shall be under management supervision and a fire extinguisher shall be immediately available. "Low smoke" fuels shall be used. Smoke free zoning regulations shall be considered.
7) Fires within National Parks, Nature Reserves and natural areas are prohibited.

8) Cooking shall be restricted to bottled gas facilities under strict control and supervision. The sensitivity of the surrounding land uses and occurrence of natural indigenous vegetation must be considered when assessing the risk of fires.

9) The Contractor shall take precautions when working with welding or grinding equipment near potential sources of combustion. Such precautions include having a suitable, tested and approved fire extinguisher immediately at hand and the use of welding curtains.

10) The Contractor shall identify the authorities responsible for fighting fires in the area and shall liaise with them regarding procedures should a fire start. The Contractor shall ensure that his staff are aware of the fire danger at all times and are aware of the procedure to be followed in the event of a fire. The Contractor shall also ensure that all the necessary telephone numbers etc. are posted at conspicuous and relevant locations in the event of an emergency. The Contractor shall advise the relevant authority of a fire as soon as one starts and shall not wait until he can no longer control it.

11) Should a contractor be found responsible for the outbreak of a fire, he shall be liable for any associated costs.

3.22 Contaminated water

General

1. The Engineer/ECO/EO's approval will be required prior to the discharge of contaminated water to the Municipal sewer system.
2. The Contractor shall prevent discharge of any pollutants, such as cements, concrete, lime, chemicals and fuels into any water sources.
3. Water from kitchens, showers, laboratories, sinks etc. shall be discharged into a conservancy tank for removal from the site.
4. Runoff from fuel depots/workshops/truck washing areas and concrete swills shall be directed into a conservancy tank and disposed of at a site approved by the Engineer/ECO and Local Authority.
5. The contaminated water, contaminated run-off, or effluent released into a water body requires analysis in terms of the National Water Act. Contaminated water must not be released into the environment without authorisation from the relevant authority.

Washing areas

1. Wash areas shall be placed and constructed in such a manner so as to ensure that the surrounding areas, which include groundwater, are not polluted.
2. A Method Statement shall be required for all wash areas where hydrocarbon and hazardous materials, and pollutants are expected to be used. This includes, but is not limited to, vehicle washing, workshop wash bays, paint wash and cleaning.
3. Wash areas for domestic use shall ensure that the disposal of contaminated "grey" water is sanctioned by the Engineer/ECO.

3.23 Vehicles and access roads

1) The movement of any vehicles and/ or personnel outside of the designated working areas shall not be permitted without the written authorisation of the Engineer/ECO.
2) Should the Contractor not exercise sufficient control to restrict all work to the area within the marker boundaries, then these on instruction of the Engineer/ECO/EO shall be replaced by fencing the additional cost of which shall be borne by the Contractor.
3) Dust control measures such as dampening with water shall be implemented where necessary, as indicated by the Engineer/ECO.
4) Access and haul roads shall be maintained by the Contractor.
5) Maintenance includes adequate drainage and side drains, dust control and restriction of edge use.
6) All temporary access routes shall be rehabilitated at the end of the contract to the satisfaction of the Engineer/ECO.
7) All public roads shall be kept clear of mud and sand. Mud and sand that has been deposited through construction activities shall be cleared regularly.
8) Any materials used for layer works shall be approved by the Engineer/ECO prior to the activity commencing.
9) Damage to the existing access roads as a result of construction activities shall be repaired to the satisfaction of the Engineer/ECO/EO, using material similar to that originally used. The cost of the repairs shall be borne by the Contractor
10) Traffic safety measures, to the satisfaction of the Engineer/ECO, shall be considered in determining entry / exit onto public roads.
11) All users of haul roads shall not exceed 45 km/h (cars)/ 15 km/h (trucks) {note that the standard spec places a site speed limit of 45 km/h for all vehicles}
12) Appropriate traffic warning signs shall be erected and maintained where applicable.
13) Trained and equipped flagmen shall be used where the access road intersects with any public roads.
14) Attention shall be paid to minimising disruption of the flow of traffic and reducing the danger to other road users and pedestrians.
15) Method statements are required for the following:-
    a) Traffic safety measures with regard to entry and exit on public roads and the control of construction traffic.
    b) Proposed route for new access roads, tracks, or haul roads; the proposed construction of new roads, and the method of upgrading existing roads; and the proposed methods of rehabilitation on completion.

3.24 Stockpiling of materials

The Contractor shall temporarily stockpile topsoil materials in such a way that the spread of materials is minimised, and thus the impact on the natural vegetation. The stockpiles must be placed within areas demarcated for this purpose. The RE/ECO/EO shall approve stockpile areas.

