

THE PROPOSED **ONSEEPKANS AGRICULTURAL DEVELOPMENT**

Remainder of the Farm Onseepkans No. 88, Upington
Khai-Ma Municipality, Northern Cape Province.

ENVIRONMEENTAL IMPACT ASSESSMENT REPORT FOR COMMENT



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DETAILS OF THE APPLICATION

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Table of Contents

1.	INTRODUCTION	1
1.1.	Background.....	1
1.1.1.	The Applicant:	2
1.2.	THE PROPOSED ACTIVITY	2
1.2.1.	Project Scope:	2
1.3.	Need and desirability	3
1.3.1.	STRATEGIC CONSIDERATION.....	4
1.3.2.	Need	4
1.3.3.	Desirability.....	5
2.	LEGAL REQUIREMENTS.....	8
2.1.	The Constitution of the Republic of South Africa.....	8
2.2.	National Environmental Management Act.....	8
2.2.1.	Listed activities	9
2.2.2.	Environmental impact assessment	9
2.2.3.	Principles of environmental management	9
2.2.4.	EIA Guideline and information document series	10
2.3.	National Heritage Resources Act.....	11
2.4.	National Water Act	11
2.5.	National Environmental Management: Biodiversity Act	12
2.6.	National Forests Act	12
2.7.	Northern Cape Nature Conservation Act	12
3.	ALTERNATIVES.....	14
3.1.	Property alternatives	14
3.2.	Layout alternatives	15
3.2.1.	Alternative 1 – The preferred alternative	16
3.2.2.	Alternative 2 – Layout alternative.....	16
3.3.	Activity alternative	17
3.4.	The No-Go alternative	18
4.	SITE DESCRIPTION	19
4.1.	Location	19
4.1.1.	SURVEYOR GENERAL CODE	19
4.1.2.	SITE COORDINATES	20
4.2.	Climate.....	20
4.3.	SOIL.....	22
4.4.	Vegetation.....	23
4.5.	Namakwa District Biodiversity Sector Plan	25
4.6.	Freshwater	26
4.7.	Socio-economic context	26
4.7.1.	Demographic Profile of Namakwa District.....	28
4.8.	Heritage features.....	28
5.	PROCESS TO DATE	29
5.1.	TASKS UNDERTAKEN TO DATE	29
5.2.	TASKS TO BE UNDERTAKEN DURING THE EIA PROCESS	30
5.3.	PROFESSIONAL TEAM.....	31
5.4.	PUBLIC PARTICIPATION	31
5.4.1.	PUBLIC PARTICIPATION UNDERTAKEN DURING THE SCOPING PHASE:	31
5.4.2.	PUBLIC PARTICIPATION UNDERTAKEN DURING THE EIA PHASE:	33
5.4.3.	INTERESTED AND AFFECTED PARTIES.....	33

6.	ENVIRONMENTAL ISSUES AND POTENTIAL IMPACTS.....	34
6.1.	LAND USE	34
6.2.	Wetlands and Watercourses.....	35
6.3.	BIODIVERSITY	35
6.3.1.	Vegetation	35
6.3.2.	Flora encountered	41
6.3.3.	Red Data and Protected Plant Species.....	42
6.3.4.	CRITICAL BIODIVERSITY AREAS	44
6.3.5.	Fauna	45
6.3.6.	Alien and invasive plant species	47
6.3.7.	Veldfire risk.....	47
6.3.8.	Sensitive habitats	47
6.3.9.	Freshwater	47
6.4.	Heritage and Archaeological impacts	47
6.5.	Visual impact.....	48
6.6.	Socio-economic impact	48
6.7.	OTHER ISSUES IDENTIFIED	49
7.	SPECIALIST STUDIES.....	50
7.1.	CRITERIA FOR SPECIALIST ASSESSMENT:	50
7.2.	briefs for specialist studies	51
7.2.1.	Biodiversity	51
7.2.2.	Archeological impact assessment.....	51
8.	ASSESSMENT OF ENVIRONMENTAL IMPACTS.....	53
8.1.	biodiversity	53
8.1.1.	KEY FINDINGS	53
8.1.2.	IMPACT ASSESSMENT.....	1
8.1.3.	MITIGATION MEASURES.....	1
8.1.4.	CONCLUSION	1
8.2.	ARCHAEOLOGICAL IMPACT ASSESSMENT.....	2
8.2.1.	Key findings.....	2
8.2.2.	Impact assessment.....	2
8.2.3.	Mitigation measures	4
8.2.4.	Conclusion	5
9.	SUMMARY OF IMPACTS.....	6
10.	RECOMMENDATIONS.....	7
10.1.	Construction Phase	7
10.2.	Maintenance and management	8
11.	CONCLUSIONS	9
12.	EXPERTISE OF THE EAP	11
Appendix 1.	Location- & Biodiversity overlay maps	1
Appendix 2.	Site Plans	2
Appendix 3.	Site Photographs	3
Appendix 4.	Additional Information	4
Appendix 5.	Public Participation	5
Appendix 6.	Specialist Studies	6
Appendix 7.	Environmental Management Plan	7
Appendix 8.	Curriculum Vitae of EAP	8

LIST OF FIGURES

Figure 1: Proposed development areas in relation to the Onseepkans Settlement	3
Figure 2: Aerial image showing the proposed development sites in relation to the surrounding land use	7
Figure 3: General soil patterns – copied from the draft agricultural viability study (July 2014)	15
Figure 4: The preferred site alternatives in relation to the Onseepkans Settlement	16
Figure 5: An overview showing possible alternative locations (stars) for development within the property	17
Figure 6: Showing the location of Onseepkans within South Africa	19
Figure 7: Proposed development areas in relation to the Onseepkans Settlement	20
Figure 8: Average long-term rainfall for Onseepkans	21
Figure 9: General Soil Patterns	23
Figure 10: Vegetation Map of SA, Lesotho, Swaziland	24
Figure 11: Deseert Biome Vegetation Types Expected at Onseepkans	25
Figure 12: Namakwa District Biodiversity Plan Showing Onseepkans	26
Figure 13: Summary of Scoping and EIA 2014 Process	30
Figure 14: Flora in expansion area A	37
Figure 15: Google image of Area A with Boscia foetida (Bf) and Boscia albitrunca (Ba) locations marked	38
Figure 16: Open sandy plains with large Euphorbia gregaria in Expansion Area B	39
Figure 17: Google image showing area B with the Boscia foetide (Bf) location marked	39
Figure 18: Sisyndite spartea dominated veld encountered at Expansion C	40
Figure 19: Google image showing area C with Boscia foetida (Bf) and Boscia albitrunca (Ba) location marked. Trees with red polygon needs to be protected through a small footprint adjustment	41

ABBREVIATIONS

BGIS	Biodiversity Geographic Information System
CBA	Critical Biodiversity Area
DEA	Department of Environmental Affairs
DENC	Department of Environment and Nature Conservation
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECA	Environment Conservation Act (Act No. 73 of 1989)
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMP	Environmental Management Programme
HIA	Heritage Impact Assessment
HWC	Heritage Western Cape
I&APs	Interested and Affected Parties
NEMA	National Environmental Management Act (Act No. 107 of 1998)
NEM: BA	National Environmental Management: Biodiversity Act (Act No. 10 of 2004)
NHRA	National Heritage Resources Act (Act No. 25 of 1999)
NID	Notice of Intent to Develop
NWA	National Water Act
OESA	Other Ecological Support Area
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
WULA	Water Use Licence Application

1. INTRODUCTION

Onseepkans is a small agricultural settlement (and border post) next to the Orange River, in the Namakwa district. It is located approximately 50 km north of Pofadder and shares a border post with Namibia, accommodating traffic between South Africa and Keetmanshoop in Namibia (Appendix 1). The settlement was founded by missionaries during the 1916's, who established a canal irrigation system in order to allow irrigation of the alluvial flood plains next to the Orange River. Today Onseepkans relies solely on the approximately 268 ha of irrigated lands, which is still supplied with irrigation water from the same 16.4 km long earth canal.

In recent years the condition of the canal has deteriorated as a result of poor management and floods with large portions becoming overgrown with weeds and reeds. The situation had deteriorated to such a degree that water supply became vulnerable, which impacted negatively on production. The situation has reached such a stage where the canal has to be re-constructed in order to ensure security of irrigation water to producers. The Department of Agriculture, Land Reform and Rural Development is in the process of upgrading the bulk water supply system at Onseepkans (Appendix 2). At the same time the Department also proposes to unlock, stimulate and expand the agricultural potential of Onseepkans (once the bulk water system is in place) by promoting the re-establishment of crops on the existing agricultural land and also the establishment of additional agricultural land for production of high value crops outside of the flood plains.

The primary objective of the proposed development project at Onseepkans centres on economic growth, job creation and economic empowerment, through revitalising the agricultural potential of approximately 300 ha of existing agricultural land (flood plains) and the development of approximately 250 ha of additional irrigation land (outside of the flood plains) into an intensive export table grape production unit.

1.1. BACKGROUND

According to the latest agricultural census Namakwa contributed 7.3% of total Gross Farm Income of the Northern Cape. According to Global Insight calculations, Namakwa District was the only District that indicated a decrease in GDP per Capita for the period 1996 to 2012. This means that output per capita decreased over this period. The situation for Khai-Ma Municipality is even worse as the GDP per Capita decreased even more significantly highlighting the need for development in order to reverse this trend. The Gross Value added by agriculture had been shown as playing an important role as contributor to value added to the economy, which is even more important on Municipal level. Agriculture labour remuneration is a very important part of the local economy and even more important in the Khai-Ma Local Municipality, where agriculture accounts for 45% of formal sector employment.

The potential for agritourism, agri-processing and value adding initiatives presents further opportunities for diversification of the local economy. It is recognized that successful promotion of agro-processing can impact positively on the incomes of primary producers, create employment and address market risks. It is also one of the means by which transformation of agriculture in the province can be achieved.

The Department of Agriculture, Land Reform and Rural Development is considering the development of approximately 250 ha of additional agricultural land at Onseepkans, outside of the floodplain area (the traditional agricultural area along the Orange River).

1.1.1. THE APPLICANT:

The applicant is the Department of Agriculture, Land Reform and Rural Development.

EnviroAfrica CC has been appointed as the independent environmental assessment practitioner (EAP) responsible for undertaking the relevant environmental impact assessment (EIA) and the public participation process required in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA) as amended. This report forms part of the EIA process.

The aim of this report is:

- to describe the proposed project and its associated activities;
- the EIA process followed to date;
- to present alternatives; and
- to list issues identified for further study; and
- assess the potential impacts on strength of specialist inputs.

The recommended specialists' studies (Section 8) were undertaken and potentially significant issues (Section 6) was investigated and assessed.

1.2. THE PROPOSED ACTIVITY

The Department of Agriculture, Land Reform and Rural Development proposes invest in the revitalisation of the agricultural potential of the larger Onseepkans Settlement with the main aim of job creation, poverty relief and social investment.

1.2.1. PROJECT SCOPE:

The proposed scope of the Onseepkans project will include two aspects of development:

- Firstly – revitalising the agricultural potential of approximately 300 ha of existing agricultural land (mainly within the flood plains).
- Secondly - The development of approximately 250 ha of additional agricultural land outside of the floodplain area, on which this application focuses.

The new agricultural area will consist of three (3) areas, namely;

- Expansion area A (between 142 – 188 ha);
- Expansion area B (\pm 47 ha); and
- Expansion area C (18 ha)

Access to the 3 sites will be *via* existing farm tracks. The availability of water will be the main prohibiting factor with regards to the proposed development. The approval of the amended upgrades to the bulk water supply system is thus crucial towards the viability of the proposed new development areas. Figure 1 below shows the proposed development areas in relation to the Onseepkans settlement.

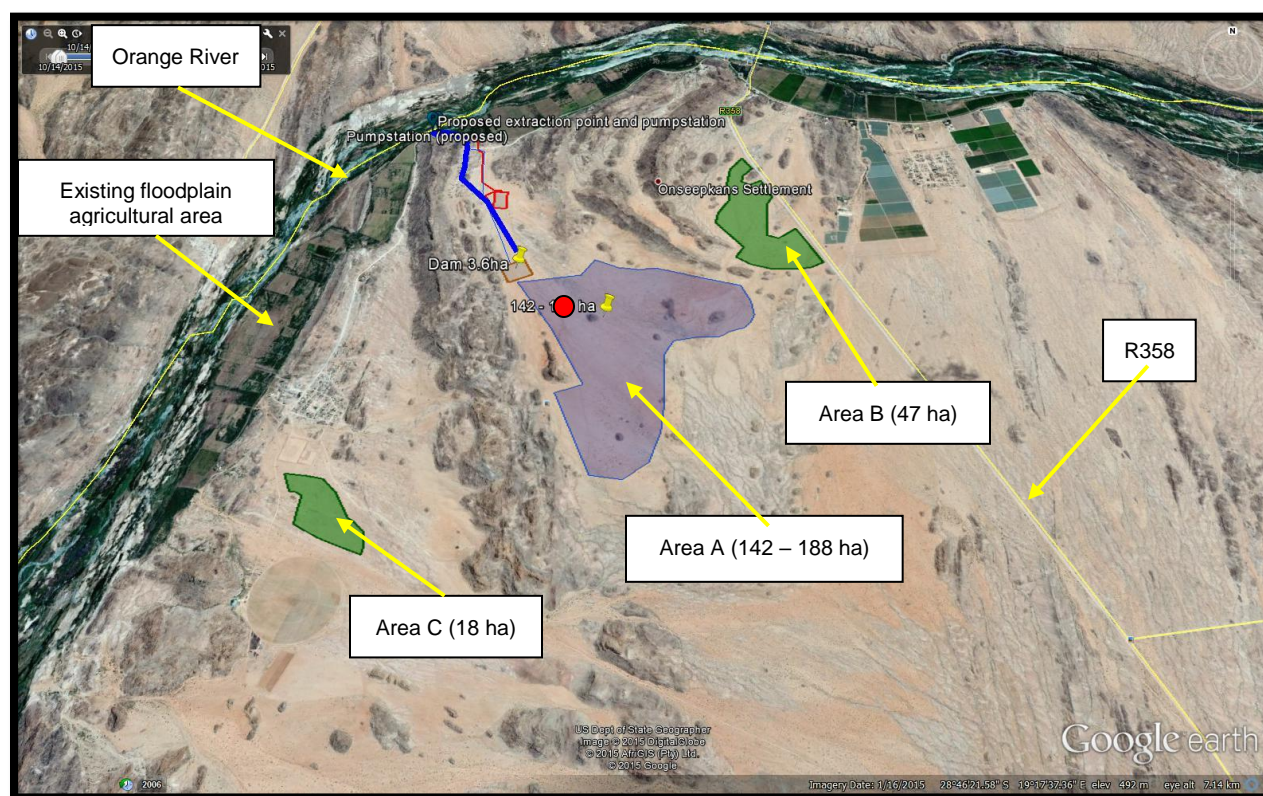


Figure 1: Proposed development areas in relation to the Onseepkans Settlement

1.3. NEED AND DESIRABILITY

In terms of the NEMA as amended, 2014 EIA regulations as amended, the Scoping/EIA report must provide a description of the need and desirability of the proposed activity. The consideration of “need and desirability” in EIA decision-making requires the consideration of the strategic context of the development proposal along with the broader societal needs and the public interest.

While the concept of need and desirability relates to the *type* of development being proposed, essentially, the concept of need and desirability can be explained in terms of the general meaning

of its two components in which *need* refers to *time* and *desirability* to *place* – i.e. is this the right time and is it the right place for locating the type of land-use/activity being proposed? Need and desirability can be equated to *wise use of land* – i.e. the question of what is the most sustainable use of land.

1.3.1. **STRATEGIC CONSIDERATION**

According to the Onseepkans Agricultural Development Plan (Appendix 4). The Onseepkans Irrigation Development is aligned to several policies and imperatives including:

- The New Growth Path (NGP) identified agriculture and its value chain as a catalyst for radical socio-economic transformation and focus on job creation and decent work towards the year 2020.
- The vision of the National Development Plan (NDP) is to create close to 1 million jobs in Agriculture and to reduce unemployment through:
 - Expanded irrigated agriculture (by at least 500 000 ha).
 - Revitalization of underutilized land in communal areas.
 - Pick and support commercial sectors with highest potential for growth.
 - To support job creation in the upstream and downstream industries.
 - To find creative combinations between opportunities.
- The Agricultural Policy Action Plan (APAP) is aligned to the NGP, NDP and the MTSF 2014 -2019 action plan.
- The National Infrastructure Plan highlights 18 strategically integrated projects (SIPs) to fast track development and growth.
- SIP 11 deals specifically with agricultural and rural infrastructure to support the expansion of production and employment.
- Mega AgriPark Initiative of Department of Rural Development
- The River Valley Catalytic Project has also been identified as a framework to develop irrigation schemes through infrastructure, improved market access, social infrastructure and skills development.

1.3.2. **NEED**

The Department of Agriculture, Land Reform and Rural Development business proposal motivates the need of the proposed development as follows (Appendix 4) :

“According to the 2002 agricultural census (the last census data on District level) Namakwa contributed 7.3% to total Gross Farm Income of the Northern Cape. The importance of production under irrigation is relatively small if compared to the rest of the Province as the District produced 2.2% of the value of field crops and 2.4 % of the value of horticulture crops in the Northern Cape.

According to Global Insight calculations, Namakwa District was the only District that indicated a decrease in GDP per Capita for the period 1996 to 2012, dropping from R 36,692 to R 36,247 in constant 2005 prices. This means that output per capita decreased marginally over this period. The situation for Khai-Ma Municipality is even worse as the GDP per Capita decreased from R 29,187 to R24, 020 for the same period. This highlights the need for additional development in these areas to reverse this trend.

The Gross Value that was added by the agricultural sector as a percentage of the total value that was added in the Northern Cape in 2012 totalled 6.34%. The contribution of the value added by agriculture in Namakwa District (R 768 million) accounted for 10.41% of the total value added by the District. The contribution of the value added by agriculture in Khai-Ma Municipality (R 69.9 million) accounted for 12.98% of the total value added by the Municipality. This indicates the relative important role agriculture plays in the District as contributor to value added to the economy and even more important role on Municipal level.

Remuneration to agricultural labour for the District was calculated at R 267 million and contributed 7.85% of total labour remuneration in the District, the 3rd highest contribution of all Districts. The average contribution of agriculture to total labour is 4.4% for the Northern Cape. Remuneration to agricultural labour for the Khai-Ma Municipality was calculated at R31.2 million and contributed 12.18% of total labour remuneration in the Municipal area. This also illustrates the importance of agricultural labour remuneration in the Municipal area and District compared to the rest of the Province.

Formal sector employment (number of persons employed) of the nine economic sectors, indicate a contribution from agriculture equal to 18% for the Northern Cape (2nd highest contributing sector). In Namakwa agriculture employed 23% of total formal sector employment (2nd highest contributing sector) and in Khai-Ma Municipal area 45% of total formal sector employment (highest contributing sector), clearly underlining the role of agriculture as job creator in rural areas. While there are moderate backward linkages with sectors such as manufacturing (e.g. fertilizers and chemicals), transport and services, minimum forward linkages exists with virtually no processing of agricultural products or agritourism ventures.

