FINAL Environmental Assessment Report & Environmental Management Programme

Application for the proposed removal of natural vegetation on Erf 359 Kakamas North Settlement, Gordonia Administrative District.

Department of Agriculture, Environmental Affairs, Rural Development and Land Reform Reference number: NC/EIA/01/ZFM/KA!/KAK1/2022.

09 November 2022.

Prepared for:

Bakenrant Boerdery Pty. Ltd.

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Compiled by:

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PROJECT DETAILS:

TITLE: Proposed agricultural development, Erf 359, Kakamas-North Settlement

APPLICANT: *Bakenrant Boerdery Pty. Ltd.*

DEPARTMENTAL REF NO: NC/EIA/01/ZFM/KA!/KAK1/2022

PROCESS: Scoping and EIA

REPORT STATUS: FINAL EIAR & EMP

REPORT DATE: 09 November 2022

APPOINTED EAP:

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APPLICANT:

Bakenrant Boerdery Pty. Ltd.
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EXECUTIVE SUMMARY

Project background: *Bakenrant Boerdery Pty. Ltd*. (hereafter referred to as the Applicant) appointed The Eco Balance Planning Co. as the independent environmental assessment practitioner (EAP) to coordinate and facilitate the Scoping and Environmental Impact Assessment process for an application for Environmental Authorisation (EA) for the proposed agricultural development on Erf 359, Kakamas-North Settlement, Kai !Garib Local Municipality, ZF Mgcawu District Municipality, Northern Cape.

Project scope: The following developments are proposed:

- Alternative 1: The development of four parcels of land (approximately 110 hectares) for agricultural purposes (table grapes). Area 1 consists of 25.5ha, Area 2 of 31.7ha, Area 3 of 15ha, and Area 4 of 35ha.
- Preferred Alternative 2: The development of the same four parcels of land but only within the Low and Very low ecological sensitivee areas (i.e. excluding the Medium and High sensitivity areas including the recommended buffers) Preferred Alternative 2 amount to 63. 82hectares.

Project location: The study area falls within the Kai !Garib Local Municipality approximately 82km south-west of Upington and 17 km north-west of Kakamas. The study area lies adjacent to the east of the road to Riemvasmaak and to the north of the Orange River. The other major roads in the area are N14 and the R 359. The study area is located to the north of existing agricultural developments on currently undeveloped land. The site can be accessed via the Kakamas - Riemvasmaak access road.

Erf 359, Kakamas-North Settlement (copy of title deed attached Appendix 1) with the coordinates of the centre point of the property 28º37’11.88”s & 20º28’03.76”E.

The National Environmental Management Act, 1998 (No. 107 of 1998) makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorisation from the relevant authorities based on the findings of an environmental assessment. The process of applying for environmental authorisation for specific developments are governed by the NEMA and the Environmental Impact Assessment Regulations, 2014, as amended. There are three published listing notices (GNR 324, 325 and 327 of April 2017) that include activities which require environmental authorisation before commencing. Activity 15 of Listing Notice 2 (GNR 325 of 2017) is triggered and therefore a Scoping / EIA process will be required. GNR 325 of 2017 Activity 15: The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or(ii) maintenance purposes undertaken in accordance with a maintenance management plan. Apart from Activity 15 of Listing Notice 2 (GNR 325 of 2017), Activities 19 and of Listing Notice 1 (GNR 327 of 2017) and Activity 12 Listing Notice 3 (GNR 324) are also trigger by the proposed development.

National Water Act (No. 36 of 1998) is to protect South Africa's water resources and aquatic ecosystems. Provisions are included in the Act requiring that a Water Use Licence be issued by the National Department of Water and Sanitation (DWS) prior to commencing or participating in activities defined as a water use in terms of Section 21 of the NWA. The Water Use License Application associated with the proposed development includes the following: 21(a) Taking of water.

Vegetation: According to the Vegetation Map of South Africa, Lesotho and Swaziland (SANBI, 2018) (VEGMAP), the vegetation types occurring in the study area are Kalahari Karroid Shrubland and Lower Gariep Broken Veld.

Potential botanical impacts include: Loss of vegetation type and ecological processes – including indigenous vegetation and ecologically important species.

Drainage lines: There are several drainage lines throughout the site, mostly flowing from the higher ground towards the southwest and west. These drainage lines are all non-perennial, small and dry.

Potential impacts in drainage lines: Disturbance and modification or loss of habitat and its associated biota and increased potential for alien vegetation infestation and erosion.

Specialist Studies: The need for the following specialist studies were identified and are being undertaken as part of the process (Should additional specialist studies be required, these will be undertaken as part of the EIA phase):

- Botanical Impact Assessment
- Phase 1 Heritage Impact Assessment (Archaeology and Palaeontology)
- Soil Suitability Study
- Freshwater / Aquatic Impact Assessment.