3.25 Heritage remains

Should any heritage remains be exposed during excavations, these must immediately be reported to the Provincial Heritage Resources Authority of the Northern Cape, SAHRA. Heritage remains uncovered or disturbed during earthworks must not be disturbed further until the necessary approval has been obtained from SAHRA.

3.26 Contingency planning

In the event of a spill or leak of product into the ground and/or water courses (e.g. that of hazardous substances used for the construction phase), such incidents must be reported (within 14 days) to all the relevant authorities including the Directorate: Pollution Management in accordance with Section 30(10) of the National Environmental Management Act No. 107 of 1998 (NEMA) and Section 20 (3) of the National Water Act No.36 of 1998 (NWA), that pertains to the control of emergency incidents and the remediation of the affected area. All necessary documentation must be completed and submitted within the prescribed timeframes.

Containment, clean-up, and remediation must commence immediately.

3.27 Environmental Control Officer or Resident Engineer

An Environmental Control Officer (ECO) will implement environmental control of the development. The ECO duties will be as follows:

- Ensure implementation and monitoring of the EMP.
- Make changes to the EMP as required.
- Visit the site regularly on at least a weekly basis.
- Prepare reports as required by mitigation measures or by the EA.
- Maintain a photographic record of the work and environmental issues.

3.28 Documentation control

The ECO will maintain a file containing the following:

- Copy of the EMP
- Methodology statement(s) by the contractor(s)

- Site establishment plan
- Letter from contractor(s) indicating that he has familiarised himself with the contents of the EMP.
- Letter from contractor(s) on environmental awareness training
- The applicant must ensure that complaints received by the farm are documented.
- The contractor should maintain a copy of the following documents on-site:
    - All methodology statements;
    - Emergency response and remedial action plan;
    - Environmental Management Plan (EMP) and other documents related to the operation on file.
- Tracking table (see Appendix B)

4 Management Programme – Operational

This section will only make reference to Operational Management measures.

4.1 Water Use License

If any recommendations or measures are outlined in the WULA they should be included in this section.

4.2 Water Management Section

The proposed development of the agricultural areas will in effect result in the following measures to reduce energy and water usage:

- The irrigation system to be used is DFM method along with irri-check calibrations and recommendations.
- Test pits and data collections from these pits are taken on a regular basis to determine the moisture content for soil etc.
- Soil coverage within the vineyards with chaff.
- Regular monitoring and checks from specialists in the field to introduce best possible irrigation practices.
- Preventative measures to reduce possible spillage or silt accumulation in lower streams from storm water accumulated during heavy rains. Placing of bales within streams in lower areas before entering streams.

4.3 Maintenance of infrastructure

The Applicant will ensure that all pump infrastructure is maintained at the water extraction point along the Orange River, to prevent leakages of hazardous substances contaminating the soil and water. Any parts that are replaced shall be removed from the site on the same day that the repair and maintenance takes place.

4.4 Contingency planning

In the event of a spill or leak of product into the ground and/or water courses (e.g. that of hazardous substances used for the construction phase), such incidents must be reported (within 14 days) to all the relevant authorities including the Directorate: Pollution Management in accordance with Section 30(10) of the National Environmental Management Act No. 107 of 1998 (NEMA) and Section 20 (3) of the National Water Act No.36 of 1998 (NWA), that pertains to the control of emergency incidents and the remediation of the affected area. All necessary documentation must be completed and submitted within the prescribed timeframes.

Containment, clean-up, and remediation must commence immediately.

Appendix A: Environmental authorisation

Included once received.

Appendix B: Tracking Table

Requirement	Received		Date	Comment
	Yes	No		
Methodology statement				
Site establishment plan				
Letter re contents of EMP				
Letter re awareness training				

Appendix C: Botanical Survey Report

Included in the Environmental Impact Assessment Report

Appendix D: Heritage Impact Assessment Report

Included in the Environmental Impact Assessment Report

13 Other

13.1 Curriculum Vitae

PB Professional Services CC
PO Box 1058
Wellington 7654

Phone: 021 8737228
Cell: 076 584 0822
Fax: 0866721916
E-mail: elaniem@iafrica.com