The potential for agri-tourism, agri-processing and value adding initiatives presents further opportunities for diversification of the local economy. It is recognized that successful promotion of agri-processing can impact positively on the incomes of primary producers, create employment and address market risks. It is also one of the means by which transformation of agriculture in the province can be achieved. Possible agri-processing ventures in the area include:

- *Wine and juice production*
- *Dried fruit and vegetables*
- *Animal feed products*
- *Cereals*

There is a definite need, locally and nationally, for economic development and the creation of employment opportunities. In the Khai-Ma Municipality, the most viable formal development option, which also relates to the most employment opportunities, remains agriculture.

A development plan was conducted by the Department of Agriculture (Appendix 4) in order to establish the economically viability of the proposed project especially in terms of beneficial use of the available resources (with emphasis on BEE).

1.3.3. DESIRABILITY

The following factors determine the desirability of the area for the proposed Onseepkans Agricultural Development.

1.3.3.1. Land reform and black economic empowerment

The land under consideration is owned by the municipality and does not require to be procured in the open market. Income can be generated through agriculture which will significantly improve the economic situation of communities over time.

1.3.3.2. Location and Accessibility

From an engineering point of view, the proposed locations are preferred due to the favourable soil and specifically, accessibility. The sites are also in close proximity to the source of water (Orange River).

1.3.3.3. Agricultural potential

The National Department of Agriculture published a report in which the criteria for high potential agricultural land in South Africa were defined (Schoeman, 2004).

Due to the dominant soil properties, inter alia, (i) topsoil horizons (ii) clay content (iii) effective root depth (iv) dominant soil form and series, it can be concluded that the soils of all the map units on the proposed area for irrigation have low to high potential for irrigated agriculture according to the criteria of Schoeman(2004). The area cannot be considered as prime land, because prime land is defined as the best land available, primarily from national perspective. However, this area can be defined as unique agricultural land, due to specific combinations of location, climate or soil properties that make it highly suitable for a specific crop, more especially table grapes, which is made even more suitable due the availability of sufficient volumes of high quality water for permanent irrigation.

The soils and climatic conditions in the area make it economically viable for the production of perennial crops such as table, dry and wine grapes as well as dates and citrus. This is at present the most preferred crop in the area.

Fodder crops such as lucerne have proved to be very successful in this area and can ensure a fairly stable income throughout the year. Lucerne produced in this area is highly suitable for milk producers as fodder and in current market conditions it is probably the most lucrative cash crop in the area.

1.3.3.4. Compatibility with the surrounding land use

The site is largely surrounded by agricultural activities, in particular lucerne and grape cultivation (Refer to Figure 2). Also evident from the aerial image is that most of the agricultural activities are concentrated along the banks of the Orange River.

The proposed activity will not be “out of character” with the surrounding land use and is expected to enhance the visual character of the area.



Figure 2: Aerial image showing the proposed development sites in relation to the surrounding land use

1.3.3.5. Job creation

Agricultural production will directly contribute to increased employment opportunities for community members. Small business opportunities will also be created in especially the services industry.

1.3.3.6. Food security

The communities of Onseepkans are characterised by severe poverty and a large proportion of families rely heavily on social grants for subsistence. Income from agricultural development will contribute directly and indirectly to food security, i.e. the availability of enough and affordable food for all.

1.3.3.7. Training and capacity building

The establishment of high value crops in Onseepkans will create a number of opportunities for schooled and unschooled individuals. Skills development through on-job and formal training will be a high priority in any development initiative.

2. LEGAL REQUIREMENTS

The current assessment is being undertaken in terms of the NEMA, as amended, to be read with section 24 (5): NEMA EIA Regulations 2014. However, the provisions of various other Acts must also be considered within this EIA.

The legislation that is relevant to this study is briefly outlined below.

2.1. THE CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA

The Constitution of the Republic of South Africa (Act 108 of 1996) states that everyone has a right to a non-threatening environment and that reasonable measures are applied to protect the environment. This includes preventing pollution and promoting conservation and environmentally sustainable development, while promoting justifiable social and economic development.

2.2. NATIONAL ENVIRONMENTAL MANAGEMENT ACT

The NEMA, as amended, makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorization from the relevant authorities based on the findings of an environmental assessment. The NEMA is a national act, which is enforced by the Department of Environmental Affairs (DEA).

On the 4 December 2014 the Minister of Environmental Affairs promulgated regulations in terms of environmental impact assessments, under sections 24(5) and 44 of NEMA, namely the EIA Regulations 2014, as amended (GN No. R 326), which consists of:

- GN No. R. 327 (Listing Notice 1);
- GN No. R. 325 (Listing Notice 2); and
- GN No. R. 324 (Listing Notice 3).

Listing Notice 1 and 3 are for a Basic Assessment and Listing Notice 2 for a full Environmental Impact Assessment.

2.2.1. LISTED ACTIVITIES

According to the 2014 EIA regulations the following potentially listed activities may be triggered (Refer to Table 1).

Table 1: Listed activities identified that might potentially be triggered by the proposed development

GN R327	Short description of relevant Activity(ies) in terms of Listing Notice 1	Description of specific portion of the development that might trigger the listed activity.
8	Development of Agri-industrial facilities larger than 2 000 m ² .	The potential of agri-processing has been mentioned.
9	Water & storm water infrastructure.	Irrigation infrastructure will have to be established (pipe sizes and delivery rates not yet calculated).
12	Development (a) within a water course.	The proposed development is likely to impact on a number of small seasonal or ephemeral drainage areas.
19	Moving of more than 10m ³ of material within a water course.	The proposed development is likely to impact on a number of small seasonal or ephemeral drainage areas.
GN R325	Short description of relevant Activity(ies) in terms of Listing Notice 2	Description of specific portion of the development that might trigger the listed activity.
13	Physical alteration of virgin soil to agriculture of more than 100 ha.	The development proposes the revitalization of approximately 300 ha of existing agricultural land, some of which might not have been cultivated in the last 10 years (and thus reverted back to virgin soil).
15	Clearance of 20 ha or more of indigenous vegetation.	The development also proposes the development of an additional agricultural land of approximately 250 ha (currently covered by indigenous vegetation).
GN R324	Short description of relevant Activity(ies) in terms of Listing Notice 3	Description of specific portion of the development that might trigger the listed activity.
2	Development of a reservoir larger than 250 m ³ .	Although unlikely this was included as a potentially listed activity until development designs are finalized.
4	Development of roads larger than 4 m.	It is possible that the main access roads may be designed to be wider than 4m.
14	Development of infrastructure larger than 10 m ² within a water course.	The proposed development is likely to impact on a number of small seasonal or ephemeral drainage areas and although unlikely, infrastructure may be located within the original location of such water courses.

2.2.2. ENVIRONMENTAL IMPACT ASSESSMENT

This scoping and impact assessment was undertaken to identify and assess potential environmental issues as part of the overall environmental impact assessment process as required in terms of the EIA regulations.

2.2.3. PRINCIPLES OF ENVIRONMENTAL MANAGEMENT

The principles of environmental management as set out in section 2 of NEMA have been taken into account. The principles pertinent to this activity include:

- People and their needs will be placed at the forefront while serving their physical, psychological, developmental, cultural and social interests. The activity seeks to provide

additional employment and economic development opportunities, which are a local and national need – ***the proposed activity is expected to have a significant beneficial impact on the people of Onseepkans, especially developmental and social benefits, as well as providing employment and economic development opportunities (with emphasis on BEE development).***

- Development will be socially, environmentally and economically sustainable. Where disturbance of ecosystems, loss of biodiversity, pollution and degradation, and landscapes and sites that constitute the nation's cultural heritage cannot be avoided, are minimised and remedied. The impact that the activity will potentially have on these will be considered, and mitigation measures will be put in place - ***potential impacts will be identified and considered, including through the public participation process. Mitigation measures will be addressed and included in the EMP.***
- Where waste cannot be avoided, it will be minimised and remedied through the implementation and adherence of the Environmental Management Programme (EMP) – ***this will be included in the EIR.***
- The use of non-renewable natural resources will be responsible and equitable.
- The negative impacts on the environment and on people's environmental rights will be anticipated, investigated and prevented, and where they cannot be prevented, will be minimised and remedied.
- The interests, needs and values of all interested and affected parties will be taken into account in any decisions through the Public Participation Process.
- The social, economic and environmental impacts of the activity will be considered, assessed and evaluated, including the disadvantages and benefits.
- The effects of decisions on all aspects of the environment and all people in the environment will be taken into account, by pursuing what is considered the best practicable environmental option.

2.2.4. EIA GUIDELINE AND INFORMATION DOCUMENT SERIES

The following are the latest guidelines that form part of the DEA *Environmental Impact Assessment Guideline and Information Document Series* (Dated: March 2013):

- *Guideline on Transitional Arrangements*
- *Guideline on Alternatives*
- *Guideline on Public Participation*
- *Guideline on Exemption Applications*
- *Guideline on Appeals*
- *Guideline on Need and Desirability*
- *Information Document on the Interpretation of the Listed Activities*
- *Information Document on Generic Terms of Reference for EAPs and Project Schedules*

2.3. NATIONAL HERITAGE RESOURCES ACT

The protection and management of South Africa's heritage resources are controlled by the National Heritage Resources Act (Act No. 25 of 1999). South African National Heritage Resources Agency (SAHRA) is the enforcing authority.

In terms of Section 38 of the National Heritage Resources Act, SAHRA will require a Heritage Impact Assessment (HIA) where certain categories of development are proposed. Section 38(8) also makes provision for the assessment of heritage impacts as part of an EIA process and indicates that if such an assessment is found to be adequate, a separate HIA is not required.

The National Heritage Resources Act requires relevant authorities to be notified regarding this proposed development, as the following activities are relevant:

- *any development or other activity which will change the character of a site exceeding 5 000 m² in extent;*

A heritage impact assessment (HIA) study was commissioned. The scoping report was loaded on to the SAHRA website for provisional comments.

Furthermore, in terms of Section 34(1), no person may alter or demolish any structure or part of a structure, which is older than 60 years without a permit issued by the SAHRA, or the responsible resources authority. Nor may anyone destroy, damage, alter, exhume or remove from its original position, or otherwise disturb, any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority, without a permit issued by the SAHRA, or a provincial heritage authority, in terms of Section 36 (3). In terms of Section 35 (4), no person may destroy, damage, excavate, alter or remove from its original position, or collect, any archaeological material or object, without a permit issued by the SAHRA, or the responsible resources authority. **Not expected to be applicable to this application – to be confirmed by the HIA.**

2.4. NATIONAL WATER ACT

The National Water Act, Act 36 of 1998 (NWA) promotes the protection, use, development, conservation, management, and control of water resources in a sustainable and equitable manner. Besides the provisions of NEMA for this EIA process, the proposed development is likely to require authorizations under the National Water Act (Act No. 36 of 1998).

- The Department of Water Affairs was contacted with regards to the registration of water rights and a consultant was appointed specifically to facilitate any Water Use Licence Application required in terms of the proposed development. A site meeting with DWS officials had been scheduled for the 4th of February 2016.
- The water rights are allocated for 4000 ha which is approved for smallholder development

by the Minister. Of these there are a further 700 ha available to distribute. After the EIR is completed and accepted, an application will be submitted to CCAW for water use rights.

The Department of Water Affairs, who administer that Act, will be a leading role-player in the EIA.

- No significant water courses are expected in the.
- Management of drainage lines will be addressed in the EMP.

2.5. NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT

The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) is part of a suite of legislation falling under NEMA, which includes the Protected Areas Act, the Air Quality Act, the Integrated Coastal Management Act and the Waste Act. Chapter 4 of NEMBA deals with threatened and protected ecosystems and species and related threatened processes and restricted activities. The need to protect listed ecosystems is addressed (*Section 54*).

2.6. NATIONAL FORESTS ACT

The National Forests Act (NFA), Act 84 of 1998 (as amended): supports sustainable forest management and the restructuring of the forestry sector. It also made provision for the protection of nationally protected tree species in terms of Section 12(d) of the NFA. GN No. 716 of 7 September 2012, refers to the latest list of protected tree species.

A biodiversity study was commissioned. Part of the brief of this study is to evaluate the potential impact on any nationally protected tree species that may be present on the property and to apply for a licence regarding protected trees in terms of the NFA (as amended).

2.7. NORTHERN CAPE NATURE CONSERVATION ACT

On the 12th of December 2011, the new Northern Cape Nature Conservation Act 9 of 2009 (NCNCA) came into effect, which provides for the sustainable utilisation of wild animals, aquatic biota and plants. Schedule 1 and 2 of the act give extensive lists of specially protected and protected fauna and flora species in accordance with this act. The NCNCA is a very important Act in that it put a whole new emphasis on a number of species not previously protected in terms of legislation.

It also put a new emphasis on the importance of species, even within vegetation classified as “Least Threatened” (in accordance with GN 1002 of 9 December 2011, promulgated in terms of the National Environmental Management Biodiversity Act 10 of 2004). Thus even though a project may be located within a vegetation type or habitat previously not considered under immediate threat, special care must still be taken to ensure that listed species (fauna & flora) are managed correctly.

A biodiversity study was commissioned. Part of the brief of this study is to evaluate vegetation and plant species and to evaluate the potential impact on species protected in terms of this Act. A flora permit will be applied for if necessary.

3. ALTERNATIVES

Alternatives with regards to a proposed activity, means different means of meeting the general purposes and requirements of the activity, which may include alternatives to –

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

Onseepkans lies in a semi-arid region where water is a scarce resource limiting development options. However, being located next to the Orange River gives Onseepkans the competitive advantage of being able to utilise this resource for agricultural irrigation. Agriculture is seen as being one of the most viable means of establishing economic growth, job creation and economic empowerment in this area. It is also recognized that successful promotion of agriculture and agri-processing can impact positively on the incomes of primary producers, create employment and address market risks. It is also one of the means by which transformation of agriculture in the province can be achieved.

The Onseepkans area has a further competitive advantage with its hot and sunny climate with the highest solar radiation intensity in South Africa, making it appropriate for private and large-scale solar energy generation. However, this type of development is not likely to address job creation or economic empowerment nearly as well as agriculture.

The Department of Agriculture, Land Reform & Rural Development recognised the opportunity to address transformation of agriculture, whilst at the same time creating economic growth, job creation and empowerment. As such the development focused on agricultural development and alternatives are mostly related to location and layout and crop types.

3.1. PROPERTY ALTERNATIVES

The proposed development aims at unlocking the agricultural potential of Onseepkans through irrigated farming. This plan includes the development of a further 200 ha of irrigation for the establishment of high value crops outside of the Orange River flood plain. The land under consideration (Farm 88) is owned by the municipality and does not require to be procured in the open market. At Onseepkans, it is also the most suitable land remaining for development.

As such property alternatives were not further investigated.

3.2. LAYOUT ALTERNATIVES

The aim of the development is to establish 200–250 ha of new agricultural land at Onseepkans. Water will be sourced from the upgraded Onseepkans Bulk Water Supply Scheme, which also supplies water to the existing established farming units at Onseepkans. Factors that limited layout alternatives include the property layout (of land that belongs to the Municipality), suitable soil types and topography, ease of access and cost of connecting with the existing water scheme.

From Figure 4 in the draft viability study (July 2014) done for this project (Figure 3), it is clear that soils will not limit the development, however, the topography and rocky ridges do constrain development. The size of the proposed development limits the options to the locations as set out in Alternative 1 (Figure 4), whilst still remaining within land owned by the Municipality.

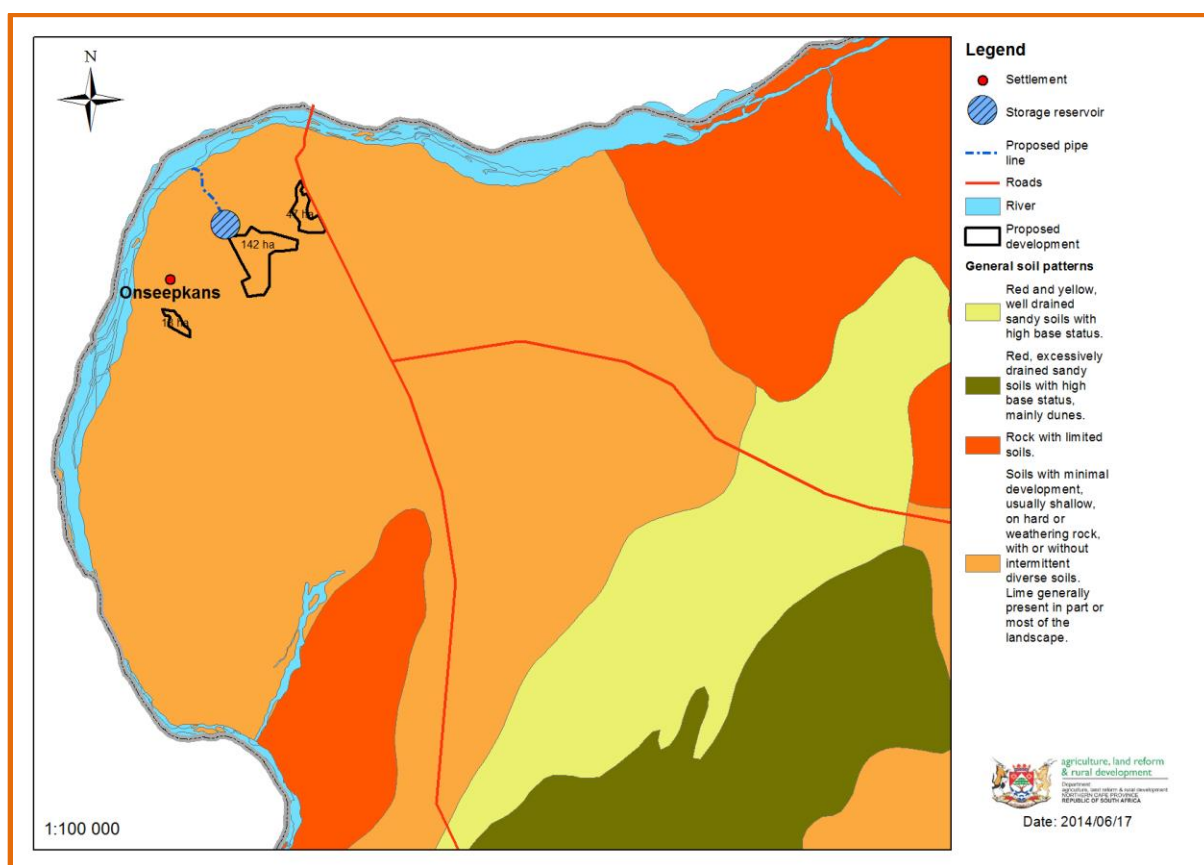


Figure 3: General soil patterns – copied from the draft agricultural viability study (July 2014)

Alternative 2 shows theoretical alternatives, should Alternative 1 be found unsuitable (or portions thereof unsuitable). In essence, Alternative 2 will move the developments further away from Onseepkans, which will increase development costs and especially running costs (it being physically further removed).