Public Participation Process: Relevant commenting authorities identified to date (other than the Competent Authority), which have been included in the process include:

- Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform
- National Department of Agriculture, Forestry and Fisheries
- Department of Water and Sanitation
- Kakamas Water Users Association
- Ngwao-Boswa Jwa Kapa Bokone / SAHRA (South African Heritage Resource Agency)
- ZF Mgcawu District Municipality
- Kai !Garib Local Municipality

Task undertaken during the Draft Scoping Phase:

- Interested and Affected Parties (I&APs) are identified throughout the process. The names and contact details of I&APs are entered into an I&AP list which will be maintained / updated throughout the environmental process.
- Notification letters describing the proposed development, the activities that will be triggered (in terms of the 2014 EIA Regulations, as amended), and an invitation to comment on the Draft Scoping Report be circulated to all potential I&APs and Commenting Authorities along with a copy (digital and/or hardcopy) of the documents.
- Neighbouring landowners will be requested to inform those residing on their farms of the application and the opportunity to comment.
- A1 sized site notices describing the proposed development, the activities that will be triggered, the public participation process, and an invitation to comment on the Report, will be placed at the farm entrances to the sites.
- The EAP will notify Department of Agriculture, Environmental Affairs, Rural Development & Land Reform of the commenting period for the Draft Scoping Report & Plan of study for EIA and provide them with the required hard- and digital copies (whichever is relevant in terms of the Covid Regulations).
- An advertisement describing the proposed development, the activities triggered (in terms of the 2014 EIA Regulations, as amended), details of the public participation process and an invitation to comment on the Draft Scoping Report will be placed in the local newspaper (Gemsbok Newspaper).
- The Draft Scoping Report will be available for a 30 day commenting period.
- All comments received during this commenting period will be included in the Comments & Response Report. This table summarises the comments received, and each comment is responded to and integrated into the Scoping Report where applicable.

Tasks undertaken during the statutory post-application Scoping Phase:

- Official notification letters will be distributed (via post, email, etc.) to all registered I&APs informing them of the statutory process and the availability of the post-application/statutory Draft Scoping Report for comment.
- Registered neighbouring landowners will be requested to inform those residing on their farms of the application and the opportunity to comment.
- The post-application/statutory Draft Scoping Report and Plan of Study for EIA will be circulated for comment to all registered I&APs and Commenting Authorities for an additional 30 day commenting period. Their comment will be requested in terms of Section 24O of NEMA (Act 107 of 1998).
- All comments received during this commenting period will be included in the Comments and Response Report.

Environmental Impact Assessment process: The following is a list of main tasks to be performed as part of the EIA process (in terms of Chapter 6 of the 2014 EIA Regulations, as amended) after receiving approval for the Scoping Report and Plan of Study for EIA.

- Update and maintain Interested & Affected Parties (I&AP) database / register.
- Compile the draft Environmental Impact Assessment Report (EIR), EMPr and MMP based on specialist input.
- Notify the competent and commenting authorities of the commenting period on the draft EIR (including EMP) and circulate copies of the documents to them by means of letters, email or whichever way communication is preferred.
- Notify registered I&APs of the 30 day (minimum) commenting period and circulate copies of the documents to them.
- Receive comment, respond to comment and update Comments & Response Report (issues trail).
- Incorporate input and recommendations into EIR, finalise EIR and submit to the Department (Department of Agriculture, Environment Affairs, Land Reform and Rural Development for decision-making.
- Notify authorities and registered I&APs of the outcome of the Department's decision and remind them of their right to appeal against the decision.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES

ABBREVIATIONS:

AGIS	Agricultural Geo-reference Information System
CBA	Critical Biodiversity Area
DFFE	Department of Fisheries, Forestry and Environment
DEA	Department of Environmental Affairs (National)
DAEALR&RD	Department of Agriculture, Environment Affairs, Land Reform and Rural Development
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
ELU	Existing Lawful Water Use
EMF	Environmental Management Framework
EMP	Environmental Management Programme / Plan
ESA	Ecological Support Area
FSP	Fine-scale Plan
GDPR	Gross Domestic Product Regional
GN	Government Notice
IDP	Integrated Development Plan
LUPO	Land Use Planning Ordinance
NEMA	National Environmental Management Act (No. 107 of 1998), as amended
NEMWA	National Environmental Management: Waste Act (No. 59 of 2008)
NFEPA	National Freshwater Ecosystem Priority Area
NHRA	National Heritage Resources Act (No. 25 of 1999)
NID	Notice of Intent to Develop
NWA	National Water Act (Act 36 of 1998)
NT	Near Threatened
PPP	Public Participation Process
PSDF	Provincial Spatial Development Framework
RMMP	River Maintenance Management Plan
SANBI	South African National Biodiversity Institute
SCC	Species of Conservation Concern
SDF	Spatial Development Framework
V&V	Verification & Validation
WUA	Water Users Association
WUL	Water Use Licence

GLOSSARY

"**Activity**" means an activity identified in terms of NEMA EIA 2014 Regulations and as amended April 2017.

"**Alternatives**", in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to property, activity, design or technology.

"**Applicant**" means a person who has submitted or intends to submit an application.

"**Associated** Infrastructure," means any building or infrastructure that is necessary for the functioning of a facility or activity or that is used for an ancillary service or use from the facility.

"**Biodiversity**" The variety of life occurring in an area, including the number of different species, the genetic wealth within each species, and the natural habitat where they are found.