Elanie Kühn

Nationality	South African		
Date of birth	20 February 1983		
Qualifications	B.Sc. Degree (Zoology & Physiology) B Sc. Hons.(Environmental Management)	North West University – Potchefstroom North West University – Potchefstroom	2004 2005
Special courses	None additional to the above.		
Professional membership	None		
Career	**2010 - current** **2006 - 2009** **2005**	Pieter Badenhorst Professional Services - Wellington Doug Jeffrey Environmental Consultants - Paarl DERA Environmental Consultancy – Klerksdorp (Part time while completing Hons.)	
Current position	Environmental Assessment Practitioner at Pieter Badenhorst Professional Services cc. As a private consultant now provide consultancy services in Environmental Management, Public Participation and Project Management.		
Professional experience	11 years experience in environmental studies and management. Produced various Basic Assessment, Scoping and Environmental Impact Reports, Environmental Management Plans and as an Environmental Control Officer for many developments.		
Publications/ Contracts (A full list is available on request)	Projects and work experience range from: ● Basic Assessment Reports ● Scoping and Environmental Impact Assessment reports. ● Environmental Management Plans –construction/operational/decommissioning. ● S24G Applications ● Waste License Applications ● Water Use License Applications ● Mining EMP's ● Mining Rights and Prospecting Rights applications ● Environmental Control Officer (ECO) ● Auditing Reports		

13.2 EAP declaration

This was included as part of the application form.

13.3 **Additional information**

13.4 Plan of study for EIA

PLAN OF STUDY FOR EIA

PROPOSED CONSTRUCTION OF AGRICULTURAL AREAS, PIPELINES AND ASSOCIATED INFRASTRUCTURE ON KAKAMAS SOUTH SETTLEMENT NO 2185 AND 2193, AUGRABIES, NORTHERN CAPE

CONTENTS

Note:

The regulations state that a plan of study for environmental impact assessment which sets out the proposed approach to the environmental impact assessment of the application, which must include –

"a plan of study for undertaking the environmental impact assessment process to be undertaken, including-

(i) a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;

(ii) a description of the aspects to be assessed as part of the environmental impact assessment process;

(iii) aspects to be assessed by specialists;

(iv) a description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists;

(v) a description of the proposed method of assessing duration and significance;

(vi) an indication of the stages at which the competent authority will be consulted;

(vii) particulars of the public participation process that will be conducted during the environmental impact assessment process; and

(viii) a description of the tasks that will be undertaken as part of the environmental impact assessment process;

(ix) identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored."

1 ALTERNATIVES

Four alternatives were developed during scoping. The conclusion as reported in the Scoping Report is that the following will be investigated:

Preferred option: Alternative 1
No-Go Option: Alternative 3

As outlined in the comments and response report in the draft Scoping Report:

"2.3The draft Scoping Report has identified various alternatives. Available information from especially the vegetation assessment, fresh water features and heritage indicators indicated that only Alternative 1 is a viable option and could therefore be investigated in the EIA phase. As required by the Regulations the No Go Option is compulsory for investigation in the EIA phase."

We understood Scoping to be the process in which you identify viable alternatives; this was done as indicated above. It is therefore unclear which other alternatives could be assessed.

2 SPECIALIST STUDIES & REPORTS

The following EIA specialist reports are required (see Appendix A in section 9 for Terms of Reference):

- Heritage/Archaeology Assessment
- Vegetation Report
- Socio-Economic summary report
- Water Use License Application

Apart from the EIA impact studies listed above the following information studies will also be undertaken (see Appendix B in section 10 for TOR):

- EMP

3 RESPONSE TO COMMENTS FROM SCOPING

The final comment tables from scoping (include comments on Executive Summary and draft and final Scoping Report) will be included in Appendix C in section 11. All consultants will provide responses on applicable comments in their reports.

Any comments or requirements from DENC when accepting the Scoping Report will be included in Appendix D in section 12.

4 REPORT REQUIREMENTS

The guidelines for EIA (Appendix 6 of NEMA 2014) reports state *inter alia* with reference to impact studies that the following must be included:

"Specialist reports

(1) A specialist report prepared in terms of these Regulations must contain-

(a) details of-

(i) the specialist who prepared the report; and

(ii) the expertise of that specialist to compile a specialist report including a curriculum vitae;

(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;

(c) an indication of the scope of, and the purpose for which, the report was prepared;

(d) the date and season of the site investigation and the relevance of the season to the outcome of the assessment;

(e) a description of the methodology adopted in preparing the report or carrying out the specialised process; the specific identified sensitivity of the site related to the activity and its associated structures and infrastructure;

(g) an identification of any areas to be avoided, including buffers;

(h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;

(i) a description of any assumptions made and any uncertainties or gaps in knowledge; a description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives on the environment;

(k) any mitigation measures for inclusion in the EMPr;

(I) any conditions for inclusion in the environmental authorisation;

(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;

(n) a reasoned opinion-

> *(i) as to whether the proposed activity or portions thereof should be authorised; and*
>
> *(ii)if the opinion is that the proposed activity or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;*

(o) a description of any consultation process that was undertaken during the course of preparing the specialist report;

(p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and any other information requested by the competent authority."