3.2.1. ALTERNATIVE 1 – THE PREFERRED ALTERNATIVE

The Department of Agriculture, Land Reform and Rural Development proposes investment in the revitalisation of the agricultural potential of the larger Onseepkans Settlement with the main aim of job creation, poverty relief and social investment. The preferred alternative proposes the development of approximately 250 ha of additional agricultural land outside of the floodplain is of Onseepkans. Since the soil type shows very little difference over the property, geography, access and cost of development were the main drivers for choosing the proposed locations.

The new agricultural area will consist of three (3) areas, namely:

- Expansion area A (between 142 – 188 ha);
- Expansion area B (\pm 47 ha); and
- Expansion area C (18 ha)

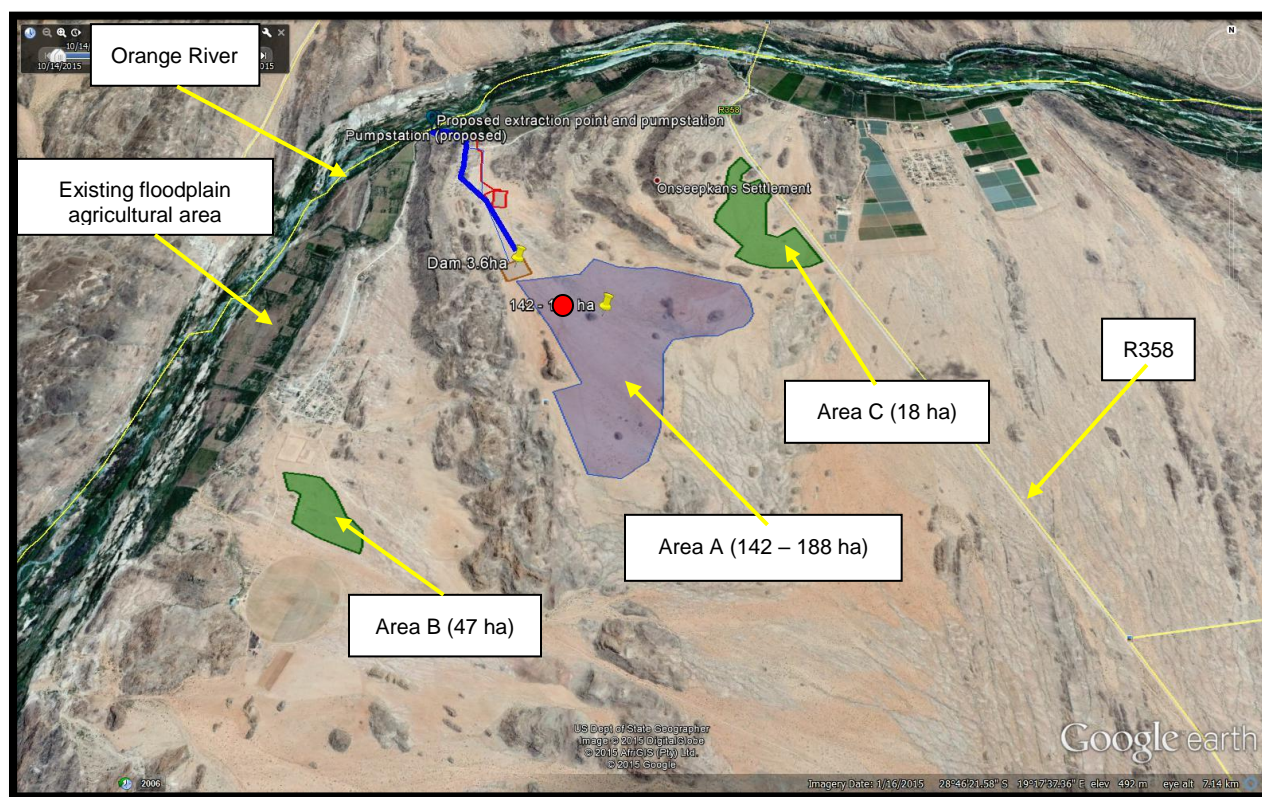


Figure 4: The preferred site alternatives in relation to the Onseepkans Settlement

3.2.2. ALTERNATIVE 2 – LAYOUT ALTERNATIVE

Although, from vegetation type, it seems as if the basin behind Onseepkans is predominantly a plain (and thus could provide opportunity for development), the natural features show a much more rocky dominated landscape (Refer to Figure 5), which limits development options quite significantly within the property (Farm 88).

Possible alternatives are also much further away from Onseepkans and the water supply, which will significantly increase development and running costs.



Figure 5: An overview showing possible alternative locations (stars) for development within the property

3.3. ACTIVITY ALTERNATIVE

The draft viability study done by the Department of Agriculture, Land Reform and Rural Development (July 2014) evaluates the agricultural potential of the property

It concludes that the area cannot be considered prime land, because prime land is defined as the best land available, primarily from a national perspective. However, this area can be defined as unique agricultural land, due to specific combinations of location, climate and soil properties that make it highly suitable for a specific crop.

The table underneath (taken from the draft agricultural viability study, July 2014) gives a subjective tabulation of possible crop suitability at Onseepkans. This is totally guided by the information of technical assistants with the drafting of this document. Lack of market knowledge around crops such as pomegranates obviously counted heavily against it. Accurate market statistics and adaptability records will probably create variation in this proposed table (Refer to Table 2)

Markets and biological/physical adaptability was weighted heavily because of its overall importance. Due to the relative high requirement for jobs in the Onseepkans region and the fairly low population, very little weight was allocated to jobs in the above matrix. Produce which allows

for on-site value adding such as drying of grapes, tomatoes and figs scored relatively high and needs further investigation.

Table 2: Expected crops suitability at Onseepkans (Copied from draft agricultural viability study, July 2014)

Product	Market	Bio/phys	Prod cost	Skills	Time	Jobs	Infrastr	%
Dry grapes	10	10	7	7	7	8	6	86
Wine grapes	10	10	8	8	7	7	7	84
Table grapes	10	10	5	5	7	10	5	77
Dates	9	10	6	6	5	8	6	71
Dried Tomato	6	8	6	6	9	8	6	70
Lucerne	7	10	3	5	10	3	7	68
Citrus	7	7	7	7	5	6	6	67
Figs	7	8	5	5	5	7	5	63
Cucurbits	6	7	4	5	8	7	6	61
Cotton	4	10	3	3	9	5	7	58
Vegetables	5	6	4	5	7	10	5	57
Veg Seed	5	5	2	2	3	5	2	57
Melon Seed	5	5	2	2	3	5	2	57
Pomegranates	4	7	6	6	6	4	4	53
Essential oils	5	5	4	3	5	4	4	43

3.4. THE NO-GO ALTERNATIVE

This is the option of not developing any additional agricultural land. Although this might result in no potential negative environmental impacts, the direct and indirect socio-economic benefits of the proposed development will not be realised or only partially realised.

The Department of Agriculture, Land Reform and Rural Development proposes to invest heavily in the revitalisation of the agricultural potential of the larger Onseepkans Settlement with the main aim of job creation, poverty relief and social investment.

Job creation will only be partially realised. Food security will only be partially realised and the potential transformation of agriculture in the province will not reach its full potential at Onseepkans, which will also impact negatively on the Province.

4. SITE DESCRIPTION

4.1. LOCATION

Onseepkans is a small agricultural settlement (and border post) next to the Orange River, Khai-Ma Local Municipality of the Namakwa district. It is located approximately 50 km north of Pofadder and shares a border post with Namibia, accommodating traffic between South Africa and Keetmanshoop in Namibia. The settlement was founded by missionaries during the 1916's. The sites are all located on the Remainder of Farm Onseepkans No. 88, at Onseepkans (Refer to Appendix 1).

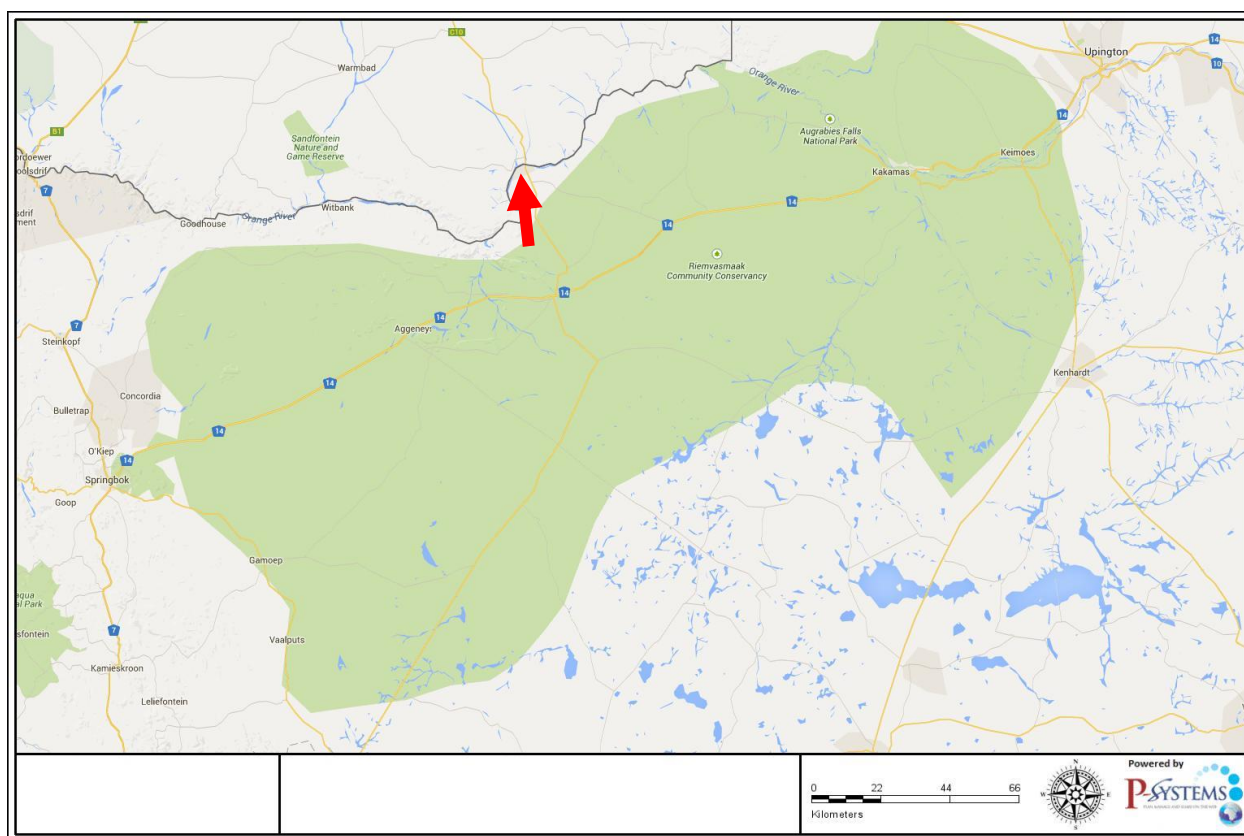


Figure 6: Showing the location of Onseepkans within the Northern Cape.

The proposed sites will be located away from the Orange River floodplains, on the plains just south of the Onseepkans settlement (Refer to Figure 7).

4.1.1. SURVEYOR GENERAL CODE

The proposed development is located on Farm 88, Onseepkans (Figure 6). The SG21 Code: C03600000000008800000

4.1.2. SITE COORDINATES

Table 3: GPS coordinates of the proposed development areas (Centre points only)

DESCRIPTION	Farm Name	LATITUDE AND LONGITUDE
Onseepkans	Rem. Farm 88, Onseepkans	S28 44 27.7 E19 18 14.1
Area A	Rem. Farm 88, Onseepkans	S28 45 58.5 E19 17 33.7
Area B	Rem. Farm 88, Onseepkans	S28 46 47.7 E19 16 15.6
Area C	Rem. Farm 88, Onseepkans	S28 45 22.7 E19 18 16.2

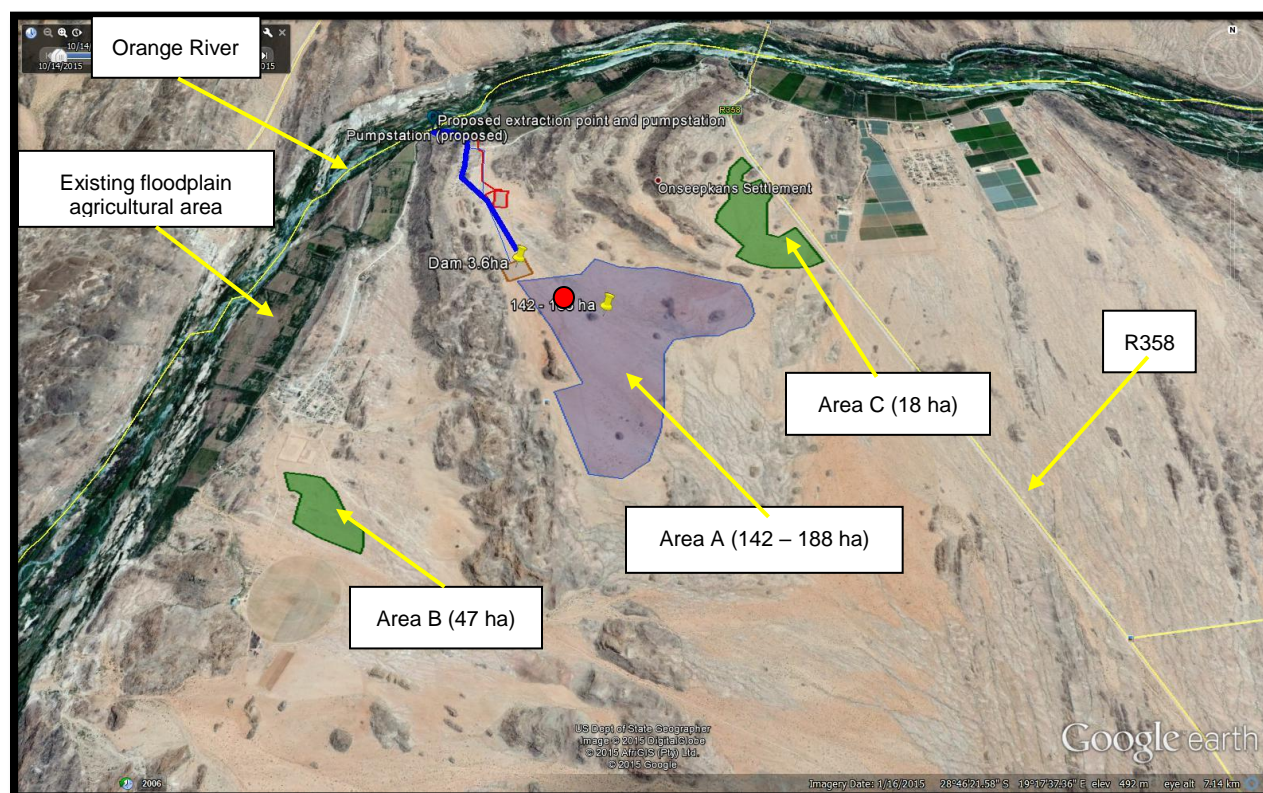


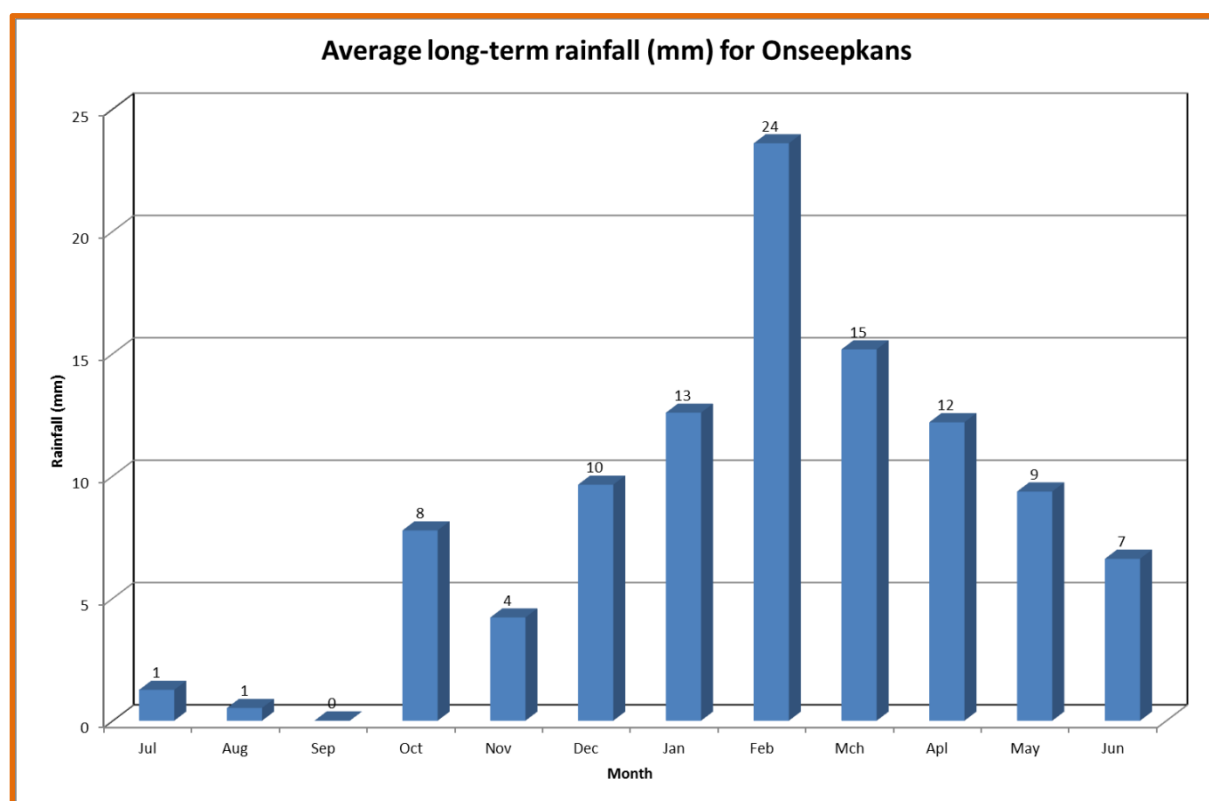
Figure 7: Proposed development areas in relation to the Onseepkans Settlement

4.2. CLIMATE

This Namakwa District of the Northern Cape Province is known for its semi-desert climate with extreme temperatures ranging from up to 45°C in summer to - 2°C in winter. The climate is variable due to its position in the transitional area between winter and summer rainfall. The winters are short and the area is well known for its high summer temperatures. Rainfall is erratic with average annual precipitation of 94 mm which occurs mainly in the late summer in the form of thunder showers. Average days with frost per year are only 2 and crops can only be grown under irrigation.