"**Borehole**" Includes a well, excavation or any artificially constructed or improved underground cavity that can be used for the purpose of:

- intercepting, collecting or storing water in or removing water from an aquifer;
- observing and collecting data and information on water in an aquifer; or
- re-charging an aquifer.

"**Cultural** significance" This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance.

"**Cumulative impact**" in relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

"**Environmental Impact Assessment**" in relation to an application to which scoping must be applied, means the process of collecting, organizing, analysing, interpreting and communicating information that is relevant to the consideration of that application.

"**Environment**" The environment has been defined as "The external circumstances, conditions and objects that affect the existence and development of an individual, organism or group". These circumstances include biophysical, social, economic, historical, cultural and political aspects

"**Environmental Assessment Practitioner**" Person or company, independent of the applicant (developer), that manages the environmental assessment process of a proposed project on behalf of the applicant

"**Environmental Impact Report**" In-depth assessment of impacts associated with a proposed development. This forms the second phase of an Environmental Impact Assessment and follows on from the Scoping Report.

"**Environmental Management Programme**" means a programme presenting management and mitigation measures in relation to identified or specified activities envisaged.

"**Heritage resources**" This means any place or object of cultural significance. It includes archaeological resources.

"**Interested and Affected Party**" means an interested and affected party contemplated in section 24(4) (d) of the Act, and which in terms of that section includes -

(a) Any person, group of persons or organization interested in or affected by an activity; and

(b) Any organ of state that may have jurisdiction over any aspect of the activity.

"**Public Participation Process**" means a process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to, specific matters; "Registered Interested and Affected Party", in relation to an application, means an interested and affected party whose name is recorded in the register opened for that application in terms of regulation 57.

"**Species of Conservation Concern**" All those species included in the categories of endangered, vulnerable or rare, as defined by the International Union for the Conservation of Nature and Natural Resources.

"**Significant impact**" means an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment.

"**The Act**" The National Environmental Management Act, 1998 (Act No. 107 of 1998)

1 INTRODUCTION

1.1 Project background

Bakenrant Boerdery Pty. Ltd. (hereafter referred to as the Applicant) appointed The Eco Balance Planning Co. as the independent environmental assessment practitioner (EAP) to coordinate and facilitate the Scoping and Environmental Impact Assessment process for an application for Environmental Authorisation (EA) for the proposed agricultural development on Erf 359, Kakamas-North Settlement, Kai !Garib Local Municipality, ZF Mgcawu District Municipality, Northern Cape (**Figure 1**).