5 A DESCRIPTION OF THE PROPOSED METHOD OF IDENTIFYING AND ASSESSING IMPACTS

The requirements of each impact report are shown in the TOR in Appendix A in section 9. Apart from those requirements each impact report (botanical assessment report, socio-economic summary report and heritage impact assessment report) must include a section that covers the above (A) i to vii,(B) and (C). Examples of comparative assessment of impacts are shown below. Consultants must use similar methods in their reports.

IMPACTS

Apart from a summary in words the impacts and ratings must also be summarised in table form.

MITIGATION MEASURES

Apart from a summary in words the impacts and ratings must also be summarised in table form.

COMPARISON OF IMPACTS – Use actual numbers wherever possible

6 DESCRIPTION OF THE ACTIVITY TO BE UNDERTAKEN

A development diagram will be developed for each alternative together with a description of the activity. The specialist consultants will use these diagrams and descriptions to compile their impact assessment reports.

7 TASKS TO BE PERFORMED DURING EIA

7.1 Advertise and meetings

On completion of the draft EIR all I&APs on the database will be informed about the availability thereof. The various authorities will be approached directly to finalise their comments. The authorities will include DENC, DWS, Dept of Agriculture, and Kai! Garieb Municipality, and Nature Conservation.

DENC will be consulted regularly and informed about progress during the EIA phase.

8 STAGES AT WHICH DEA&DP WILL BE CONSULTED

(a) On submission of this Plan of Study for EIA.

(b) On presentation of the draft and final EIR.

(c) Draft EIR for comment to Authorities

Additional formal or informal consultation will be requested at other times in order to satisfy all environmental requirements and regulations.

9 APPENDIX A - TOR FOR SPECIALIST REPORTS

9.1 Heritage/Archaeology

INTRODUCTION

Details of the alternatives to be investigated will be made available through a layout diagram and description of each.

BASELINE STUDIES

No baseline study will be done.

LEGISLATION

Legislation would include:

The National Heritage Resources Act (NHRA) No. 25 of 1999 protects a variety of heritage resources as follows:

- Section 34: structures older than 60 years;
- Section 35: palaeontological, prehistoric and historical material (including ruins) more than 100 years old;
- Section 36: graves and human remains older than 60 years and located outside of a formal cemetery administered by a local authority; and
- Section 37: public monuments and memorials.

Following Section 2, the definitions applicable to the above protections are as follows:

- Structures: "any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith";
- Palaeontological material: "any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace";
- Archaeological material: a) "material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures"; b) "rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation"; c) "wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the Republic, as defined respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation"; and d) "features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found";
- Grave: "means a place of interment and includes the contents, headstone or other marker of such a place and any other structure on or associated with such place"; and
- Public monuments and memorials: "all monuments and memorials a) "erected on land belonging to any branch of central, provincial or local government, or on land belonging to any organisation funded by or established in terms of the legislation of such a branch of government"; or b) "which were paid for by public subscription, government funds, or a public-spirited or military organisation, and are on land belonging to any private individual."

While landscapes with cultural significance do not have a dedicated Section in the NHRA, they are protected under the definition of the National Estate (Section 3). Section 3(2)(c) and (d) list "historical settlements and townscapes" and "landscapes and natural features of cultural significance" as part of the National Estate. Furthermore, Section 3(3) describes the reasons a place or object may have cultural heritage value.

Section 38 (2a) states that if there is reason to believe that heritage resources will be affected then an impact assessment report must be submitted. This report fulfils that requirement.

For this proposed development the following is applicable:

1. Legal requirements

In terms of Section 38 (1) (c) (iii) of the National Heritage Resources Act 1999 (Act 25 of 1999), a Heritage Impact Assessment (HIA) of the proposed project is required if the footprint area of the proposed development is more than 5000m² in extent.

Section 38 (1) (a) of the Act also indicates that any person constructing a powerline, pipeline or road, or similar linear development or barrier exceeding 300m in length is required to notify the responsible heritage resources authority, who will in turn advise whether an impact assessment report is needed before development can take place.

2. Aim of the AIA

The overall purpose of the AIA is to assess the sensitivity of archaeological resources in the affected areas, to determine the potential impacts on such resources, and to avoid and/or minimize such impacts by means of management and/or mitigation measures.

The significance of archaeological resources was assessed in terms of their content and context. Attributes considered in determining significance include artefact and/or ecofact types, rarity of finds, exceptional items, organic preservation, potential for future research, density of finds and the context in which archaeological traces occur

Under the National Environmental Management Act (No. 107 of 1998; NEMA), as amended, the project is subject to an EIA. Ngwao-Boswa Ya Kapa Bokoni (Heritage Northern Cape; for built environment and cultural landscapes) and the South African Heritage Resources Agency (SAHRA for archaeology and palaeontology) are required to provide comment on the proposed project in order to facilitate final decision making by the Northern Cape Department of Environment and Nature Conservation.