Table 4: Mean monthly climate data for Onseepkans

Elem	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	April	May	Jun
Maximum daily temp (° C)	23.05	25.02	29.59	32.01	35.2	37.31	38.9	38.15	36.17	31.18	26.42	22.16
Minimum daily temp (° C)	5.36	6.66	10.45	14.46	17.27	19.59	21.51	21.55	19.44	15.26	10.04	5.6
Average daily temp (° C)	13.53	15.49	19.58	23.52	26.59	28.76	30.47	29.89	27.68	22.67	17.64	13.31
Rainfall (mm)	1.26	0.52	0.01	7.78	4.22	9.65	12.59	23.6	15.18	12.2	9.37	6.62
Radiation (MJ/m ²)	14.72	18.37	23.57	27.18	30.87	32.32	30.95	27.31	24.06	19.31	15.22	13.52

**Figure 8: Average long-term rainfall for Onseepkans**

All regions with a rainfall of less than 400 mm per year are regarded as arid. The Onseepkans area falls within the desert biome or hyper arid region fringing the western South African shoreline, Southern Angola and Namibia. The desert biome is characterised by ecological extremes and of all the biomes in SA it has the lowest amount and variability in rainfall. Onseepkans normally receives about 18 mm of rain per year, with most rainfall occurring mainly during autumn.

According to www.saexplorer.co.za, Onseepkans receives the lowest rainfall (0 mm) in May and the highest (9 mm) in March. The monthly average daily maximum temperatures for Onseepkans range from 20.7°C in July, to 33.4°C in January. The region is the coldest during July with temperatures of 4.7°C, on average, during the night.

4.3. SOIL

The following information is obtained from the Proposed Onseepkans Development Report (**Appendix 2**).

The existing irrigation lies on the flood plain of the Orange River and is characterised by recent alluvial deposits of the Orange River supporting soil forms such as Dundee and Oakleaf. The proposed site for the table grape development lies south of the alluvial plain on gently sloping pediment slopes. This area is characterized by gneissic rock and coarse grained metamorphic rocks from the Little Namaqualand Suite of the O’Kiep Group. This is interspersed by sedimentary material from the Korannaland Sequence which includes conglomerates, quartzite, schists and mica.

Due to the dominant soil properties, inter alia, (i) topsoil horizons (ii) clay content (iii) effective root depth (iv) dominant soil form and series, it was concluded that the soils have low to high potential for irrigated agriculture.

The area cannot be considered as prime land, because prime land is defined as the best land available, primarily from national perspective. However, this area can be defined as unique agricultural land, due to specific combinations of location, climate or soil properties that make it highly suitable for a specific crop, more especially table grapes, which is made even more suitable due the availability of sufficient volumes of high quality water for permanent irrigation.

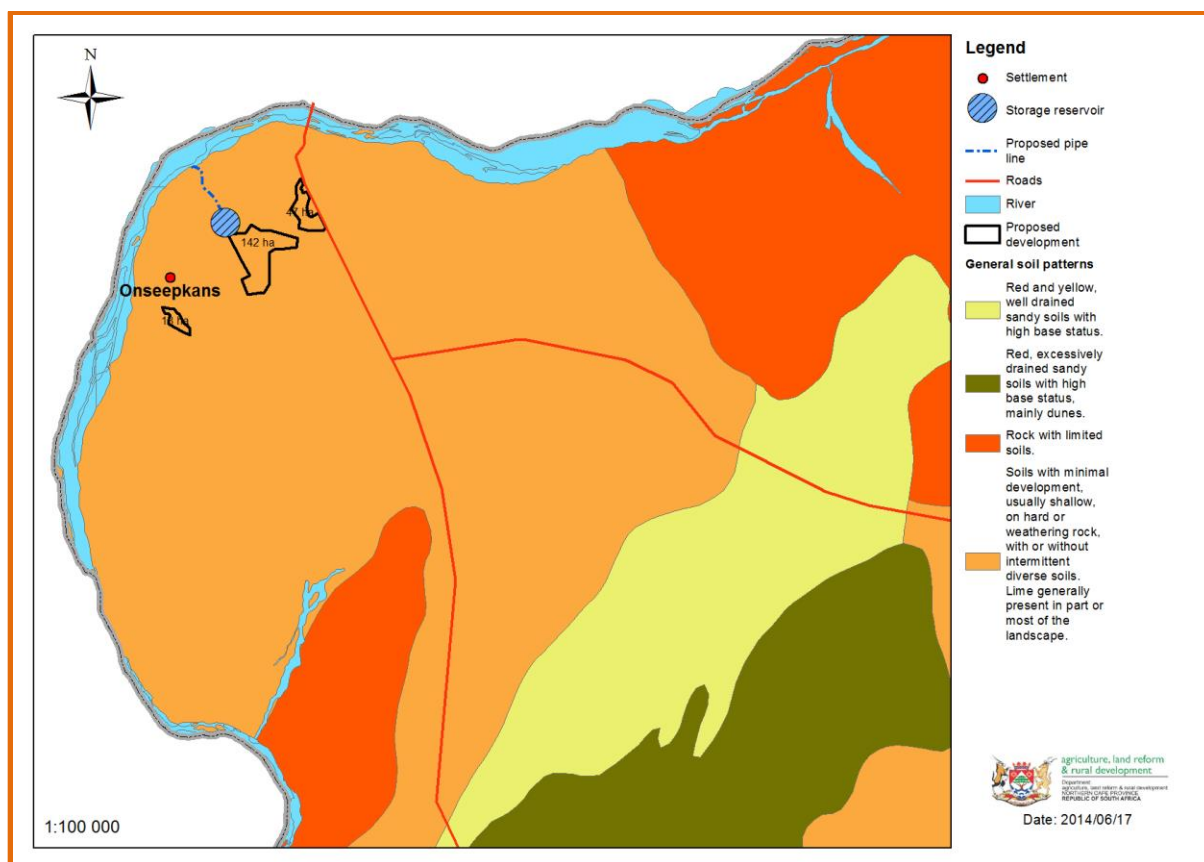


Figure 9: General Soil Patterns

4.4. VEGETATION

In accordance with the Vegetation map of South Africa, Lesotho and Swaziland (Mucina & Rutherford, 2006) only two broad vegetation types are expected to be impacted by the proposed development namely; **Eastern Gariep Plains Desert** and **Eastern Gariep Rocky Desert** (Figure 7). According to the *National list of ecosystems that are threatened and in need of protection* (GN 1002, December 2011) both these vegetation types are classified as “Least Threatened”.

Table 5: Vegetation status according to the 2004 & 2011 National Spatial Biodiversity Assessment

VEGETATION TYPE	NATIONAL STATUS 2011	REMAINING (2004)	CONSERVATION TARGET	FORMALLY CONSERVED
Eastern Gariep Plains Desert	Least Threatened	Very little intact examples remains	34%	-
Eastern Gariep Rocky Desert	Least Threatened	99.7%	34%	-

It is important to note that even though both Eastern Gariep Plains Desert and Eastern Gariep Rocky Desert, has been classified as least threatened, they also both fall within the South African Desert Biome, in this case fringing on the Namibian desert. The Desert Biome is a hyperarid region of great age and one with extraordinary high diversity of organisms (including many endemics), adaptations and includes both winter- and summer rainfall areas, making it one of the

most interesting hyperarid regions of the world. Compared with other desert regions, plant species richness is very high (especially the Richtersveld) and does not differ much from that of the Succulent Karoo (Mucina & Rutherford, 2006). However, not all parts of this biome are equally rich in species diversity. Plant species richness of the western Gariep Lowland Desert vegetation unit, is thought to be less rich than that of for example the Richtersveld and is described by Mucina & Rutherford (2006) as moderate. This is very likely as a result of the fact that the Richtersveld falls within a winter rainfall area (and subject to fog from the nearby Atlantic Ocean), while moving east the climate changed to a summer rainfall pattern (like at Onseepkans).

Please refer to the Biodiversity study (Appendix 6.2) for a more in-depth discussion of the two prominent vegetation types. Impacts of the proposed development (development of areas A, B and C) on the vegetation will be discussed below in Section 6.

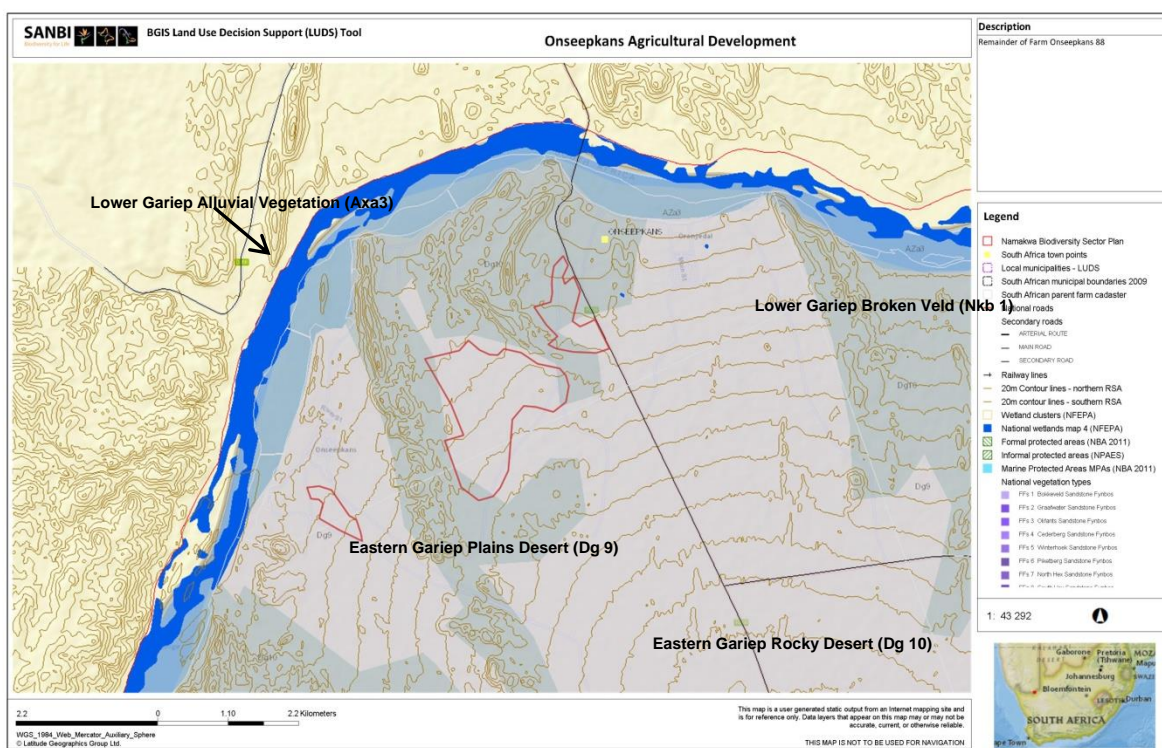


Figure 10: Vegetation map of SA, Lesotho, Swaziland (2006)

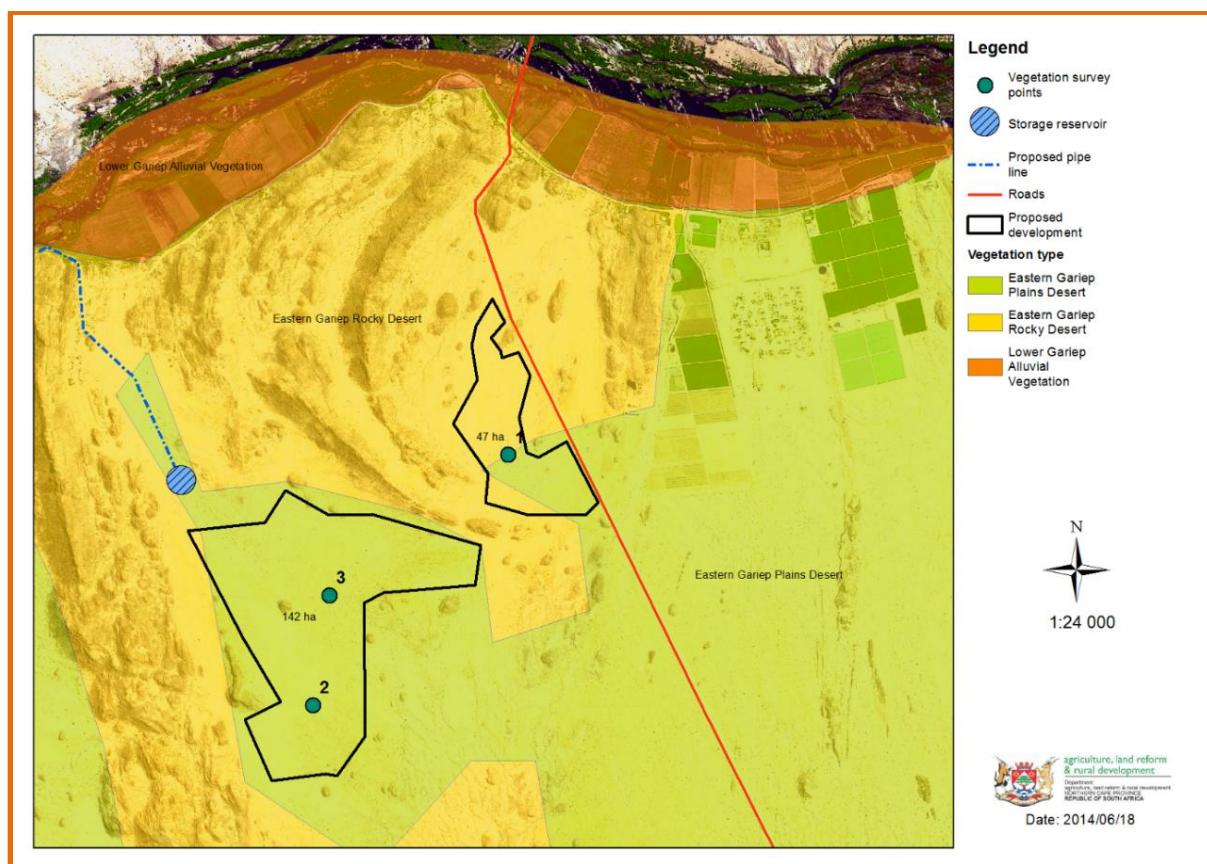


Figure 11: Desert Biome vegetation types expected at Onseepkans

4.5. NAMAKWA DISTRICT BIODIVERSITY SECTOR PLAN

The Namakwa District Biodiversity Sector Plan (Figure 11) is intended to help guide land-use planning, environmental assessments and authorisations and, natural resource management in order to promote sustainable development. It has been developed to further the awareness of the unique biodiversity in the area, the value this biodiversity represents to people and promote the management mechanisms that can ensure its protection and sustainable utilisation (Draft Namakwa District Biodiversity Sector Plan, Version 2).

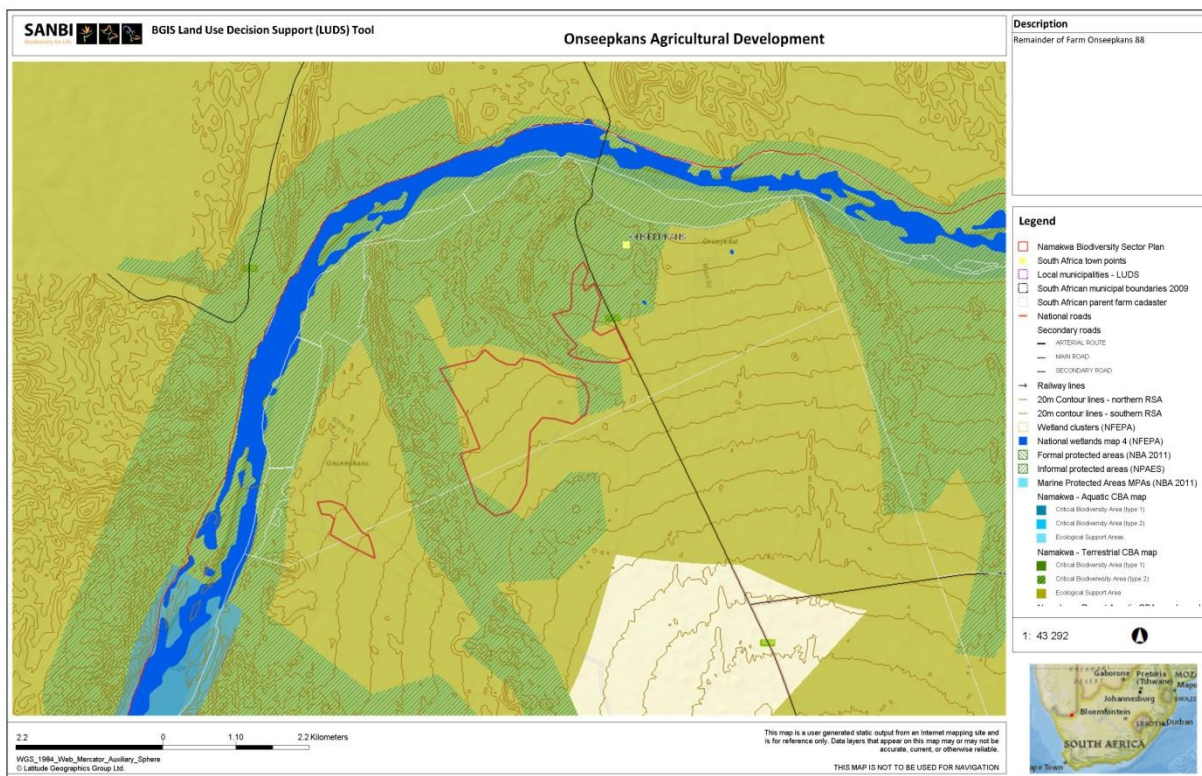


Figure 12: Namakwa District Biodiversity Plan showing the Onseepkans area

According to the CBA map for the Onseepkans area it is clear that the proposed sites as well as the whole of Onseepkans is located within proposed CBA 1 or CBA 2 areas. Ideally one would like to limit potential impact on such CBA areas, but in this case it will be almost impossible. However, the impacts on the CBA's are already mitigated to a large degree by the placement of the sites next to existing roads and within areas already impacted by agricultural development and urban creep. However, it is still recommended that good environmental control must be implemented during construction and rehabilitation, especially in this arid region where re-instatement of natural vegetation would be especially difficult after disturbance.

4.6. **FRESHWATER**

No fresh water impact assessment was commissioned in terms of the proposed agricultural development at Onseepkans.

4.7. **SOCIO-ECONOMIC CONTEXT**

According to the 2002 agricultural census (the last census data on District level) Namakwa contributed 7.3% to total Gross Farm Income of the Northern Cape. The importance of production under irrigation is relatively small if compared to the rest of the Province as the District produced 2.2% of the value of field crops and 2.4 % of the value of horticulture crops in the Northern Cape.

According to Global Insight calculations, Namakwa District was the only District that indicated a decrease in GDP per Capita for the period 1996 to 2012, dropping from R 36,692 to R 36,247 in constant 2005 prices. This means that output per capita decreased marginally over this period. The situation for Khai-Ma Municipality is even worse as the GDP per Capita decreased from R 29,187 to R24, 020 for the same period. This highlights the need for additional development in these areas to reverse this trend.

The Gross Value that was added by the agricultural sector as a percentage of the total value that was added in the Northern Cape in 2012 totalled 6.34%. The contribution of the value added by agriculture in Namakwa District (R 768 million) accounted for 10.41% of the total value added by the District. The contribution of the value added by agriculture in Khai-Ma Municipality (R 69.9 million) accounted for 12.98% of the total value added by the Municipality. This indicates the relative important role agriculture plays in the District as contributor to value added to the economy and even more important role on Municipal level.