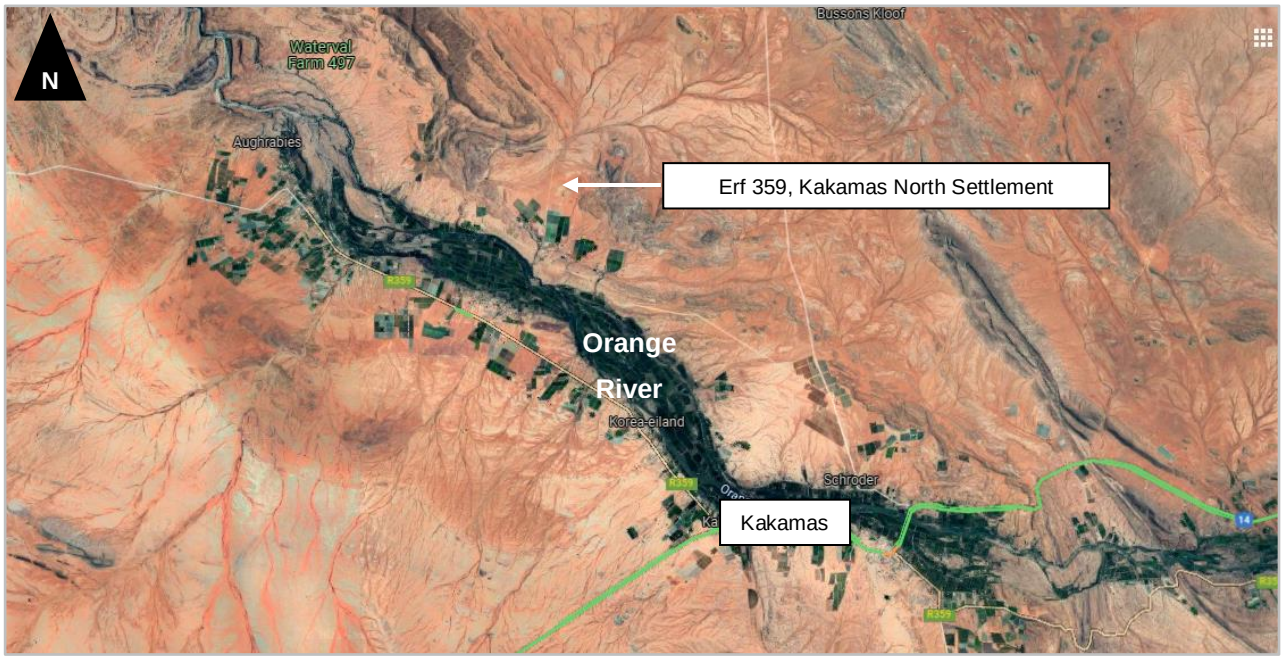


***Figure 1**. Erf 359 North West of Kakamas.*

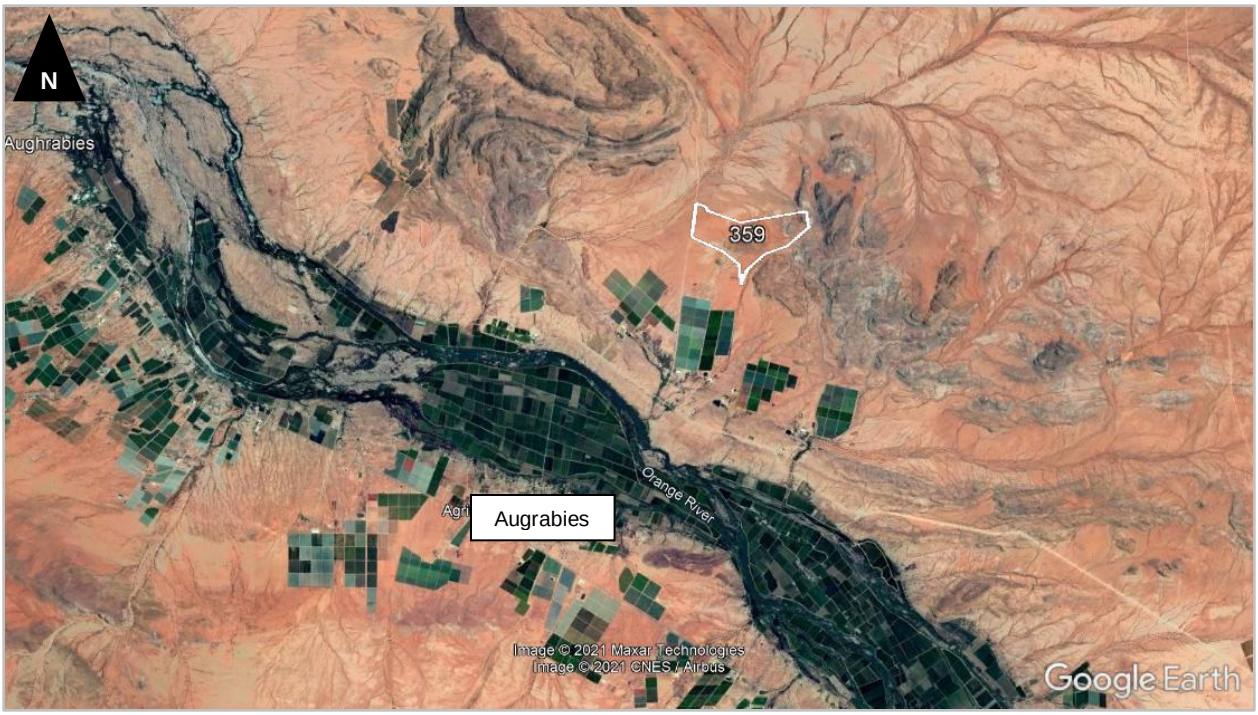


***Figure 2**. The property boundaries of Erf 35orth of Augrabies.*

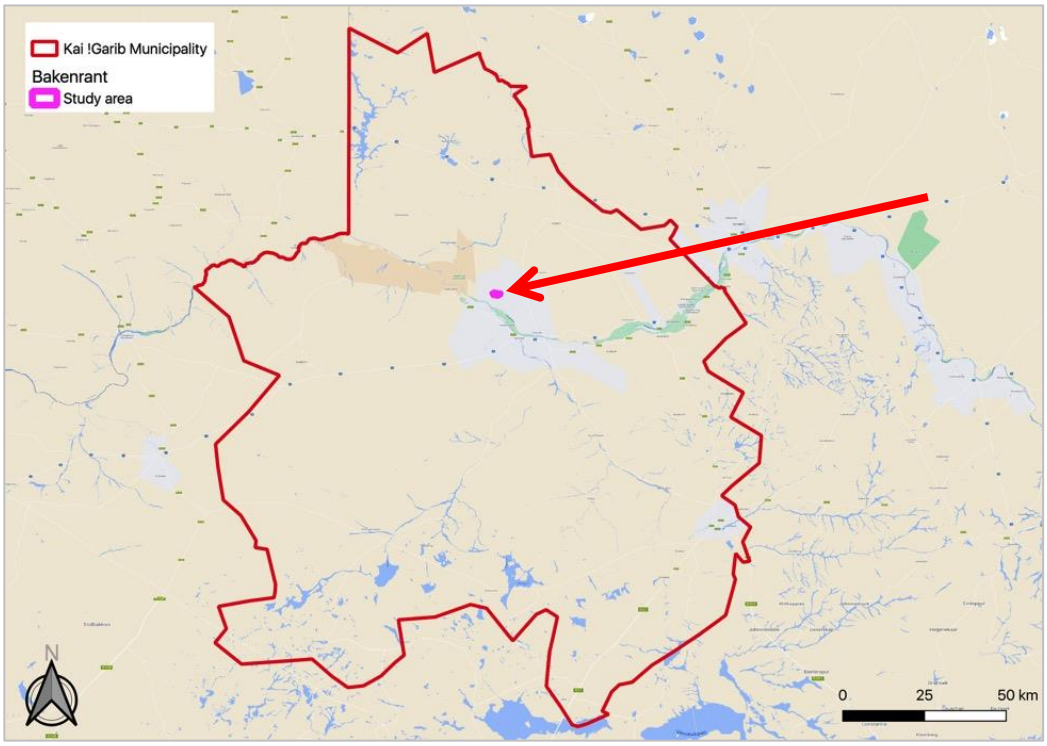


Figure 3. *The study area in relation to the Kai !Garib municipal boundary and the towns overlaid on a Google Maps™ image.*