IMPACT ASSESSMENT

METHODS:

Literature survey

A survey of available literature should be carried out to assess the general heritage context into which the development would be set. This literature included published material, unpublished commercial reports and online material, including reports sourced from the South African Heritage Resources Information System (SAHRIS).

Field survey

A field survey should be done. During the survey the positions of finds should be recorded on a hand-held GPS receiver set to the WGS84 datum. Photographs should be taken at times in order to

capture representative samples of both the affected heritage and the landscape setting of the proposed agricultural development.

Grading

Section 7 of the NHRA provides for the grading of heritage resources into those of National (Grade 1), Provincial (Grade 2) and Local (Grade 3) significance. Grading is intended to allow for the identification of the appropriate level of management for any given heritage resource. Grade 1 and 2 resources are intended to be managed by the national and provincial heritage resources authorities, while Grade 3 resources would be managed by the relevant local planning authority. These bodies are responsible for grading, but anyone may make recommendations for grading – something that is, at times, required in HIAs.

It is intended that the various provincial authorities formulate a system for the further detailed grading of heritage resources of local significance but this is generally yet to happen. Heritage Western Cape (2012), however, uses a system in which resources of local significance are divided into Grade 3A, 3B and 3C. These approximately equate to high, medium and medium-low local significance, while sites of low or very low significance (and generally not requiring mitigation or other interventions) are referred to as ungradeable.

TABLE OF CONTENTS

The report must be submitted in both digital and printed format and should *at least* include the following sections:

1. EXECUTIVE SUMMARY (must include at least a full summary of section 6 for transfer to the EIR)
2. INTRODUCTION AND DESCRIPTION OF STUDY
3. TERMS OF REFERENCE
4. METHODOLOGY
5. RESULTS/FINDINGS
6. ASSESSMENT OF IMPACTS

6.1 Comparative analysis (use criteria for assessment as described above)

(i) cumulative impacts;

(ii) the nature of the impact;

(iii) the extent and duration of the impact;

(iv) the probability of the impact occurring;

(v) the degree to which the impact can be reversed;

(vi) the degree to which the impact may cause irreplaceable loss of resources; and

(vii) the degree to which the impact can be mitigated;

6.2 a description of any assumptions, uncertainties and gaps in knowledge;

6.3 an environmental impact statement which contains –

- a summary of the key findings of the environmental impact assessment; and

- a comparative assessment of the positive and negative implications of the proposed activity and identified alternatives;

7. DISCUSSION (including management recommendations for construction and operation phases; response to I&AP comments)
8. MANAGEMENT PLANS
9. CONCLUSIONS (must include summary tables as described in section 5 of PoSfEIA)
10. RECOMMENDATIONS
11. APPENDICES (including impact assessment tables)

IMPACT Please refer to details in Box 16		
Nature of impact		
STAGE	**CONSTRUCTION PHASE**	**OPERATION PHASE**
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Legal aspects		
Mitigation measures		
Level of significance after mitigation		
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9.2 Botanical

INTRODUCTION

Details of the alternatives to be investigated will be made available through a layout diagram and description of each.

BASELINE STUDIES

The Baseline studies have been completed and should include at least the following:

- Describe the broad ecological characteristics of the site and its surrounds in terms of any mapped spatial components of ecological processes and/or patchiness, patch size, relative isolation of patches, connectivity, corridors, disturbance regimes, ecotones, buffering, viability, etc.
- In terms of biodiversity pattern, identify or describe:

  Community and ecosystem level

  - The main vegetation, its aerial extent and interaction with neighbouring types, soils or topography;
  - The types of plant communities that occur in the vicinity of the site
  - Threatened or vulnerable ecosystems (*see sources listed in box 4*).

  Species level

  1. Red Data Book species (give location if possible using GPS)
  2. The viability of and estimated population size of the RDB species that are present (include the degree of confidence in prediction based on availability of information and specialist knowledge, i.e. High=70-100% confident, Medium 40-70% confident, low 0-40% confident)
  3. The likelihood of other RDB species, or species of conservation concern, occurring in the vicinity (include degree of confidence).