Remuneration to agricultural labour for the District was calculated at R 267 million and contributed 7.85% of total labour remuneration in the District, the 3rd highest contribution of all Districts. The average contribution of agriculture to total labour is 4.4% for the Northern Cape. Remuneration to agricultural labour for the Khai-Ma Municipality was calculated at R31.2 million and contributed 12.18% of total labour remuneration in the Municipal area. This also illustrates the importance of agricultural labour remuneration in the Municipal area and District compared to the rest of the Province.

Formal sector employment (number of persons employed) of the nine economic sectors, indicate a contribution from agriculture equal to 18% for the Northern Cape (2nd highest contributing sector). In Namakwa agriculture employed 23% of total formal sector employment (2nd highest contributing sector) and in Khai-Ma Municipal area 45% of total formal sector employment (highest contributing sector), clearly underlining the role of agriculture as job creator in rural areas. While there are moderate backward linkages with sectors such as manufacturing (e.g. fertilizers and chemicals), transport and services, minimum forward linkages exist with virtually no processing of agricultural products or agri-tourism ventures.

The potential for agri-tourism, agri-processing and value adding initiatives presents further opportunities for diversification of the local economy. It is recognized that successful promotion of agri-processing can impact positively on the incomes of primary producers, create employment and address market risks. It is also one of the means by which transformation of agriculture in the province can be achieved.

Possible agri-processing ventures in the area include:

- Wine and juice production
- Dried fruit and vegetables
- Animal feed products

- Cereals

4.7.1. DEMOGRAPHIC PROFILE OF NAMAKWA DISTRICT

Total Population	124 940
As Percentage of South Africa	0.25%
As Percentage of Northern Cape	11.65%
Population Density (people per km ²)	0.9
South Africa	3.91
Northern Cape	2.62

4.8. HERITAGE FEATURES

In terms of Section 38 of the National Heritage Resources Act (Act No. 25 of 1999) (NHRA), SAHRA require an impact assessment where certain categories of development are proposed. Since the footprint of the proposed development will exceed 5 000 m² in extent it triggers the NHRA.

An Archaeological Impact Assessment (AIA) was commissioned (Refer to Appendix 6.3) in order to evaluate the possible impacts on heritage or archeologically and to advise SAHRA of the likelihood of impacts on existing heritage as well as recommendations for impact minimisation (if required).

5. PROCESS TO DATE

In terms of the NEMA EIA process the Scoping and EIA process must follow certain prescribed process or steps. The section below outlines the various tasks undertaken to date, the members of the team involved in the project, as well as the Public Participation Process.

5.1. TASKS UNDERTAKEN TO DATE

Table 6: Tasks undertaken in the EIA to date

TASKS	DAYS	TARGET DATE	Target Achieved Yes / NO
Scoping phase	44 days maximum		
Prepare and submit Application document			Yes
DEA to acknowledge application and provide formal reference number	10	October 2016	Yes
Submit Scoping Report for comment	30		Yes
Prepare comments and response report	2		Yes
Incorporate comments and prepare Final Scoping Report	2	November 2016	Yes
Submit Final Scoping Report to DEA for decision on scoping process	43		Yes

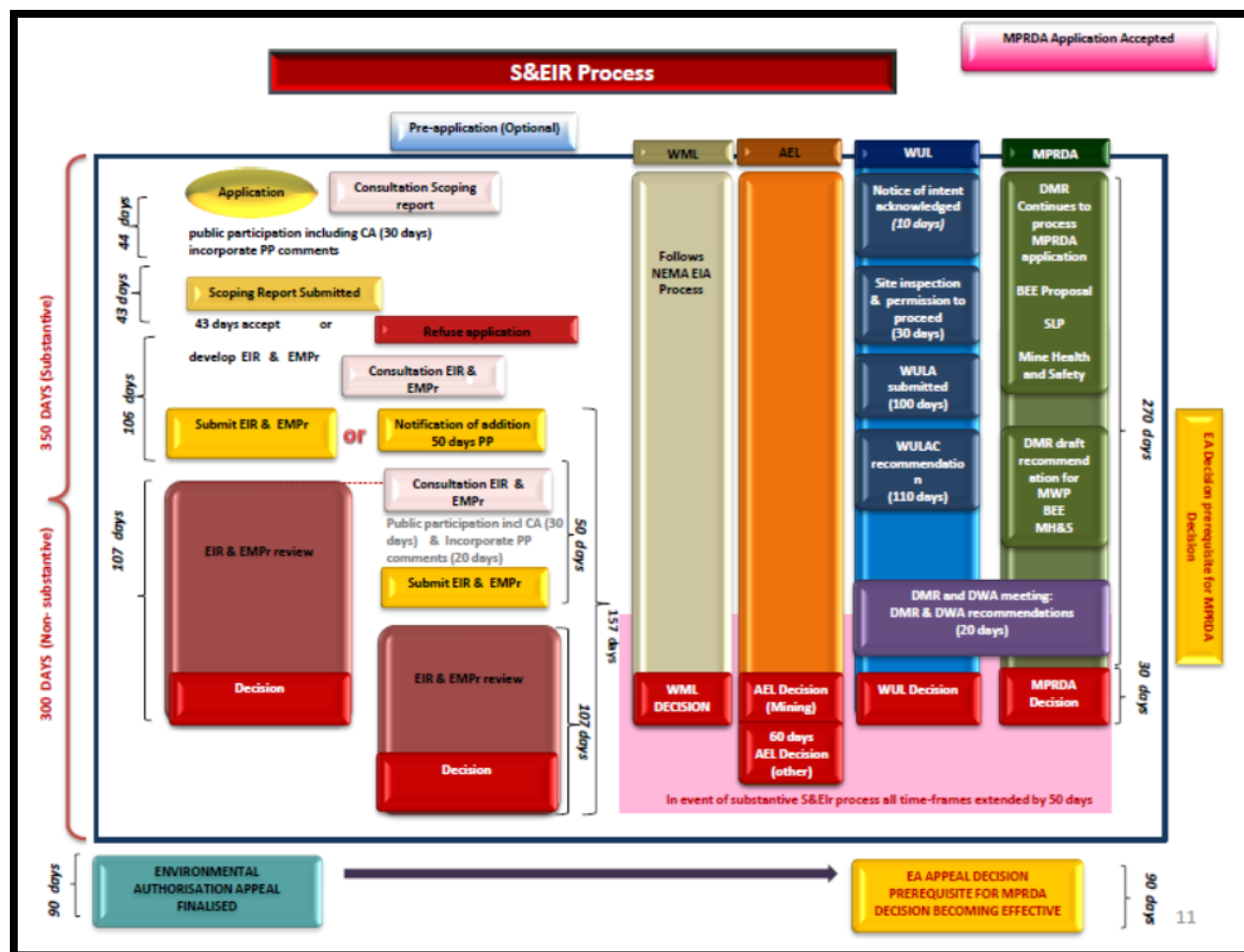


Figure 13: Summary of Scoping and EIA 2014 process

Figure 13 gives a summary of the EIA process and provides an understanding of the times frames for the different phases of the EIA process.

5.2. TASKS TO BE UNDERTAKEN DURING THE EIA PROCESS

The following must be undertaken during the EIA phase of the process:

Table 7: Tasks to be undertaken during the EIA process

Impact assessment phase (Note this phase can only start after decision from CA)	106 days maximum	
Compile Draft Environmental Impact Report (EIR) for public comment based on specialist information (THIS DOCUMENT)	30	June 2017
Submit Impact Report to Competent Authority		23 June 2017 to 23 July 2017
Submit Draft Impact Report (EIR) to interested and affected parties (I&AP) for comments	30	
Receive all comments and incorporate responses to comments into the Final Environmental Impact Assessment	30	August 2017
Prepare Final Environmental Impact Report	16	August 2017

Submit Final Environmental Impact Report to DEA for decision	107	August 2017
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5.3. **PROFESSIONAL TEAM**

The following professionals are part of the project team:

Table 7: Professional team

Discipline	Specialist	Organisation
Environmental Assessment Practitioner (EAP)	PJJ Botes & Inge Erasmus	Enviro Africa
Biodiversity & Botanical scan	Peet Botes	PB Consult
Archaeological Impact Assessment	Jan Engelbrecht	Ubique Heritage Consultants

5.4. **PUBLIC PARTICIPATION**

5.4.1. **PUBLIC PARTICIPATION UNDERTAKEN DURING THE SCOPING PHASE:**

Interested and Affected Parties (I&APs) were identified throughout the process. Landowners adjacent to the proposed site, relevant organs of state, organizations, ward councillors and the Local and District Municipality were added to this database. Please note that EnviroAfrica also facilitated the application for the upgrade of the Onseepkans Bulk Water Supply System, which resulted in environmental authorization and all I&AP's identified during that application process were automatically added to the interested and affected parties list for this project. A complete list of organisations and individual groups identified to date is shown in Appendix 5.1.

Public Participation was conducted for this proposed development in accordance with the requirements outlined in Regulation 41, 42,43 and 44 of the NEMA EIA Regulations, as well as the Department of Environmental Affairs and Development Planning's guideline on Public Participation 2011. The issues and concerns raised will be dealt with as part of this application.

Each subsection of Regulation 41 contained in Chapter 6 of the NEMA EIA Regulations will be addressed separately to thereby demonstrate that all potential Interested and Affected Parties (I&AP's) were notified of the proposed development.

Table 8: PPP

R41	Posters, Advertisement & Notification letters
(2) (a) (i)	Posters was displayed on the property fence to the east and south of the proposed sites (Area A & B). A number of posters were placed in the vicinity of Area C (Refer to Appendix 4.6). Posters were also placed at the Onseepkans Municipal Offices, at, "Die Winkel", at the community hall, at the satellite Municipal offices to the east of Onseepkans and at the farm shop to the east of Onseepkans (please refer to Appendix 5.1.4).

	The posters contained all details as prescribed by R41 (3) (a) & (b) and the size of the on-site poster were 60cm by 42cm as prescribed by section 41 (4) (a).
(ii)	N/A No alternative site
(2) (b) (i)	An initial notification letter was posted to the landowner (Nama Khoi Municipality) (please refer to Appendix 5.1.4 & 5.1.5 for proof of notification letters sent).
(2) (b) (ii)	Initial notification letters were delivered to landowners and occupiers adjacent to the site. Please refer to Appendix 5.1.3 & 5.1.4 for proof of notifications.
n(2) (b) (iii)	Notification letters were sent to the municipal ward councilor for Henkries. Please refer to Appendix 5.1.3 & 5.1.1
(iv)	Notification letters were sent to the Municipal Manager of the Municipality who is also the land owner (Appendix 5.1.5)
(v)	Notification letters were sent to the following organs of state: <ul style="list-style-type: none"> o Department of Water Affairs o DENC (Department of Environment and Nature Conservation) o DAFF (Department of Agriculture, Forestry & Fisheries) o SAHRA (South African Heritage Recourse Agency) (Please refer to Appendix 5.1.1 and 5.2.3)
(vi)	Notification letters were sent to neighbours (Please refer to Appendix 5.1.3 & 5.1.4)
(2) (c) (i)	An advert was placed in Die Gembok of 06 November 2015 (Please refer to Appendix 5.1.2)
R42 & 34	Register of I&AP
(a), (b), (c), (d)	A register of interested and affected parties was opened and maintained and is available to any person requesting access to the register in writing (Please refer to Appendix 5.1.1 & 5.2.1 (updated) for the list of I&AP).
R43	Registered I&AP entitled to comments
3	I&AP were given 30 days for comments during the initial public participation phase
R44	I&AP to be recorded
	A summary of issues raised by I&AP are addressed in the comments and response report.. (Refer to Appendix 5.1.6 and 5.1.7 for comments from The Löt's familie trust during the. No comments were made during the second round of public participation).

5.4.2. PUBLIC PARTICIPATION UNDERTAKEN DURING THE EIA PHASE:

Groups and individuals identified as Interested and Affected Parties during the initial Public Participation Process were added to the I&AP register. The updated list of organisations and individual groups identified as well as those I&APs that have registered are given in **Appendix 5.2.1**.

The Scoping report was sent to all registered and affected parties as well as the relevant registered state organizations (Please refer to **Appendix 5.2.3** for proof). DENC acknowledged the receipt of the Scoping Report and granted permission to proceed with the EIR. (Please refer to **Appendix 5.2.2**

Full copies of the EIR will be sent to all Registered I&AP, and will be notified of the Environmental Impact Report (EIR) by means of notification letters (via preferred method of communication), informing them of the availability of the Draft EIR and will be invited to comment. The EIR will be made available for a 30-day comment period.

The EIR will be revised in response to feedback received from I&APs. All comments received and responses to the comments will be incorporated into the Final Environmental Impact Report (Final EIR). The Final EIR will be made available for a further 30-day commenting period, after which, it will be submitted to DENC for a decision.

Should it be required this process may be adapted depending on input received during the ongoing process and as a result of public input. Both DENC and I&APs will be informed of any changes in the process.

5.4.3. INTERESTED AND AFFECTED PARTIES

Interested and Affected Parties (I&AP) have been notified by means of advertisement in regional and/or local newspapers, site notices and letters and/or emails to registered I&APs on the project database.

The updated register of I&APs is included as **Appendix 5.2.1**. No new I&APs were registered.

6. ENVIRONMENTAL ISSUES AND POTENTIAL IMPACTS

Environmental issues were raised through informal discussions with the project team, specialists and authorities. Specialist were appointed to assess any potential impacts on the proposed environment, an Biodiversity impact study as well as an Heritage Impact Study was commissioned. (Please refer to Appendix 6). Additional issues raised during the public participation will be listed in the Final Environmental Impact Report.

The following potential issues have been identified:

6.1. LAND USE

According to the Biodiversity report (Appendix 6.1), Onseepkans lies in a hyperarid region where access to water is the main restriction on human settlement and agricultural expansion. This contributes to the fact that the most appropriate crops together with the most water-efficient irrigation technologies must be promoted. The only sustainable source of good quality irrigation water is the Orange River.

The following description was taken from the draft agricultural viability study (July 2014). The long-term grazing capacity is very low for the Onseepkans farming area and ranges between 70 ha LSU-1 and 100 ha LSU-1 (Large Stock Unit) (Grazing map, 1993). Both past and present farming activities on arid rangelands often placed immense pressure on the natural resources, often leading to the overutilization thereof. On the communal managed rangelands there are often too many livestock, with only a few water points and not a proper grazing management system in place to allow rest for the rangelands. These non-equilibrium systems as are primarily controlled by various stochastic abiotic factors, such as droughts, while Westoby et al. (1989) consider the high rainfall variability to be the primary driver for vegetation dynamics and claimed that grazing pressure from livestock only plays a marginal role in rangeland condition. Variable rainfall would, therefore, result in highly variable forage production and, accordingly, carrying capacity (Vetter, 2005). Less available forage results in higher mortality rates of livestock or more livestock being marketed.

The Onseepkans farm forms part of the Desert Biome of Southern Africa (Low & Rebelo, 1996; Rutherford et al., 2006). The term desert is roughly defined as an area with a mean annual precipitation of less than 75 mm and a sparse perennial vegetation canopy cover of less than 10%. The diversity of the vegetation in this biome is relatively high compared to the other deserts at the same aridity level globally. The Gariap vegetation types consist of some rocky areas which are dominated by sparse shrubs and leaf succulents. The vegetation within this Desert Biome can be quite sensitive to degradation, e.g. soil loss and changes in the plant species composition are some of the major impacts which resulted due to the mismanagement of livestock (Jürgens, 2006).

The proposed development areas will be located on communal land within the sandy plains (between the rocky hills) to the south of the main Onseepkans settlements. The sandy plains can be described as sloping plains, sharply contrasting with the surrounding rocky hills and mountains covered with sparsely vegetated natural veld, used as natural grazing by the local inhabitants of Onseepkans. However, the long term grazing capacity is very low for the Onseepkans farming area

One of the issues raised during the initial public participation process was the fact that land owners are using the communal land (“meent gronde”), belonging to the Municipality as grazing. Even though the grazing potential of this area is very low, some subsistence farmers are likely to be dependent on this resource. Mitigation should entail, relocating the farmers onto similar grazing land or compensating them in some other way.

6.2. WETLANDS AND WATERCOURSES

As per the Botanical assessment, all the rivers within the proposed area are non-perennial rivers, except for the Orange River.

All three of the proposed agricultural expansion areas is located on open sheet washed plains that is commonly found between the rocky hills of the Eastern Gariep desert. These plains contain the alluvial fans which developed from drainage channels emerging out of the hills (driven by flash floods during thunder storm events) and opening up on the gently sloping pediment where the power of the streams become too low and where the sediment loads are dropped (and the drainage lines dissipate onto the sandy plains).

No perennial watercourses or wetlands were observed on any of the proposed sites. However, a number of smaller drainage lines have been observed (a legacy of thunderstorm events). Some of these drainage lines (e.g. at Expansion area C) is slightly more prominent and sometimes a larger shrubs or small trees (e.g. *Parkinsonia africana*, *Boscia foetida* or *Boscia albitrunca*) layer can be associated with portions of these drainage lines, but even at expansion area C the site is located to miss the most significant alluvial fans. On all three of these sites, almost invariably, these drainage lines dissipate onto the sandy plains and does not link up to any water resource

6.3. BIODIVERSITY

A Biodiversity assessment was commissioned to determine if there are any sensitive or endangered vegetation types on the proposed site (Please refer to **Appendix 6.2**). The terms of reference for this study required a baseline analysis of the flora of the area, including the broad ecological characteristics of the site. It must also address the significance of the vegetation in terms of local and national biodiversity targets, ecological corridors and connectivity.

6.3.1. VEGETATION

Expansion area A & C are expected to be located within the Eastern Gariep Plains Desert vegetation type, while expansion area B overlaps both Eastern Gariep Plains Desert and Eastern Gariep Rocky Desert vegetation types (Refer to Figure 9). However, the vegetation encountered on all three sites was very similar, with the only marked difference the number of larger shrub and tree species encountered on Area C (probably as a result of the being located along more defined drainage lines in the vicinity of the site) and higher grassy content on Expansion area B. All three sites were located on typical sheet washed plains and it is very likely that the expectance of Eastern Gariep Rocky Desert vegetation on Expansion area C is more the result of the scale of mapping than there actually being Eastern Gariep Rocky Desert vegetation on site.

In general all of these sites were covered by a very sparse (>10% cover) low shrubland or grassy shrubland. Larger shrubs and small trees were also occasionally encountered on the plains (e.g.

Boscia foetida, *Senegalia mellifera* and *Euphorbia gregaria*), but more often than not larger shrubs and small trees were associated with alluvial fans and dry drainage lines. Species like *Parkinsonia africana* and *Adenolobus garipensis* are almost exclusively found in association with these dry drainage lines.

None of the sites are fenced and all the sites showed signs of over grazing. Palatable shrubs are heavily grazed and the veld dominated by less palatable species such as *Aptosimum spinescens*, *Euphorbia species*, *Petalidium setosum* and *Sisyndite spartea*. Grass densities are low and mostly with a low basal cover, dominated by less palatable species like *Schmidtia kalahariensis*. More palatable grasses such as *Stipagrostis ciliata* and *Stipagrostis obtusa* were scarce and if encountered grazed to ground level. The presence of invasive alien species like *Prosopis* spp. (even though low in numbers) also raises concern.