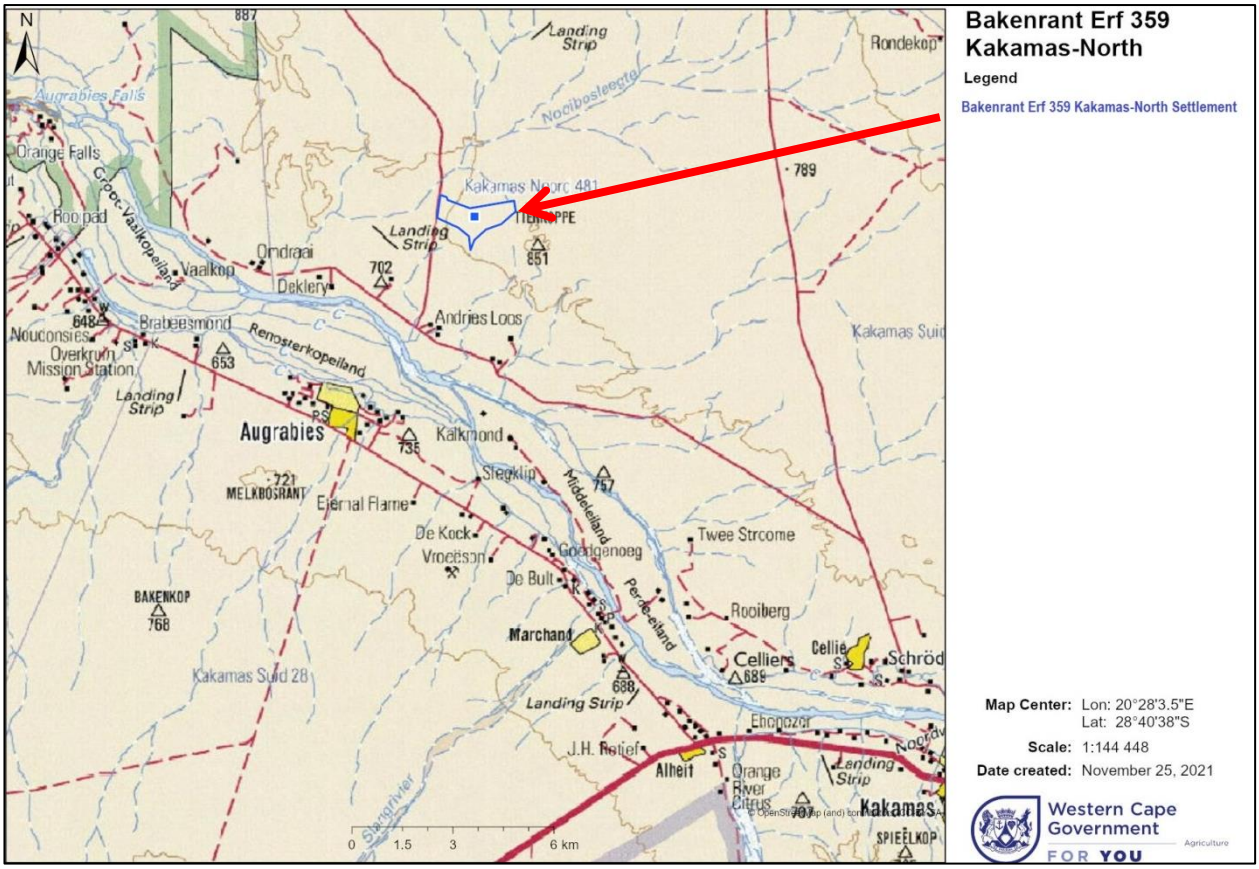


Figure 4*. Locality Map Erf 359 Kakamas North Settlement.*

1.2 Description of the proposed project

Layout Alternative 1: The development of four parcels of land (approximately 110 hectares) for agricultural purposes (table grapes). Area 1 consists of 25.5 ha, Area 2 of 31.7 ha, Area 3 of 15 ha, and Area 4 of 35 ha (**Figure 5).**