  Other pattern issues

  - Any significant landscape features or rare or important vegetation associations such as seasonal wetlands, alluvium, seeps, quartz patches or salt marshes in the vicinity.
  - The extent of alien plant cover of the site, and whether the infestation is the result of prior soil disturbance such as ploughing or quarrying (alien cover resulting from disturbance is generally more difficult to restore than infestation of undisturbed sites).
  - The condition of the site in terms of current or previous land uses.
- In terms of biodiversity process, identify or describe:
  - The key ecological "drivers" of ecosystems on the site and in the vicinity, such as fire.
  - Any mapped spatial component of an ecological process that may occur at the site or in its vicinity (i.e. *corridors* such as watercourses, upland-lowland gradients, migration routes, coastal linkages or inland-trending dunes, and *vegetation boundaries* such as edaphic interfaces, upland-lowland interfaces or biome boundaries)
  - Any possible changes in key processes, e.g. increased fire frequency or drainage/artificial recharge of aquatic systems.

- Would the conservation of the site lead to greater viability of the adjacent ecosystem by securing any of the functional factors listed in the first bullet?

○ Would the site or neighbouring properties potentially contribute to meeting regional conservation targets for both biodiversity pattern and ecological processes?

LEGISLATION

Legislation would include:

Box 4 : Legislation of relevance to the biodiversity specialist[10]

The particular context of the EIA, nature of the proposed project and of the receiving environment will determine which – if any – of the following are relevant.

At an international level:

- *Convention on Biological Diversity;*
- *The Ramsar Convention (on wetlands of international importance especially as waterfowl habitat);*
- *The Bonn Convention (on conservation of migratory species of wild animals);*
- *The World Heritage Convention;*
- *The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).*

At a regional level, the Action Plan of the Environmental Initiative of NEPAD (the New Partnership for Africa's Development), 2003, advocates sustainable development and associated conservation and wise use of biodiversity.

At a national level:

- *The National Environmental Management (NEMA) (Act No. 107 of 1998);*
- *The National Environmental Management Protected Areas (Act No. 57 of 2003);*
- *The National Environmental Management Biodiversity (Act No. 10 of 2004);*
- *Environment Conservation Act (Act No. 73 of 1989) and associated EIA Regulations [to be replaced by regulations i.t.o. NEMA];*
- *Sea Birds and Seals Protection Act (Act No. 46 of 1973);*
- *Marine Living Resources Act (Act No. 18 of 1998);*
- *Mountain Catchment Areas Act (Act No. 63 of 1970);*
- *National Heritage Resources Act (Act No. 25 of 1999), and provincial regulations;*
- *National Water Act (Act No. 36 of 1998);*
- *Conservation of Agricultural Resources Act (Act No. 43 of 1983);*
- *National Forests Act (Act No. 84 of 1998);*
- *Lake Areas Development Act (Act No. 39 of 1975);*
- *Sea Shore Act (Act No. 21 of 1935);*
- *Atmospheric Pollution Prevention Act (Act No. 45 of 1965).*

At provincial level:

- *Western Cape Nature Conservation Laws Amendment Act (Act No. 3 of 2000);*
- *The Provincial Spatial Development Framework (PSDF) in terms of the Municipal Systems Act (Act No. 32 of 2000);*

Spatial Development Frameworks (SDFs) at municipal level, in terms of the Municipal Systems Act 32 of 2000. The preparation of an SDF draws on bioregional planning principles.

IMPACT ASSESSMENT

To determine the current status and trends in biodiversity key sources of biodiversity must be assessed. Key sources are listed below.

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Box 13 : Key sources of biodiversity information
▪ The National Spatial Biodiversity Assessment [36] (NSBA) should be a 'first stop' reference for any biodiversity assessment, as should the NBSAP which prioritises areas for action. The NSBA gives the national ecosystem status (i.e. critically endangered, endangered, vulnerable or not currently threatened) for terrestrial, river, marine and estuarine ecosystems; wetlands are to be included in future. ▪ The new South African vegetation map (South African National Biodiversity Institute[37]). The NSBA gives the national ecosystem status of vegetation types in this map. ▪ The Conservation Planning Unit of CapeNature (http://cpu.uwc.ac.za/home), which gives information on: ➢ Systematic biodiversity planning outputs, at broad and/or fine-scale spatial scales (Cape Floristic Region: CAPE, Succulent Karoo: SKEP, Subtropical Thicket: STEP, Cape Lowlands Renosterveld Project), plus guides for users[38]. These plans provide information on both important pattern and process corridors. Depending on their scale, they can be used as a trigger of potential biodiversity significance or, at fine-scale, to inform an EIA. ➢ Regional biodiversity corridor initiatives (e.g. Greater Cederberg Biodiversity Corridor initiative, Gouritz Initiative). These corridors 'capture' both pattern and process. ▪ CapeNature's State of Biodiversity : 2000 report [www.capenature.org.za/know_how/html/sobintro.html] describes critical habitats for reptiles and amphibians, birds and mammals in the Western Cape. ▪ Fynbos Forum's Ecosystem-specific Guidelines (Box 14). ▪ Information on threatened ecosystems and species held by CapeNature's Land Use Advisory Unit and regional ecologists.
▪ The biodiversity expertise within the Scientific Services section of CapeNature for information on specific taxa, as relevant (e.g. invertebrates, frogs, fishes, mammals, birds). ▪ Additional information (e.g. Protea Atlas, Frog Atlas and Bird Atlas) held by research institutions who carry out work on biodiversity, such as universities, technikons and the National Biodiversity Institute, the South African Natural History Museum in Cape Town (various specialists), the Plant Protection Research Institute in Pretoria (arthropod and fungi specialists). ▪ South African Red Data Books, provided that these are current (e.g. Red Data Book for Mammals, produced by the Endangered Wildlife Trust 2004), IUCN's Red List, and other protected or threatened species lists (e,g. in terms of the Biodiversity Act). ▪ The River Health Programme gives information on the ecological state of certain river systems [www.csir.co.za/rivercons/related.html]. ▪ Provincial or local State of Environment Report.