Vegetation affected by the expansion of Area A:

Expansion Area A is by far the largest (142 – 188 ha) of the three sites and is located within the open sandy plains south of the Viljoensdraai Settlement (Refer to **Error! Reference source not found.**). The site can be described as an open sheet washed plain covered by a very sparse grassy and shrub layer (**Error! Reference source not found.**). The shrub layer of the proposed expansion area A (**Error! Reference source not found.**) was dominated by scattered individuals of *Lycium cinereum* with *Petalidium setosum*, *Euphorbia gregaria* and *Euphorbia gariepina* also relatively common. Grasses were common but mostly unpalatable varieties like *Schmidtia kalahariensis* and *Stipagrostis* species and was mostly heavily grazed with a low basal cover. Other shrubs included *Acanthopsis cf. disperma*, *Aptosimum spinescens*, *Chascanum garipense*, *Codon royenii* and *Kissenia capensis* (near rocky outcrops) and *Sisyndite spartea*.



Figure 14: Very sparse vegetation dominated by *Lycium cinereum* encountered at expansion A.

Apart from a few scattered *Parkinsonia africana* (near ephemeral drainage lines or alluvial fans) two *Boscia albitrunca* trees were encountered (Refer to Waypoint 042 & 043 in Figure 15) near the site, both beautiful mature trees (2 m and 3.5 m in height respectively). However, both these trees are outside of the proposed footprint, at the base of a rocky hill and there should be no reason to disturb these trees and they should be protected. Eight *Boscia foetida* ranging from large shrubs to small trees in size were also observed within or near the site, of which only 4 falls within the proposed footprint. However, apart from the small tree (marked with waypoint 041 in 15) the remaining three (waypoint 044, 047 & 048) are near to the boundaries of the proposed sites and although none of them are particularly spectacular trees (1.8 – 2m in height) it should be possible to preserve at least some of these trees (Figure 15) if not all.



Figure 15: Google image indicating area A with *Boscia foetida* (Bf) and *Boscia albitrunca* (Ba) locations marked

Vegetation affected by the expansion of Area B:

Expansion Area B is the second largest site (48 ha) and is located next to the R358 main entrance to Onseepkans (Figure 16). The vegetation encountered was very similar to that described for expansion area A, although it showed a slightly denser grassy layer (**Error! Reference source not found.**) and *Lycium cinereum* was replaced by *Senegalia mellifera* (Swarthaak) and *Euphorbia gregaria* as the dominant shrub layer. *Adenolobus garipensis* was also encountered on this site.



Figure 16: Open sandy plains with large *Euphorbia gregaria* in the foreground encountered at Expansion B

Only one *Boscia foetida* (approximately 2m in height and in average condition) was encountered within the proposed footprint (marked by waypoint 049 in Figure 17).



Figure 17: Google image showing area B with the *Boscia foetida* (BF) location marked.

Vegetation affected by the expansion of Area C:

Expansion area C is the smallest of the proposed sites (18 ha) and located further to the west and directly east of the main Mission settlement at Onseepkans.

The shrub layer is noticeably denser than found on the other two sites, but still dominated by unpalatable species such as *Sisyndite spartea*, *Euphorbia garipense*, *Euphorbia gregaria*, *Tetraena decumbens* and *Petalidium setosum* (Figure 18). In terms of botanical significance, this site was regarded as the most sensitive of the three sites, purely because of the relative high number of *Boscia foetida* and *Boscia albitrunca* individuals within and near the site (which is probably the result of the number of alluvial fans in the vicinity of the site – ephemeral drainage lines).

Other species encountered includes the shrubs: *Acanthopsis* cf. *disperma*, *Adenolobus garipensis*, *Aptosimum spinescens*, *Blepharis mitrata*, *Calicorema capitata*, *Chascanum garipense*, *Codon royenii*, *Lycium cinereum*, *Parkinsonia capensis* and *Senegalia mellifera*. The number of individuals of the alien invasive plant *Prosopis* species was worrying.



Figure 18: *Sisyndite spartea* dominated veld encountered at Expansion C

However, importantly, twenty six (26) *Boscia foetida* and 11 *Boscia albitrunca* trees/shrubs were observed within or in close proximity to the proposed development footprint (Refer to **Error! Reference source not found.**). Of the 26 *Boscia foetida* only 15 falls within the proposed footprint (likely to be impacted), most of which were small or scruffy plants in poor condition. However, three of the plants (marked with waypoint 035, 036 and 037 (Figure 19) was described as mature trees in relative good condition (located near an ephemeral drainage line and also near to the boundary of the proposed site). **If possible the footprint should be adjusted to exclude these 3 *Boscia foetida* trees.**

Of the 11 *Boscia albitrunca* (Sheppard's trees) individuals only one (waypoint 012) falls outside of the proposed footprint, while one (waypoint 11) should be easy to avoid. The remainder are squarely within the site. However, none of these trees are really in good condition, in fact, six of them (refer to waypoint 015 and 018 – 022) are scruffy small trees in poor condition (all of them less than 1.8 m in height), while another three (refer to waypoint 029, 030 and 033), were described as in medium condition with only one (029) reaching 2 m in height.

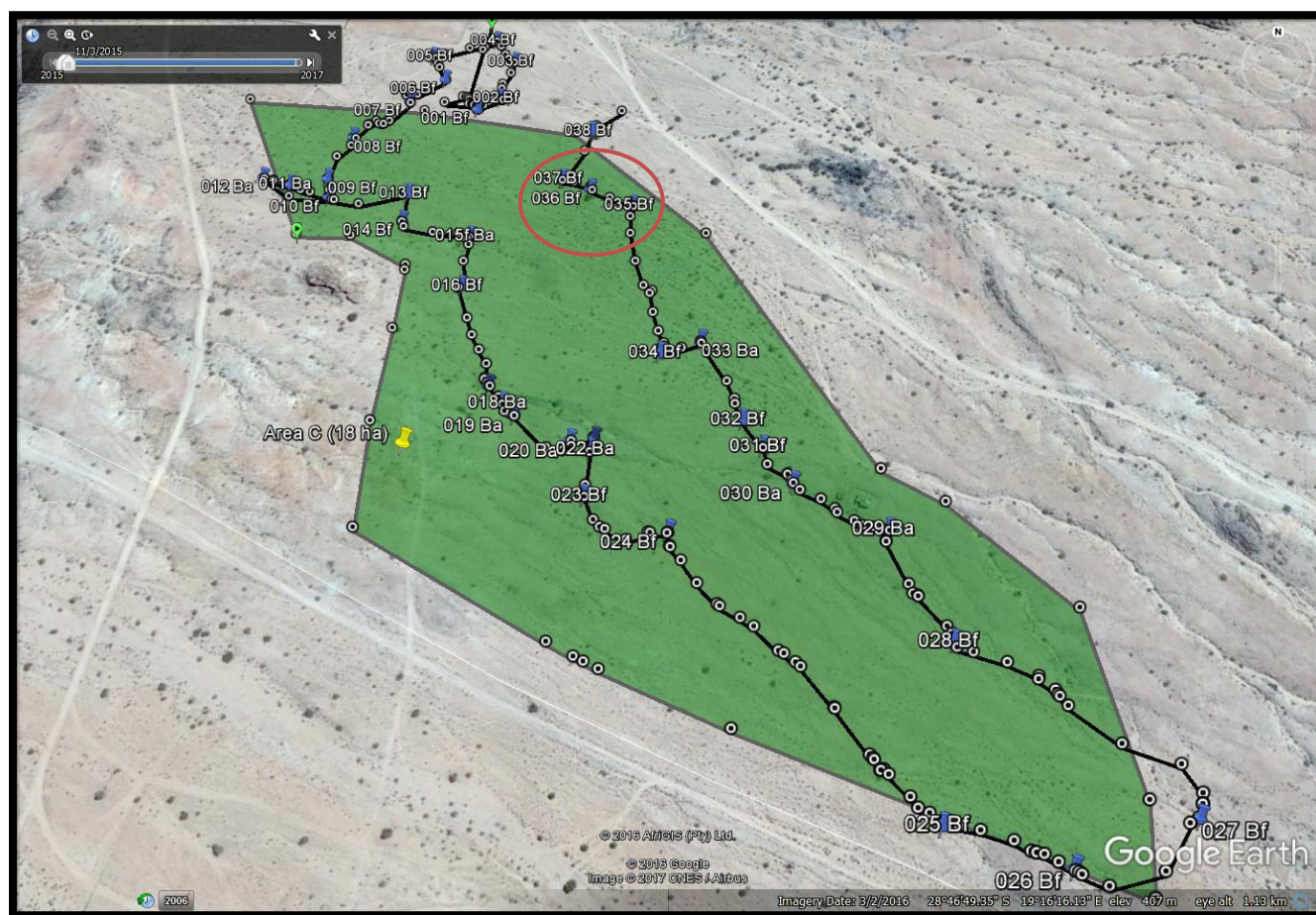


Figure 19: Google image showing area C with *Boscia foetida* (Bf) and *Boscia albitrunca* (Ba) location marked. Trees within the red polygon needs to be protected through a small footprint adjustment.

6.3.2. FLORA ENCOUNTERED

The table below shows the list of species encountered within the sites, excluding grass species.

Table 9: List of species encountered (excluding grass species)

SPECIES NAME	FAMILY	Protected species	Legal requirement(s)
<i>Acanthopsis disperma</i>	ACANTHACEAE		
<i>Adenolobus garipensis</i>	FABACEAE		

SPECIES NAME	FAMILY	Protected species	Legal requirement(s)
<i>Aptosimum spinescens</i>	SCROPHULARIACEAE		
<i>Blepharis mitrata</i>	ACANTHACEAE		
<i>Boscia albitrunca</i>	CAPPARACEAE	Protected in term of the NFA and all <i>Boscia</i> species protected in terms of Schedule 2 of NCNCA	Apply for a tree permit in terms of the NFA as well as a Flora permit in terms of the NCNCA for all individuals to be removed.
<i>Boscia foetida</i>	CAPPARACEAE	Protected in terms of Schedule 2 of NCNCA	Apply for a Flora permit in terms of the NCNCA for all individuals to be removed.
<i>Calicorema capitata</i>	AMARANTHACEAE		
<i>Chascanum garipense</i>	VERBENACEAE		
<i>Codon royenii</i>	BORAGINACEAE		
<i>Euphorbia gariepina</i>	EUPHORBIACEAE		
<i>Euphorbia gregaria</i>	EUPHORBIACEAE		
<i>Kissenia capensis</i>	LOASACEAE		
<i>Lycium cinereum</i>	SOLANACEAE		
<i>Mesembryanthemum guerichianum</i>	AIZOACEAE	All Aizoaceae protected in terms of the Schedule 2 of NCNCA. But please note that this plant is a typical pioneer species indicating disturbance and not vulnerable in itself.	Apply for a Flora permit in terms of the NCNCA for all individuals to be removed.
<i>Monsonia parvifolia</i>	GERANIACEAE		
<i>Ornithoglossum vulgare</i>	COLCHICACEAE		
<i>Petalidium setosum</i>	ACANTHACEAE		
<i>Prosopis species</i>	FABACEAE	Category 2 in terms of CARA; Category 3 in terms of NEMBA	
<i>Rogeria longiflora</i>	PEDALIACEAE		
<i>Schmidtia kalahariensis</i>	POACEAE		
<i>Senegalia mellifera</i> (=Acacia mellifera)	FABACEAE		
<i>Sisymbrium sparteae</i>	ZYGOPHYLLACEAE		
<i>Stipagrostis ciliata</i>	POACEAE		
<i>Stipagrostis namaquensis</i>	POACEAE		
<i>Stipagrostis obtusa</i>	POACEAE		
<i>Tetraena decumbens</i> (=Zygophyllum decumbens)	ZYGOPHYLLACEAE		

6.3.3. RED DATA AND PROTECTED PLANT SPECIES

South Africa has become the first country to fully assess the status of its entire flora. Major threats to the South African flora are identified in terms of the number of plant taxa Red-Listed as threatened with extinction as a result of threats like, habitat loss (e.g. infrastructure development,

urban expansion, crop cultivation and mines), invasive alien plant infestation (e.g. outcompeting indigenous plant species), habitat degradation (e.g. overgrazing, inappropriate fire management etc.), unsustainable harvesting, demographic factors, pollution, loss of pollinators or dispersers, climate change and natural disasters (e.g. such as droughts and floods).

In the Northern Cape, species of conservation concern are also protected in terms of national and provincial legislation, namely:

- The National Environmental Management: Biodiversity Act, Act 10 of 2004, provides for the protection of species through the “*Lists of critically endangered, endangered, vulnerable and protected species*” (GN. R. 152 of 23 February 2007).
- National Forest Act, Act 84 of 1998, provides for the protection of forests as well as specific tree species through the “*List of protected tree species*” (GN 908 of 21 November 2014). The list of protected tree species is published annually.
- Northern Cape Nature Conservation Act, Act of 2009, provides for the protection of “*specially protected species*” (Schedule 1), “*protected species*” (Schedule 2) and “*common indigenous species*” (Schedule 3).

The Red List of South African Plants online provides up to date information on the national conservation status of South Africa’s indigenous plants (SANBI, 2015). Categories and definitions are discussed in the Biodiversity Impact Assessment.

6.3.3.1. Plants protected in terms of The Red List of South Africa

No red-listed plant species were encountered within the proposed development footprints. However, *Commiphora capensis* is quite common in the rocky outcrops surrounding these sites. Since development within these rocky areas is not feasible, it is highly unlikely that any of these plants will be impacted.

Within the Eastern Gariep Plains Desert vegetation type, 3 red list plants may be expected namely (www.redlist.sanbi.org):

- *Aloidendron dichotomum*, (Masson) Klopper & Gideon.F.Sm. (Status: **Vulnerable**);
- *Conophytum devium* G.D.Rowley subsp. *stiriferum*, S.A.Hammer & Barnhill (Status: **Rare**);
- *Othonna graveolens*, O.Hoffm. (Status: **Least Concern**).

Within the Eastern Gariep Rocky Desert vegetation type a number of red listed species can be expected namely (www.redlist.sanbi.org):

- *Aloidendron dichotomum*, (Masson) Klopper & Gideon.F.Sm. (**Vulnerable**)
- *Aloidendron ramosissimum*, (Pillans) Klopper & Gideon.F.Sm. (**Vulnerable**);
- *Anginon jaarsveldii*, B.L.Burt. (**Endangered**);
- *Brunsvigia gariepensis*, Snijman. (**Endangered**);
- *Bulbine ophiophylla*, G.Will. (**Endangered**);
- *Commiphora capensis*, (Sond.) Engl. (**Least Concern**);
- *Conophytum devium*, G.D.Rowley subsp. *stiriferum* S.A.Hammer & Barnhill (**Rare**);
- *Conophytum fuller*, L.Bolus. (Status: **Least Concern**);
- *Conophytum limpidum*, S.A.Hammer (**Near Threatened**);
- *Conophytum marginatum*, Lavis subsp. *littlewoodii* (L.Bolus) S.A.Hammer. (**Rare**);
- *Euphorbia phylloclada*, Boiss. (**Least Concern**);

- *Jatropha orangeana*, Dinter ex P.G.Mey. (**Least Concern**);
- *Lithops dinteri* Schwantes subsp. *frederici* (D.T.Cole) D.T.Cole (**Vulnerable**);
- *Lithops dorotheae* Nel (**Endangered**);
- *Lithops olivacea* L.Bolus (**Vulnerable**);
- *Othonna graveolens* O.Hoffm. (**Least Concern**); and
- *Tritonia marlothii* M.P.de Vos subsp. *marlothii*. (**Vulnerable**).

6.3.3.2. *Plants protected in terms of NEM:BA*

No species protected in terms of NEM:BA was encountered within the proposed development footprint.

6.3.3.3. *Trees protected in terms of NFA*

Thirteen (13) *Boscia albitrunca* (Shepherds-tree) are protected in terms of NFA and were observed within or near the proposed footprint.

6.3.3.4. *Plants protected in terms of the NCNCA*

Thirty five (35) *Boscia foetida* trees are protected in terms of the NFA and were observed within or near the proposed footprints

Exact locations of protected plant species were captured, together with recommendations for each plant are available in the Biodiversity Impact Assessment (**Appendix 6.1**) and key findings are summarised in Section 8 of this report.

6.3.4. CRITICAL BIODIVERSITY AREAS

Critical biodiversity areas (CBA's) are areas of the landscape that need to be maintained in a natural or near-natural state in order to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. Ecological support areas (ESA's) are areas that are not essential for meeting biodiversity representation targets/thresholds but which nevertheless play an important role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration. The degree of restriction on land use and resource use in these areas may be lower than that recommended for critical biodiversity areas.

According to the Namakwa District Biodiversity Sector Plan (NDBSP) and its associated Terrestrial Critical Biodiversity Areas (CBA's) maps (Please refer back to Figure 12) all three sites are located within Ecological Support Areas (ESA) and might even overlap onto Critical Biodiversity Areas (CBA).

The ecological support areas in this case aim to maintain terrestrial migration corridors. Ideally the proposed agricultural sites should have been placed outside of these CBA areas. However, this will mean that establishment and operational cost will be much higher and the sites located away from the Onseepkans settlements and away from the only source of water, making the development less viable. In addition the proximity of the Onseepkans Settlement means that the migration corridors associated with the proposed site is likely already impacted to a degree. It should this be preferable to place such development areas nearer to existing settlements (which is more likely to already be degraded as a result of human settlement and communal grazing) than on land which might be less impacted.

The critical biodiversity areas, in this case, aims to protect expert important terrestrial areas. At Onseepkans these expert important terrestrial areas are associated with the rocky outcrops of the Eastern Gariep Rocky Desert vegetation type which is the potential habitat to a great number of known endemic plant species. According to Figure 12, the proposed Expansion area B is likely to overlap such rocky desert vegetation. However, the botanical scan does not support this. As a result it is considered highly unlikely that the proposed development, will in actual fact, have any significant impact on the proposed CBA areas in the vicinity of Onseepkans.

6.3.5. FAUNA

Animal species found in the Desert biomes associated with the Nama-, and Succulent Karoo is adapted to withstand the harsh, arid climate, while some species associated with the denser vegetation bordering the Orange River. This vast desert area was once the home of plentiful and diverse nomadic herbivores together with a great number of bird-, lizard- and snake species. However, more than 200 years of livestock grazing together with wild game hunting has left its mark on this dry sparse desert landscape. In an area, where the carrying capacity of the veld is already very low (70 – 100 ha per larger stock unit), the long term impact of stock grazing (often overgrazing), with their much narrower grazing habits (range of palatable plant species), as opposed to game, had very likely irreversibly impacted on plant species composition as well. As a result large game was almost totally displaced by sheep and goat farmers and herders in in this part of the Northern Cape. This in turn has affected the food chain and ultimately the density of tertiary predators, particularly mammals and larger birds of prey. Smaller predators and scavengers such as jackal and caracal suffered the same lot and were almost totally eradicated by farmers in fear of their livestock. The use of wire snares and hunting dogs added to the impact on the remaining mammal species such as rabbit and mongooses, which are extremely vulnerable to such hunting methods.