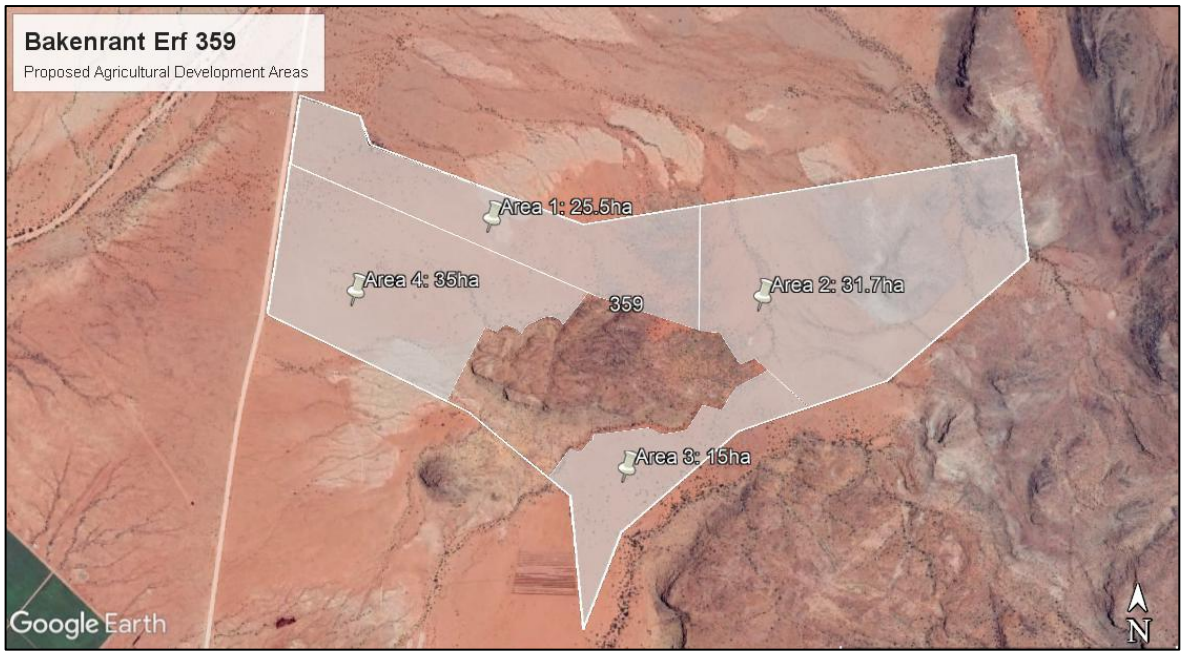


***Figure 5**. Erf 359 Proposed agricultural development areas for Layout Alternative 1.*

Layout Alternative 2 (preferred alternative): The development of the same four parcels of land but only within the identified Low and Very low ecological sensitive areas (i.e. excluding the Medium and High sensitivity areas including the recommended buffers). Preferred Layout Alternative 2 amount to 63. 82 hectares (**Figure 6**).

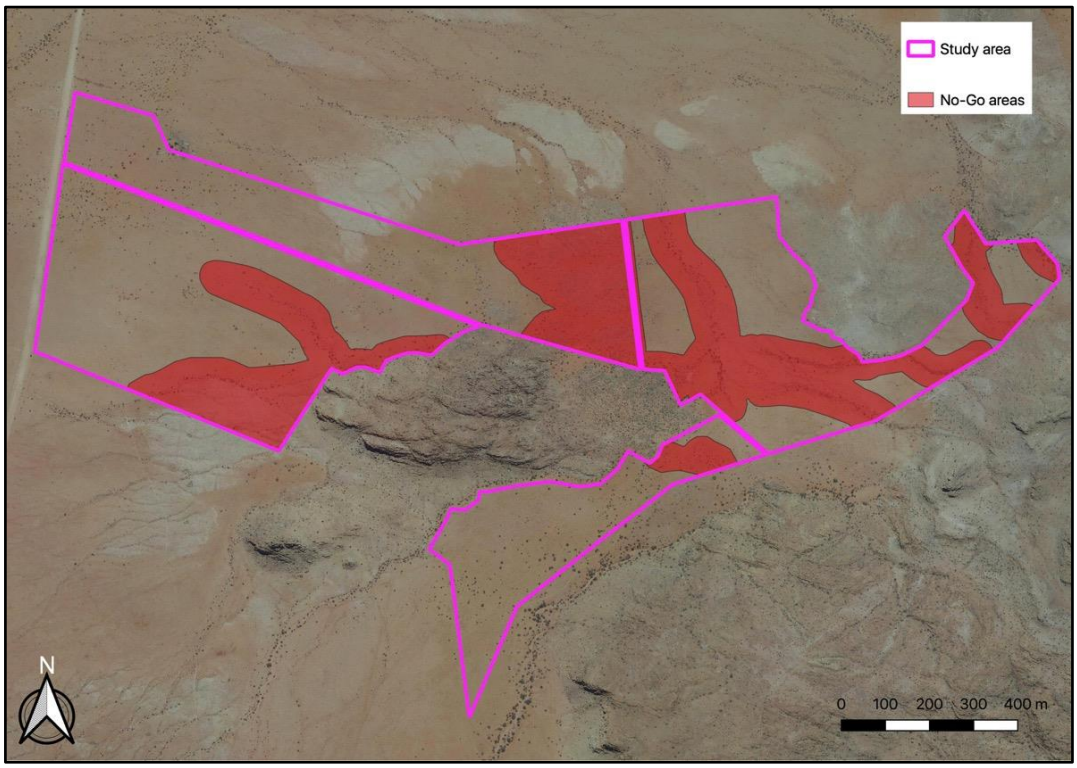


***Figure 6**.The red coloured polygons indicate the no-go (i.e. no development) areas.*

Figure 7. *Preferred Layout Alternative 2 in green coloured polygons. This layout alternative excludes the identified No-Go areas which has a High Botanical Sensitivity rating.*

Irrigation pipeline

An irrigation pipeline (diameter 500mm and length of approximately 3400m) is included in the proposal in order to supply water to the proposed table grapes.