The report must specifically address the following:

a) Species level (Vegetation):

i. A comprehensive species list of each vegetation unit, with an indication of the dominant or most abundant species.

ii. Each vegetation unit should be assessed individually.

iii. The quality of each vegetation unit should also be assessed with reference to the number and type of exotic woody plants and weeds occurring in each unit. The level of disturbances, such as trampling, grazing and erosion should also be recorded.

(b) Mitigation actions (Vegetation):

i. Mitigate impact by reducing footprint in terms of pattern and process.

ii. Mitigation must be functional in terms of ecosystem processes.

(c) The Biodiversity Impact Assessment (Vegetation) report must confirms the level of significance (low, medium or high) of the impact on:

i. Threatened ecosystems

ii. Special habitats/threatened or rare species

iii. Habitat in the ecological corridors of vegetation boundaries

(d) The significance rating in the Biodiversity Impact Assessment (Vegetation) report must be linked to some threshold and meaningful context.

(e) The Biodiversity Impact Assessment (Vegetation) report must also report on gaps in information and uncertainty.

A report is required that describes and assess the impacts of the alternatives that were identified (use table at the end of this document). The impact assessment will need to consider the potential negative as well as positive impacts that would result from the proposed development and should include mitigation measures to reduce the negative impacts as well as measures that would enhance the positive impacts. Please include in the report all aspects that will impact on the vegetation (e.g. fire management) together with future management recommendations that would be included in the Environmental Management Plan.

Together with the above also provide a response to the I&AP comments as captured in the Scoping Report.

CRITERIA FOR ASSESSMENT

The criteria for assessment of impacts are as follows (NEMA Regulations 32(k))

(i) cumulative impacts;

(ii) the nature of the impact;

(iii) the extent and duration of the impact;

(iv) the probability of the impact occurring;

(v) the degree to which the impact can be reversed;

(vi) the degree to which the impact may cause irreplaceable loss of resources; and

(vii) the degree to which the impact can be mitigated;

The following can be used as a guide when assessing impacts.

The criteria in the box below must be used for the assessment of impacts. Although not listed, legal aspects must be added.

Box 16: Criteria used for the assessment of impacts

Nature of the impact – A description of positive or negative effect of the project on the affected environment, or *vice versa*. This description should include who or what would be affected, and how.

Extent - the impact could:

- be site – specific;
- be limited to the site and its immediate surroundings;
- have an impact on the *region* (e.g. if communities rely on biodiversity);
- have an impact on a *national* scale (e.g. national biodiversity conservation targets);
- have an impact across *international* borders (e.g. where catchments cross international border, international conventions are concerned, or migratory species).

Duration – It is important to indicate whether or not the lifetime of the impact will be:

- *short term* (e.g. during the construction phase);
- *medium term* (e.g. during part or all of the operational phase);
- *long term* (e.g. beyond the operational phase, but not permanently);
- *permanent* (where the impact is for all intents and purposes irreversible. An irreversible negative impact may also result in irreplaceable loss of natural capital or biodiversity, if it were to result in extinction or loss of a species or ecosystem); or
- *discontinuous or intermittent* (where the impact may only occur during specific climatic conditions or during a particular season of the year).

Intensity or magnitude – The size of the impact (if positive) or its severity (if negative):

- *low,* where biodiversity is negligibly affected or where the impact is so low that remedial action is not required;
- *medium,* where biodiversity pattern, process and/or ecosystem services are altered, but not severely affected, and the impact can be remedied successfully; and
- *high,* where pattern, process and/or ecosystem services would be substantially (i.e. to a very large degree) affected. If a negative impact, could lead to irreplaceable loss of biodiversity and/or unacceptable consequences for human wellbeing.