This holds very true for the larger Onseepkans settlement. Livestock grazing mostly by sheep and goats have left its impact on the immediate surroundings. All areas easily reachable within the Onseepkans communal lands show signs of the impact of long-term livestock farming. Almost all larger ungulates had been displaced together with nearly all smaller game. Thus, although natural fauna and avi-fauna are still present, it is expected that it would be limited to avi-fauna, insects and reptile's species albeit slightly changed in composition as a result of the changed food chain (loss of game). Because of the long-term impact of human settlement on the larger areas

and especially because of the close proximity of the proposed development areas to the Onseepkans settlement no comprehensive faunal survey was conducted or deemed necessary. The numbers of species given below reflects the potential range of species from literature, but because of the location, the nature and the relative small scale of the proposed development it is not expected that the development can or will pose any significant impact on any specific fauna or avi-fauna species.

The Biodiversity impact study gives an in depth discussion of the species of mammals, reptiles, amphibians and avi-fauna that might be encountered on the proposed development footprint.

6.3.5.1. Mammals

Since human activity in the area is medium-high and it is highly unlikely that a fair representation of mammals will be found on the property. As result the potential impact on mammal species is deemed negligible.

6.3.5.2. Reptiles

Although a small number of snakes of snakes, lizards and geckos might be encountered on the open sandy plains (none of which was observed during the site visit), by far the majority of reptile species will be associated with the surrounding rocky hills. As a result is considered highly unlikely that the proposed development will impact on any significant number of reptile species. As such, the impact on reptiles should be negligible.

6.3.5.3. Amphibians

No suitable breeding places were observed on the proposed site and it is highly unlikely that the proposed development will have any significant impact on amphibian species. In addition, most amphibians require perennial water and will thus not be affected at all.

6.3.5.4. Avi-fauna

It is not expected that a fair representation of avi-fauna species will be encountered on site or its immediate vicinity. Larger indigenous trees can provide suitable habitat for a number of animal species, including avi-fauna, and it remains important that all larger indigenous trees must be protected wherever possible in order to minimise the possible impact (although localised). Thus apart from the potential impact on mature trees the proposed activity is not expected to have a significant impact on avi-fauna.

6.3.6. ALIEN AND INVASIVE PLANT SPECIES

The riparian zone associated with the nearby Orange River is heavily infested with alien invasive species, with *Prosopis* species especially prominent. A number of *Prosopis* trees were observed within the various footprints (especially Expansion area C) most likely the result of its seeds being distributed by livestock (the seed pod of the *Prosopis* tree being a sought after fodder). Although their numbers are not high at present, it is important that these plants are removed wherever they are observed. Removal methods should be based on that used by the Working for Water Program (Bold, 2007) and or the CapeNature alien control guideline.

In this case all *Prosopis* individuals should be removed from the footprint and its immediate vicinity.

6.3.7. VELDFIRE RISK

Onseepkans Canal is situated in an area supporting desert vegetation, which has been classified with a **low fire risk classification**. Although, the fire risk is low it is still important that during construction and operation the site must adhere to all the requirements of the local Fire Protection Association (FPA) if applicable, or must adhere to responsible fire prevention and control measures.

6.3.8. SENSITIVE HABITATS

Apart from the Orange River and its important riparian zone (which will not be impacted by the proposed development) **all rocky hills and koppies** in the vicinity of the proposed development footprint, **must be considered sensitive habitats**. Protection of these rocky outcrops (especially in the Northern Cape) will contribute significantly to the conservation of biodiversity in this area as well as in the Northern Cape.

The Biodiversity Impact Assessment is attached as **Appendix 6.1** and key findings are summarised in Section 8 of this report.

6.3.9. FRESHWATER

Due to the low impact on ephemeral streams a freshwater impact assessment was not commissioned.

6.4. HERITAGE AND ARCHAEOLOGICAL IMPACTS

In terms of Section 38 of the National Heritage Resources Act (Act No. 25 of 1999) (NHRA), SAHRA require an impact assessment where certain categories of development are proposed. Since the footprint of the proposed development will exceed 5 000 m² and will thus trigger the NHRA. An Archaeological Impact Assessment (AIA) has been commissioned in order to evaluate

the possible impacts on heritage or archeologically and to advise SAHRA of the likelihood of impacts on existing heritage as well as recommendations for impact minimisation (if required).

Onseepkans, has a rich living heritage in terms of historical Catholic Missionary activities in the area. This was the reason for the establishment of Onseepkans. There was only one Stone Age archaeological finding within the assessment area. Living heritage is absent on the development footprint, but surrounding areas like the Catholic Mission Station at Onseepkans Settlement have significant history which makes living heritage a possibility and a fact to be considered throughout the proposed development.

The Heritage Impact assessment is attached as **Appendix 6.3** and key findings are summarised in Section 8 of this report.

6.5. VISUAL IMPACT

The potential impact on the sense of place of the proposed development was also considered. The surrounding area is characterised by agricultural activities. Onseepkans is in fact almost totally dependent on agriculture for its economic survival. Agricultural practices mainly consist of the production of high value irrigation crops and grazing (however, the grazing potential of the very arid natural veld is very low).

Since the proposed development is very much in character with the existing land use and is not expected to impact negatively on the visual character of the area no visual impact studies are suggested.

6.6. SOCIO-ECONOMIC IMPACT

The primary objective of the proposed irrigation development project at Onseepkans centres on economic growth, job creation and economic empowerment. It is on the back of socio-economic evaluations that this project has proposed and approved by the Department of Agriculture, Land Reform and Urban Development.

The communities of Onseepkans are characterised by severe poverty and a large proportion of families rely heavily on social grants for subsistence. It is expected that income can be generated through agriculture which will significantly improve the economic situation of the Onseepkans communities over time (especially focusing on previously disadvantage individuals). Agricultural production will directly contribute to increased employment opportunities for community members. Small business opportunities will also be created in especially the services industry. The establishment of high value crops in Onseepkans will create a number of opportunities for schooled and unschooled individuals. Skills development though on-job and formal training will be a high priority in any development initiative. The potential for agri-tourism, agri-processing and value adding initiatives presents further opportunities for diversification of the local economy. It is recognized that successful promotion of agri-processing can impact positively on the incomes

of primary producers, create employment and address market risks. It is also one of the means by which transformation of agriculture in the province can be achieved.

6.7. OTHER ISSUES IDENTIFIED

Any further issues raised during the public participation process or by the Competent Authority not mentioned in this section, will be captured in the Comments and Response Report (**Appendix 5**) and will be discussed in the final Impact Report

7. SPECIALIST STUDIES

Specialist studies were undertaken to provide information to address the concerns and assess the impacts of the proposed development alternatives on the environment.

The specialists are provided with set criteria for undertaking their assessments, to allow for comparative assessment of all issues. These criteria are detailed in the Terms of Reference to each specialist and summarised below.

7.1. CRITERIA FOR SPECIALIST ASSESSMENT:

The impacts of the proposed activity on the various components of the receiving environment will be evaluated in terms of duration (time scale), extent (spatial scale), magnitude and significance as outlined in Table 10. These impacts could either be positive or negative.

The magnitude of an impact is a judgment value that rests with the individual assessor while the determination of significance rests on a combination of the criteria for duration, extent and magnitude. Significance thus is also a judgment value made by the individual assessor.

Table 10: Table for criteria of impact assessment

Criteria	Definition
Nature of impact	This is an evaluation of the effect that the construction, operation and maintenance of a proposed development would have on the affected environment. This description should include what is to be affected and how.
Extent	Describe whether the impact will be: local extending only as far as the development site area; or limited to the site and its immediate surroundings; or will have an impact on the region, or will have an impact on a national scale or across international borders.
Duration of the impact	The specialist should indicate whether the lifespan of the impact would be short term (0-5 years), medium term (5-15 years), long terms (16-30 years) or permanent.
Intensity	The specialist should establish whether the impact is destructive or benign and should be qualified as low, medium or high. The specialist study must attempt to quantify the magnitude of the impacts and outline the rationale used.
Probability of occurrence	The specialist should describe the probability of the impact actually occurring and should be described as improbable (low likelihood), probable (distinct possibility), highly probable (most likely) or definite (impact will occur regardless of any prevention measures).
Status of the Impact	The specialist should determine whether the impacts are negative, positive or neutral ("cost – benefit" analysis). The impacts are to be assessed in terms of their effect on the project and the environment. For example, an impact that is positive for the proposed development may be negative for the environment. It is important that this distinction is made in the analysis.

Accumulative Impact	Consideration must be given to the extent of any accumulative impact that may occur due to the proposed development. Such impacts must be evaluated with an assessment of similar developments already in the environment. Such impacts will be either positive or negative, and will be graded as being of negligible, low, medium or high impact.
Degree of Confidence in predictions	The specialist should state what degree of confidence (low, medium or high) is there in the predictions based on the available information and level of knowledge and expertise.
Significance	<p>Based on a synthesis of the information contained in the above-described procedure, the specialist is required to assess the potential impacts in terms of the following significance criteria:</p> <p>No significance: the impacts do not influence the proposed development and/or environment in any way.</p> <p>Low significance: the impacts will have a minor influence on the proposed development and/or environment. These impacts require some attention to modification of the project design where possible, or alternative mitigation.</p> <p>Moderate significance: the impacts will have a moderate influence on the proposed development and/or environment. The impact can be ameliorated by a modification in the project design or implementation of effective mitigation measures.</p> <p>High significance: the impacts will have a major influence on the proposed development and/or environment.</p>

7.2. **BRIEFS FOR SPECIALIST STUDIES**

7.2.1. **BIODIVERSITY**

The terms of reference for this study include the following:

- Complete a Biodiversity Scan of the proposed site in order to determine whether any significant features will be impacted as a result of the proposed development;
- Make recommendations on impact minimisation should it be required;
- Consider short- to long-term implications of impacts on biodiversity and highlight irreversible impacts or irreplaceable loss of species.

7.2.2. **ARCHEOLOGICAL IMPACT ASSESSMENT**

The terms of reference for this study include the following:

- The identification and mapping of all heritage resources in the area affected;
- An assessment of the significance of such resources in terms of heritage assessment criteria set out in regulations;
- An assessment of the impact of the development on heritage resources;
- An evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;

- If heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
- Plans for mitigation of any adverse effects during and after completion of the proposed development.

8. ASSESSMENT OF ENVIRONMENTAL IMPACTS

The specialist studies detailed in **Appendix 6** were undertaken to determine significance of the impacts that may arise from the proposed development. The findings of the specialist studies are summarised here. Full copies of the studies are included in **Appendix 6.1 & 6.2**.

The following studies were undertaken:

8.1. BIODIVERSITY

8.1.1. KEY FINDINGS

The evaluation of the potential environmental impacts indicates the most significant potential impacts identified where:

- The rocky hills and outcrops with its diverse and potentially wide range of habitats, which again results in higher potential biodiversity associated with the Eastern Gariep Rocky Desert vegetation type.
- The fact that the larger Onseepkans area falls within the Gariep Centre of endemism (primarily as a result of the diverse rocky outcrops).
- The fact that all of the sites falls within an ecological support area (ESA), while Expansion site B might also potentially impact on a critical biodiversity area (CBA) of expert importance.
- The potential impact on protected species, especially a number of *Boscia albitrunca* and *Boscia foetida* trees.
- The potential impact on fauna associated with the surrounding rocky outcrops.

However, the botanical scan suggest that it is highly unlikely that the proposed development footprint will impact on Eastern Gariep Rocky Desert vegetation, which also mean that it will not impact on the rocky hills and outcrops (with its higher potential biodiversity status). It also means that it is unlikely to have any significant impact on the Gariep Centre of endemism. However, a number of protected tree species are likely to be impacted (even though most of them are in poor condition to begin with), but with mitigation the impacts on these trees can be reduced significantly.

8.1.2. **IMPACT ASSESSMENT**

Table 11 underneath gives a summary of the impact assessment findings conducted by the Biodiversity Specialist.

Table 11: Summary of Impact Assessment Findings conducted by Biodiversity Specialist

Aspect	Short description	CV	Lik	Dur	Ext	Sev	Sig.	Short discussion
Geology & soils	The proposed development will have a direct impact on 200 - 250 ha of soils associated with Eastern Gariep Plains Desert vegetation (already degraded as a result of past and present grazing practices). According to the South African vegetation map it might also impact on Eastern Gariep Rocky Desert (considered a sensitive habitat in terms of potential flora and fauna which is also the main reason this area is included in the Gariep Centre of Endemism. These rocky hills are considered of much higher biodiversity significance than the sandy plains in-between (Refer to Section 4.15). No other sensitive habitats were observed (e.g. termite mounds or true quartz patches).							
	Without mitigation	4	4	5	1	4	Medium	Potential impact on the sensitive rocky hills and its associated biodiversity.
	With mitigation	1	1	5	1	1	Insignificant/positive	The site visit indicates that the proposed development will not impact on these rocky hills. Mitigation: All rocky outcrops must be considered sensitive environmental features to be regarded as No-Go areas.
Landuse and cover	The proposed development will impact on areas currently used for livestock grazing by local farmers. However, the carrying capacity of the land is very low and the size of the development footprint relatively small (in terms of the available communal land). In addition the socio-economic benefit of the proposed development might be huge (and will very likely benefit these farmers as well). Still these farmers will have to buy in to the proposed development.							
	Without mitigation	2	4	5	1	3	Low	Taking away grazing rights without consultation or compensation.
	With mitigation	1	1	3	1	1	Insignificant/positive	Ensuring that farmers with grazing rights are compensated or included in the benefits of the proposed development.
Vegetation type	The development footprint is relatively small in terms of remaining vegetation types, both of which is classified as Least Threatened. Eastern Gariep Rocky Desert has a much higher biodiversity value and the protection of rocky hills on which it is located will contribute significantly to the conservation of biodiversity within the Gariep Centre of endemism.							
	Without mitigation	4	4	5	1	4	Medium high	Potential impact on the sensitive Eastern Gariep Rocky Desert vegetation type and its associated biodiversity.

Aspect	Short description	CV	Lik	Dur	Ext	Sev	Sig.	Short discussion
	With mitigation	1	1	5	1	1	Insignificant/ Positive	The site visit indicates that the proposed development will not impact on this vegetation type. Mitigation: Regard all rocky outcrops as sensitive environmental features to be regarded as No-Go areas.
Conservation priority areas and connectivity	Expansion area B, might potentially impact a CBA regarded as of "expert important terrestrial areas". In addition all of the proposed sites are located within an ESA for maintaining terrestrial migration corridors.							
	Without mitigation	4	4	5	1	4	Medium high	Potential permanent impacts on a CBA regarded as very sensitive (within the Gariep Centre of Endemism) and an ESA.
	With mitigation	2	1	5	1	1	Insignificant/ Positive	The site visit shows that the proposed sites will not impact on the rocky hills at which the CBA aims it protection. The ESA is also already significantly degraded and in close proximity to the Onseepkans Settlement.
Watercourses and wetlands	Alluvial fans and small drainage lines are present on the various sites, but no significant watercourse will be impacted. However, stormwater management will have to be part of the development criteria.							
	Without mitigation	2	1	5	1	3	Insignificant/ Positive	No stormwater management.
	With mitigation	2	1	5	1	1	Insignificant/ Positive	With stormwater management.
Flora	No red-listed species was encountered within the proposed sites (although one listed plant species was observed within the surrounding rocky hills). However, a number of protected species were encountered.							
	Without mitigation	3	4	5	1	3	Medium low	Development with no mitigation or regard for protected species.
	With mitigation	2	3	5	1	2	Insignificant/ Positive	Implementing the recommendations regarding to protected trees given in Appendix A & B and regarding all mature indigenous trees as sensitive and to be protected wherever possible.
Fauna	It is considered unlikely that the proposed footprint will impact significantly on the conservation of any fauna species or its habitat.							

Aspect	Short description	CV	Lik	Dur	Ext	Sev	Sig.	Short discussion
	Without mitigation	2	3	5	1	2	Insignificant/ Positive	Construction without regard for the protection of fauna.
	With mitigation	2	2	2	1	1	Insignificant/ Positive	During construction personnel must be made aware of potential impacts on fauna and trained in appropriate measures for their protection.
Avi-fauna	It is considered unlikely that the proposed footprint will impact significantly on any single species.							
	Without mitigation	2	2	5	1	2	Insignificant/ Positive	Construction without regard for the protection of avi-fauna and its habitat (e.g. larger indigenous trees).
	With mitigation	1	1	2	1	1	Insignificant/ Positive	Mitigation - minimise footprint and impact on protected trees.
Alien and invasive plant species	A number of Prosopis trees were observed. They have to potential to spread significantly when in proximity to water or if removed incorrectly. The incorrect use of herbicides might also impact on the surrounding vegetation.							
	Without mitigation	3	3	4	2	4	Medium low	Incorrect control methods or incorrect use of herbicides.
	With mitigation	3	1	2	1	1	Insignificant/ Positive	Alien invasive plant control must be done in accordance with an approved method statement based on the Working for Water or CapeNature guidelines for AIP control.
Veld fire risk	The risk of veld fires is low, but they can be potentially dangerous during times when the grass layer is significant.							
	Without mitigation	3	3	4	3	3	Medium low	Uncontrolled fires can have a severe impact on vegetation and fauna.
	With mitigation	3	1	2	1	1	Insignificant/ Positive	Fire prevention and control measures must be implemented during construction and operation.

Aspect	Short description	CV	Lik	Dur	Ext	Sev	Sig.	Short discussion
Cumulative impacts	Cumulative impacts refer to the sum of all impacts associated with the proposed development. In this case it was measured in terms of its potential impact on the vegetation types, the importance of the Gariep Centre of endemism and potential impact on red-listed species and protected species.							
	Without mitigation	4	4	5	3	4	High	Development without mitigation as proposed throughout this document.
	With mitigation	3	3	5	1	2	Low	Development with mitigation as proposed in this document.
The "No-Go" option	The No-Go option refers to no development being allowed. In this case the No-Go option means the "status quo" will be maintained and no additional permanent impacts will result on vegetation or associated biodiversity. However, it was also taken into account that the site itself is not pristine condition and the purpose of the development is socio-economic benefit.							
	Without mitigation	2	1	4	1	1	Insignificant/ Positive	No development, but also no socio-economic gain.
	With mitigation						0	The positive gain from the associated socio-economic upliftment is likely to be significant.

Significance before mitigation: The impact assessment suggests that the proposed development is expected to have **Medium-high cumulative** potential impact, with the most significant aspect being the potential impact on the sensitive habitat associated with the Eastern Gariep Rocky Desert vegetation type (which is also the main reason for the area being included in the Gariep Centre of endemism) and protected species (mainly tree species) encountered within the site and to a lesser degree potential accidental veld fires.

Significance after mitigation: The site visit confirmed that it is very unlikely that the proposed development will impact on Eastern Gariep Rocky Vegetation and its potentially much more diverse biodiversity. Impacts on protected tree species can also be minimised through slight layout adjustments. The potential impact on the regional status of the vegetation type and associated biodiversity features (e.g. corridor function or special habitats) will also be minimised through the above mitigations. Apart from the potential impact on protected species no further irreversible species-loss, habitat-loss, connectivity or associated impact can be foreseen from locating and operating the proposed agricultural development. With mitigation the potential impacts on biodiversity features can be reduced to **Low**.