The pipeline will abstract water from an existing abstraction point at the Orange River with coordinates 28º38'35.80'S 20º26' 07.90"E . The first section of the pipeline will be within a servitude located on Farm 412 (Kakamas North Settlement). Hereafter the pipeline will follow an existing private gravel track leading in a northern direction until it reaches Erf 359 (Kakamas North Settlement).

The pipeline will cross two provincial roads at two different locations. The first crossing is located at 28º38'25.76'S & 20º26'15.10"E and is the point where it leaves Farm 412 and enters Farm 401. The second road crossing is located at 28º37'08.65'S & 20º27'20.95"E and is where the pipeline leaves Farm 401 and enters Erf 359.

On entering Erf 359, where the development is proposed, the pipeline will divide into an irrigation network supplying each new table grape block with irrigation water.

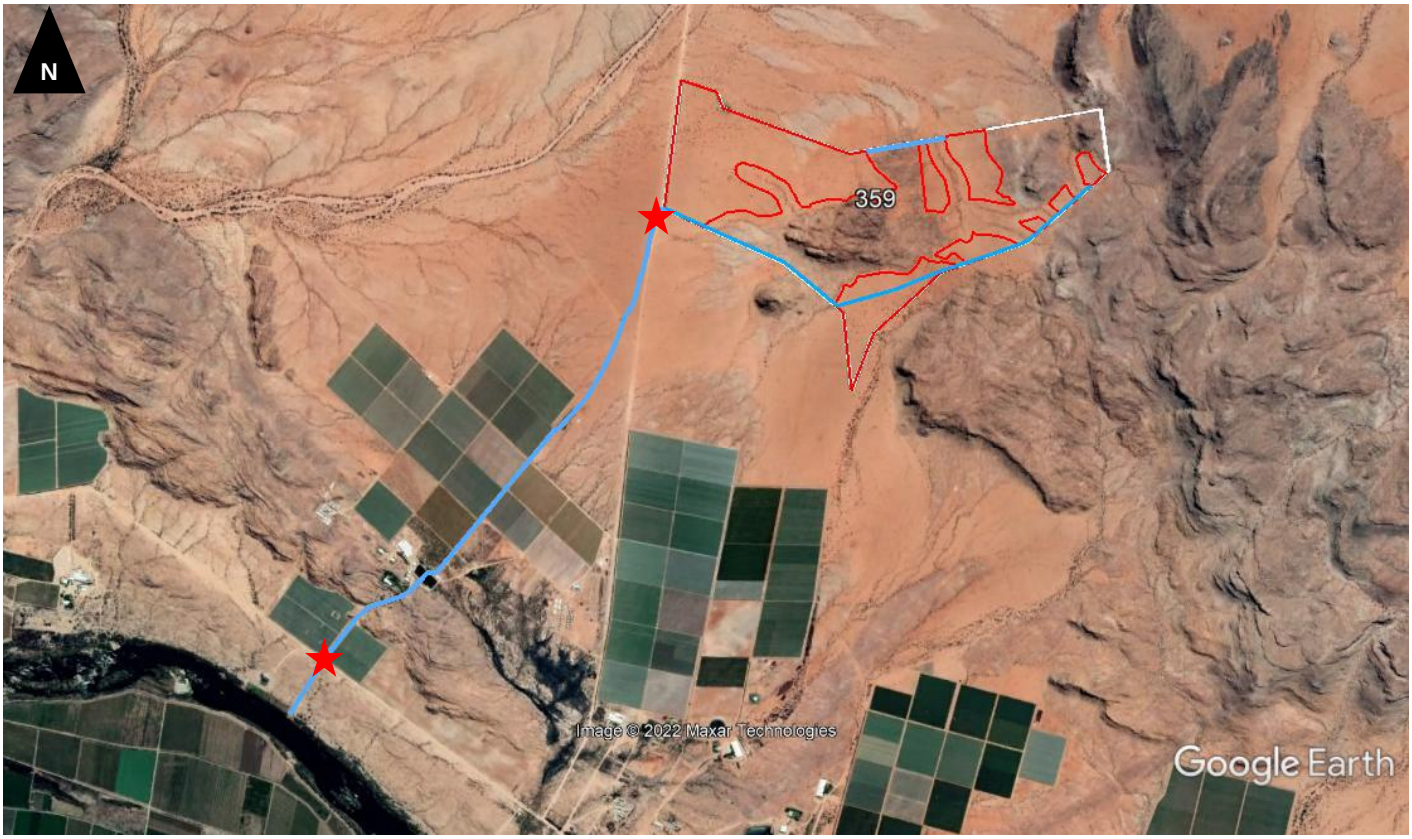


***Figure 8**. The proposed pipeline (blue line) connecting the Orange River with the proposed development sites on Erf 359 with road crossings indicated as red stars.*

1.3 Property detail and location

The study area falls within the Kai !Garib Municipality approximately 82 km south-west of Upington and 17 km north-west of Kakamas. The study area lies adjacent to the east of the road to Riemvasmaak and to the north of the Orange River. The other major roads in the area are N14 and the R359. The study area is located to the north of existing agricultural developments in currently undeveloped land (**Figure 9**). The site can be accessed via the Kakamas - Riemvasmaak access road; Divisional Road 3270.