Probability – Should describe the likelihood of the impact actually occurring indicated as:

- *improbable,* where the possibility of the impact is very low either because of design or historic experience;
- *probable,* where there is a distinct possibility that the impact will occur;
- *highly probable,* where it is most likely that the impact will occur; or
- *definite,* where the impact will occur regardless of any prevention measures.

Significance – The significance of impacts can be determined through a synthesis of the assessment criteria. Significance can be described as:

- *low,* where it would have negligible effect on biodiversity, and on the decision;
- *medium,* where it would have a moderate effect on biodiversity, and should influence the decision;
- *high,* where it would have, or there would be a high risk of, a large effect on biodiversity. These impacts should have a major influence on the decision;
- *very high,* where it would have, or there would be a high risk of, an irreversible negative impact on biodiversity and irreplaceable loss of natural capital or a major positive effect. Impacts of very high significance should be a central factor in decision-making.

Confidence – The level of confidence in predicting the impact can be described as:

- *low,* where there is little confidence in the prediction, due to inherent uncertainty about the likely response of the receiving ecosystem, or inadequate information;
- *medium,* where there is a moderate level of confidence in the prediction; or
- *high,* where the impact can be predicted with a high level of confidence.

Source: Adapted from criteria used by the Department of Environmental Affairs and Tourism, 1998.

TABLE OF CONTENTS

The report must be submitted in both digital and printed format and should *at least* include the following sections:

12. EXECUTIVE SUMMARY (must include at least a full summary of section 6 for transfer to the EIR)
13. INTRODUCTION AND DESCRIPTION OF STUDY
14. TERMS OF REFERENCE
15. METHODOLOGY
16. RESULTS/FINDINGS
17. ASSESSMENT OF IMPACTS
    - 6.1 Comparative analysis (use criteria for assessment as described above)
      - (i) cumulative impacts;
      - (ii) the nature of the impact;
      - (iii) the extent and duration of the impact;
      - (iv) the probability of the impact occurring;
      - (v) the degree to which the impact can be reversed;
      - (vi) the degree to which the impact may cause irreplaceable loss of resources; and
      - (vii) the degree to which the impact can be mitigated;
    - 6.2 a description of any assumptions, uncertainties and gaps in knowledge;
    - 6.3 an environmental impact statement which contains –
      - a summary of the key findings of the environmental impact assessment; and
      - a comparative assessment of the positive and negative implications of the proposed activity and identified alternatives;
18. DISCUSSION (including management recommendations for construction and operation phases; response to I&AP comments)
19. CONSERVATION MANAGEMENT PLANS AND PLANT LISTS
20. CONCLUSIONS (must include summary tables as described in section 5 of PoSfEIA)
21. RECOMMENDATIONS
22. APPENDICES (including impact assessment tables)

IMPACT Please refer to details in Box 16		
Nature of impact		
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9.3 Water Use License Application

The purpose of the National Water Act is to provide a framework for the equitable allocation and sustainable management of water resources. Both surface and groundwater sources are redefined by the Act as national resources which cannot be owned by any individual, and rights to which are not automatically coupled to land rights, but for which prospective users must apply for authorisation and register as users. The National Water Act also provides for measures to prevent, control and remedy the pollution of surface and groundwater sources.

An application for a license in terms of the National Water Act, 1998 is made by the developer, Oseiland Boerderye for the transfer water rights, taking of water from the Orange River, the water usages is summarised as the follows:

(a) taking water from a water resource;	Transfer of water rights
(c) impeding or diverting the flow of water in a watercourse	Impeding flow
(i): altering the bed, banks, course or characteristics of a watercourse;	Altering the banks of a water course

All the necessary information will be included in the WULA as part of the EIA phase of the application.

10 TOR FOR REPORTS

Reports, other than impact studies, that will complete the suite of reports required for the EIR are:

Note: Each report must include a section with response(s) to relevant comments (see Appendix 11).

The following EIA specialist reports are required (see Appendix A in section 9 for Terms of Reference):

Specialist reports

- Heritage/archaeology assessment
- Vegetation Report
- Socio-Economic summary report
- Water Use License Application

Other reports

- EMP

11 APPENDIX C – COMMENTS FROM SCOPING

As per the Final Scoping Report, see section 12.3.

12 APPENDIX D – COMMENTS FROM NORTHERN CAPE DEPARTMENT OF ENVIRONMENT AND NATURE CONSERVATION

Will be inserted when available