The NO-GO option: The “No-Go Alternative” alternative will not result in significant gain in regional conservation targets, the conservation of rare & endangered species or gain in connectivity. At the best the No-Go alternative will only support the “status quo” on the site. On the other hand the socio-economic benefits may be significant.

8.1.3. **MITIGATION MEASURES**

- All construction must be done in accordance with an approved construction and operational phase Environmental Management Plan (EMP).
- A suitably qualified Environmental Control Officer must be appointed to monitor the construction phase in terms of the EMP and ensure that the recommendation made in this study is implemented.
- Rocky outcrops and hills must be identified as sensitive habitats and regarded as no-go areas.
- The possibility of slight adjustments to the proposed footprint must be investigated with regards to impact minimisation on the protected Boscia trees, see **Figure 19** above. (Please see Appendix A and B of the Biodiversity Impact Assessment). It is suggested that Area C be slightly adjusted in order to protect Boscia trees.
- The necessary Tree and Flora permits must be obtained for the removal or damage to any protected plant species that might be impacted as a result of the proposed development.
- All other mature indigenous trees must be regarded as sensitive biodiversity features and efforts must be made to protect such trees wherever they are encountered.
- During construction personnel must be made aware of potential impacts on fauna and trained in appropriate measures for their protection.
- Ensuring that farmers with grazing rights are compensated or included in the benefits of the proposed development.
- All alien invasive plant species within the proposed footprints and within 50m of these footprints must be eradicated as part of the construction phase. Regular follow-up control must be part of the maintenance management plan.
- Alien invasive plant control must be done in accordance with an approved method statement based on the Working for Water or CapeNature guidelines for AIP control.
- Stormwater management must be part of the development layout in order to accommodate flash floods from the surrounding rocky hills (erosion prevention).
- Fire prevention and control measures must be implemented during construction and operation.
- All areas outside of the final footprint that were disturbed as a result of the proposed development must be rehabilitated as part of the construction phase.

8.1.4. **CONCLUSION**

However, with appropriate mitigation it is considered highly unlikely that the proposed project will contribute significantly to any of the following:

- Significant loss of vegetation type and associated habitat.
- Loss of ecological processes (e.g. migration patterns, pollinators, river function etc.) due to development and operational activities.
- Loss of local biodiversity and threatened plant species.
- Loss of ecosystem connectivity

Lastly it is felt that good environmental planning and control during development planning, the appointment of a suitably qualified ECO and the implementation of an approved EMP, could significantly reduce environmental impact.

With the available information at the author's disposal, it is recommended that the project be

approved since it is not associated with significant environmental impact, provided that mitigation is adequately addressed.

8.2. ARCHAEOLOGICAL IMPACT ASSESSMENT

An Archaeological Impact Assessment (AIA) has been commissioned in order to evaluate the possible impacts on heritage or archeologically and to advise SAHRA of the likelihood of impacts on existing heritage as well as recommendations for impact minimisation (if required). **Appendix 6.2.**

8.2.1. KEY FINDINGS

- Three proposed development footprints were surveyed, the impact on archaeological remains, material and objects is significantly low. There was only one Stone Age archaeological finding within the assessment area without any living heritage on the proposed development footprints.
- The assessment area (development footprint) for development has no significant archaeological places or structures. The footprint area is clear and consists of open field arid Savannah vegetation.
- There are no colonial/historical or pre-historical structures 60 years and older, neither are there any places or equipment of significance on the proposed development footprints.
- It is likely that places, structures and equipment has low heritage significance at the community specific, local and regional levels at least for its historic values.
- No traditional burial places were recorded in the proposed development site.
- Living heritage is absent on the development footprint, but surrounding areas like the Catholic Mission Station at Onseepkans Settlement have significant history which makes living heritage a possibility and a fact to be considered throughout the proposed development.
- No Palaeontological Impact Assessment (PIA) was conducted.

8.2.2. IMPACT ASSESSMENT

The table below summarizes the heritage resource types assessed and observations made by Ubique Heritage Consultants. According to the assessment the proposed development will have a significantly LOW impact on heritage and archaeological material.

Table 12: Summary if Impact Significance of the proposed development on Heritage features

Heritage Research Type	Observation
Places, buildings, structures and equipment	None of archaeological significance was identified within the proposed development area.
Places associated with oral traditions or living heritage	Living heritage was identified outside the development footprint. The historical Roman Catholic Mission Station was established around 1916 and lives on to operate until this present day.

	Within the development footprint, places, buildings, structures and equipment related to heritage have a <u>LOW</u> heritage significance
Landscape	Archaeological deposits are not in high density on the surface landscape
Natural features	Riverines and waterways (non-perennial) are present on the site. Trenches, developed over time due to erosion are also present. Rocky outcrops, steep hills and mountains are present outside the development footprint. Proposed development is restricted to more accessible plains.
Traditional burial places	None were identified within the proposed development footprint. There are however two cemeteries located near Onseepkans Settlement and the Mission Station. One cemetery seems to be of historical significance. Graves, burial sites and human remains have no heritage significance at all levels
Ecofacts (Non-artefactual organic or environmental remains that may reveal aspects of past human activity)	None were identified within the proposed development area.
Geological sites of scientific or cultural importance	None were identified within the proposed development area.
Archaeological sites	One location was identified with one MSA/LSA stone tool/retouched stone. The tool represents a microlithic flake utilised as a possible scraper or point. The tool was detected, identified and recorded. The impact on archaeological remains, material and objects is <u>significantly low</u> . It is evident that archaeological remains <u>has low heritage significance</u> at the community specific, local and regional levels at least for its historic and, cultural values. Development can thus continue.
Historical settlements and townscapes	Roman Catholic Mission Station at Onseepkans Settlement with historical graveyard, church and buildings. These settlements are however outside the proposed development footprint and proposed development will not have an effect on such historical heritage resources. It is likely that historical settlements and townscapes related to heritage on the development footprint have a <u>low heritage significance</u> at the community.
Public monument and memorials	None were identified within the proposed development footprint. Mission church and buildings dated ca.1927 is located outside the development footprint. Public monuments or memorials have <u>no heritage significance</u> at all levels for their social, cultural and spiritual values within the proposed development footprint.
Battlefields	None were identified within the proposed development footprint. The nearest battlefield registered from Onseepkans Settlement is Kakamas where 1900-1902 ABW as well as 1914 Rebellion forces had skirmishes.
Palaeontology	No Palaeontological Impact Assessment (PIA) was conducted by

8.2.3. **MITIGATION MEASURES**

It is possible that sub-surface heritage resources might be encountered during the construction phase of this project. The Project Engineer, Environmental Control Officer and all other persons responsible for site management and excavation should be aware that indicators of sub-surface sites could include:

- Ash deposits (unnaturally grey appearance of soil compared to the surrounding substrate);
- Bone concentrations, either animal or human;
- Ceramic fragments, including potsherds;
- Stone concentrations that appear to be formally arranged (may indicate the presence of an underlying burial)
- Fossilised remains of fauna and flora, including trees.
- Stone tool concentrations from San origin.

Regarding the impact on heritage on the proposed development site and footprints, the impact on archaeological material will be significantly LOW.

In the event that above mentioned indicator(s) of heritage resources are identified, the following actions should be taken immediately:

- All construction within a radius of at least 20 m of the indicator should cease. This distance should be increased at the discretion of supervisory staff if heavy machinery or explosives could cause further disturbance to the suspected heritage resource.
- This area must be marked using clearly visible means, such as barrier tape, and all personnel should be informed that it is a no-go area.
- A guard should be appointed to enforce this no-go area if there is any possibility that it could be violated, whether intentionally or inadvertently, by construction staff or members of the public.
- No measures should be taken to cover up the suspected heritage resource with soil, or to collect any remains such as bone, ceramics or stone.
- If a heritage practitioner has been appointed to monitor the project, s/he should be contacted and a site inspection arranged as soon as possible.
- If no heritage practitioner has been appointed to monitor the project, SAHRA or Dr. D. Morris must be contacted at the SAHRA head office or at the McGregor museum.
- The South African Police Services should be notified by a SAHRA staff member or an independent heritage practitioner if human remains are identified. No SAPS official may disturb or exhumate such remains, whether of recent origin or not.
- All parties concerned should respect the potentially sensitive and confidential nature of the heritage resources, particularly human remains, and refrain from making public statements until a mutually agreed time.
- Any extension of the project beyond its current footprint involving vegetation and/or earth clearance should be subject to prior assessment by a qualified heritage practitioner, taking into account all information gathered during this initial heritage impact assessment.

- We recommend the appointment of a Stone Age Specialist if any large finds of stone tools are discovered during construction.

SAHRA head office may be contacted (South African Heritage Resources Agency, 111 Harrington Street Cape Town 8001; Mr Phillip Hine; E-mail: phine@sahra.org.za; Tel: (+27) 21-4624502.

8.2.4. CONCLUSION

Ubique Heritage Consultants (Pty) Ltd recommend that the development can proceed.

Furthermore, as reflected in this report, the impact on heritage and archaeological material on the surface within all the proposed areas is low. The SAHRA Minimum Standards for impact assessments and in accordance with the National/Provincial heritage legislation is recommended and the client must keep compliance in mind, prior, during and after development.

The developer is to cease all work immediately and follow the protocol should any heritage resources be discovered during the course of development activities.

9. SUMMARY OF IMPACTS

Table 13 is a summary of all the impacts that are associated with the construction and operational phase for the preferred development.

Table 13: Summary of Impacts

Study	Impact	Significance No mitigation	Significance With Mitigation
Biodiversity	Geology and soil	Medium Negative Impact	Insignificant (Negative Impact)
	Land use and cover	Low (Negative Impact)	Insignificant (Negative Impact)
	Vegetation types	Medium high (Negative Impact)	Insignificant (Negative Impact)
	Corridors and conservation priority areas/networks	Medium high (Negative Impact)	Insignificant (Negative Impact)
	Watercourses and Wetlands	Insignificant (Negative Impact)	Insignificant (Negative Impact)
	Protected plant species (Flora)	Medium Low (Negative Impact)	Insignificant (Negative Impact)
	Fauna and avi-fauna	Insignificant (Negative Impact)	Insignificant (Negative Impact)
	Invasive alien infestation	Medium Low (Negative Impact)	Positive
	Veld fire risk	Medium Low (Negative Impact)	Insignificant (Negative Impact)
Heritage	Loss of archaeological heritage	Low (Negative Impact)	Low (Negative Impact)
Cumulative Effect		Medium High	Low (Negative Impact)

10. RECOMMENDATIONS

The following mitigation measures must be enforced if the proposed development were approved. These are also included in the Environmental Management Programme (**Appendix 7**).

10.1. CONSTRUCTION PHASE

- All construction must be done in accordance with an approved construction and operational phase Environmental Management Plan (EMP).
- A suitably qualified Environmental Control Officer must be appointed to monitor the construction phase in terms of the EMP and ensure that the recommendation made in this study is implemented.
- Rocky outcrops and hills must be identified as sensitive habitats and regarded as no-go areas.
- The possibility of slight adjustments to the proposed footprint must be investigated with regards to impact minimisation on the protected Boscia trees, see **Figure 19** above. (Please see Appendix A and B of the Biodiversity Impact Assessment). It is suggested that Area C be slightly adjusted in order to protect Boscia trees.
- The necessary Tree and Flora permits must be obtained for the removal or damage to any protected plant species that might be impacted as a result of the proposed development.
- All other mature indigenous trees must be regarded as sensitive biodiversity features and efforts must be made to protect such trees wherever they are encountered.
- During construction personnel must be made aware of potential impacts on fauna and trained in appropriate measures for their protection.
- Ensuring that farmers with grazing rights are compensated or included in the benefits of the proposed development.
- All alien invasive plant species within the proposed footprints and within 50m of these footprints must be eradicated as part of the construction phase. Regular follow-up control must be part of the maintenance management plan.
- Alien invasive plant control must be done in accordance with an approved method statement based on the Working for Water or CapeNature guidelines for AIP control.
- Stormwater management must be part of the development layout in order to accommodate flash floods from the surrounding rocky hills (erosion prevention).
- Fire prevention and control measures must be implemented during construction and operation.
- All areas outside of the final footprint that were disturbed as a result of the proposed development must be rehabilitated as part of the construction phase.
- No archaeological mitigation is required.
- If sub-surface heritage resources or human remains are encountered during the construction phase, SAHRA or Dr. D. Morris must be contacted at the SAHRA head office or at the McGregor museum.
- SAHRA head office may be contacted (South African Heritage Resources Agency, 111 Harrington Street Cape Town 8001; Mr Phillip Hine; E-mail: phine@sahra.org.za; Tel: (+27) 21-4624502.
- Ubique Heritage Consultants (Pty) Ltd recommend that the development can proceed.

- Furthermore, as reflected in this report, the impact on heritage and archaeological material on the surface within all the proposed areas is low. The SAHRA Minimum Standards for impact assessments and in accordance with the National/Provincial heritage legislation is recommended and the client must keep compliance in mind, prior, during and after development.

10.2. MAINTENANCE AND MANAGEMENT

- Irrigation methods must be limited to micro or drip irrigation in order to ensure efficient irrigation practices and minimum water loss (which relates to less pump costs and thus less energy used).
- To improve on water efficiency, soil surface should be covered with stones to limit evaporation.

11. CONCLUSIONS

The following specialist studies were undertaken as part of the Environmental Impact Assessment:

- Biodiversity Impact Assessment
- Archaeological Impact Assessment

The specialist studies and the information provided within the EIA Report indicate that the proposed Onseepkans Agricultural Development does not pose any significant impacts and can be implemented with appropriate mitigation.

There is a definite need, locally and nationally, for economic development and the creation of employment opportunities. In the Nama Khoi Municipality, the most viable formal development option, which will also relates to the most employment opportunities remains agriculture.

In terms of Alternatives, The land under consideration (Farm 88) is owned by the municipality and does not require to be procured in the open market. At Onseepkans it is also the most suitable land remaining for development. As such property alternatives were not further investigated.

Alternative 1 is the preferred layout alternative due to the favourable geography, access and cost of development was the main drivers for choosing the proposed locations. Alternative 2 will remove the developments further away from Onseepkans, which will increase development costs and especially running costs (it being physically further removed).

The “no-go” option, which is the option of not investing in this development (expanding agricultural land), will mean that none of the potential environmental impacts will be triggered. However, it will also mean that none of the direct or indirect socio-economic benefits of the proposed development will be realised, which will remain to impact negatively on a province already struggling with high unemployment rates and poor socio-economic prospects.

The proposed development can be defined as unique agricultural land due to specific combinations of location, climate or soil properties that make the area highly suitable for a specific crop, more specifically dates and grapes.

From a biodiversity perspective, with the good environmental control and mitigation measures in place, the proposed project should not have any significant impact on conservation targets. It is suggested that Area C be slightly adjusted in order to protect the Boscia trees. Please refer to Appendix A and B in the Botanical Assessment for the coordinates and exact location of the trees that need to be protected.

The Archaeological Impact Assessment indicates no objections to the authorisation of the proposed agricultural development. The Project Engineer, Environmental Control Officer and all other persons responsible for site management and excavation should be aware that indicators of sub-surface heritage resources might be encountered during the construction phase of the project.

Considering all the information, it is not envisaged that this proposed Onseepkans Agricultural Development will have a significant negative impact on the receiving environment, and the socio-economic benefits are expected to greatly outweigh any negative impacts.

It is therefore recommended that the proposed new agricultural development (Alternative 1) be supported and be authorised with the necessary conditions of approval, subject to the implementation of the recommended enhancement and mitigation measures contained in Section 10.

12. EXPERTISE OF THE EAP

This Draft Environmental Impact Report was prepared by Me Inge Erasmus under the supervision of Mnr Peet Botes

Inge completed her BA Honours Degree in Geography and Environmental Studies at Stellenbosch University in 2016. Before completing her honours degree Inge gained practical experience as a junior environmental consultant at Hatch Goba in Johannesburg from 2014 until 2015. Inge acted as an environmental control officer on a variety of projects in the Northern Cape, conducting environmental compliance audits, as well as being part of a project team working on a major resettlement project for Kumba Iron ore. Inge joined Enviro Africa in February 2017, generally performing duties as an environmental assessment practitioner with regards to NEMA EIA applications.

Mr. Botes holds a BSc. (Hons.) degree in Plant Ecology from the University of Stellenbosch (Nature Conservation III & IV as extra subjects). He has been employed for more than 20 years in the environmental management field, first at the Overberg Test Range (a Division of Denel) managing the environmental department of OTB and being responsible for developing and implementing an ISO14001 environmental management system, ensuring environmental compliance, performing environmental risk assessments with regards to missile tests and planning the management of the 26 000 ha of natural veld, working closely with CapeNature (De Hoop Nature Reserve). In 2005 he joined Enviroscientific, an independent environmental consultancy specializing in wastewater management, botanical assessments and developing environmental management plans and strategies, environmental control work as well as doing environmental compliance audits. He was also responsible for helping develop the biodiversity section of the Farming for the Future audit system implemented by Woolworths. During his time with Enviroscientific he performed more than 400 biodiversity and environmental legal compliance audits. He is currently employed by EnviroAfrica. Experience with EnviroAfrica includes NEMA applications, biodiversity- and botanical assessments, environmental compliance audits and environmental control work.

Mr. Botes is also a registered Professional Botanical, Environmental and Ecological Scientists at SACNASP (South African Council for Natural Scientific Professions) as required in terms of Section 18(1)(a) of the Natural Scientific Professions Act, 2003, since 2005.

The whole process and report was supervised by Bernard de Witt who has more than 20 years' experience in environmental impact assessment applications.

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Appendix 1. Location- & Biodiversity overlay maps

- 1.1 Site location
- 1.2 Layout maps
- 1.3 Vegetation map
- 1.4 Namakwa District Biodiversity Sector Plan – CBA maps

Appendix 2. Site Plans

Appendix 3. Site Photographs

Appendix 4. Additional Information

Draft Onseepkans Development Plan, July 2014

Appendix 5. Public Participation

5.1 INITIAL PPP

- 5.1.1 I&AP'S REGISTER
- 5.1.2 PROOF OF NEWSPAPER ADVERTISEMENT
- 5.1.3 INITIAL NOTIFICATION LETTERS
- 5.1.4 PROOF OF POSTER AND LETTER DROPS
- 5.1.5 PROOF OF LANDOWNER NOTIFICATIONS
To be provided in the Final EIR
- 5.1.6 COMMENTS RECEIVED
 - 5.1.6.1 Comments from Löts Familie Trust
- 5.1.7 COMMENTS AND RESPONSE REPORT (INITIAL PPP)

5.2 PPP ON SCOPING REPORT

- 5.2.1 I&AP'S REGISTER (UPDATED)
- 5.2.2 PROOF OF SCOPING REPORT SUBMITTED & ACCEPTED
- 5.2.3 PROOF OF SCOPING REPORT PPP
- 5.2.3 COMMENTS RECEIVED
None

Appendix 6. Specialist Studies

6.1 BIODIVERISTY IMPACT STUDY

6.2 ARCHAEOLOGICAL IMPACT STUDY

Appendix 7. Environmental Management Plan

Appendix 8. Curriculum Vitae of EAP