Erf 359, Kakamas-North Settlement can be located by the following coordinates:

28º36’52.30”S	20º28’47.36”E
28º37’02.48”S	20º28’47.54”E
28º37’14.44”S	20º28’31.77”E
28º37’19.50”S	20º28’15.07”E
28º37’29.89”S	20º28’02.16”E

28º37'39.47"S	20º27'57.93"E
28º37'26.26"S	20º27'56.38"E
28º37'17.93"S	20º27'44.68"E
28º37'08.57"S	20º27'21.55"E
28º36'52.30"S	20º27'32.20"E
28º36'52.30"S	20º27'33.04"E
28º36'52.30"S	20º27'57.41"E
28º36'52.30"S	20º27'47.36"E

Table 1. *Coordinates of the property.*

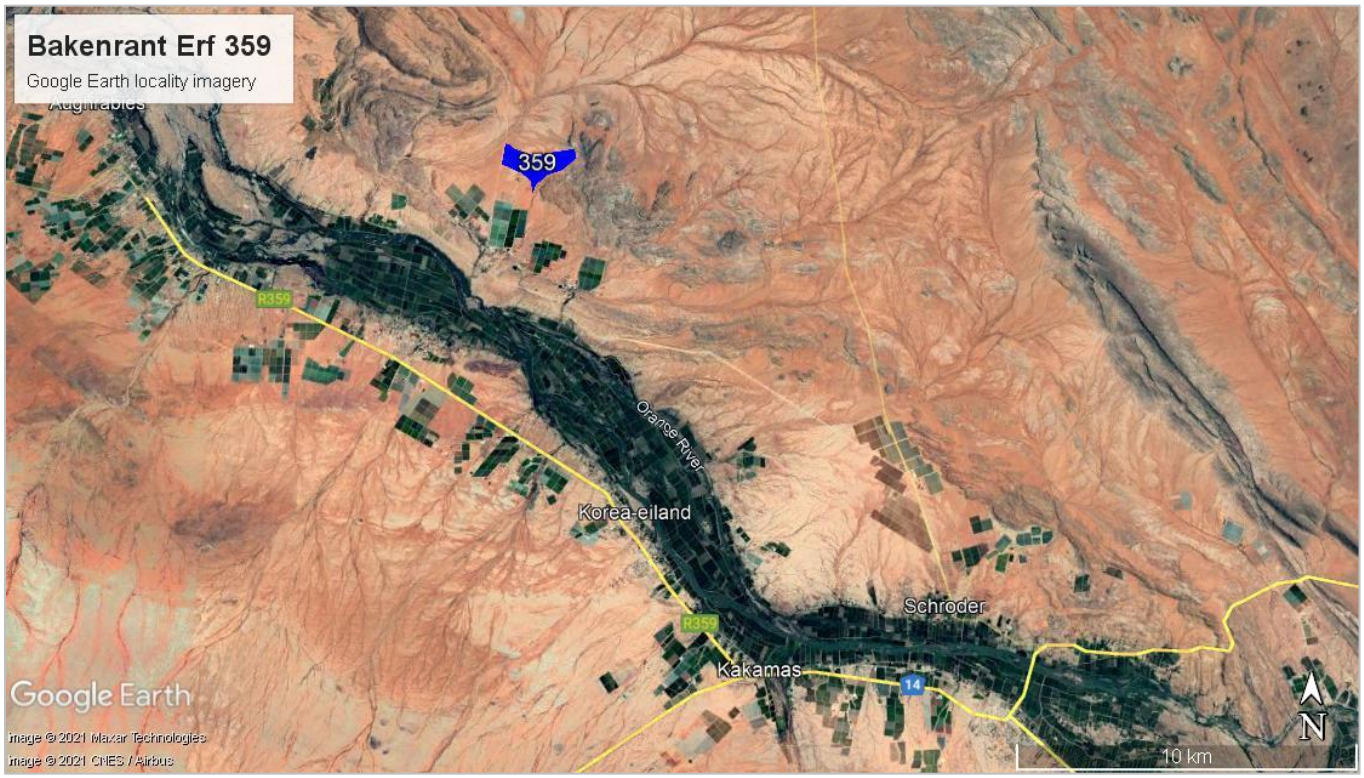


Figure 9*. Erf 359 Google Earth locality imagery.*

1.4 Surveyor General 21-Digit Code

Erf 359 Kakamas North Settlement : C0036 0000 00000359 00000.

2 APPLICANT AND EAP INFORMATION

2.1 Details of the Applicant

The Applicant, *Bakenrant Boerdery Pty. Ltd*., applies for Environmental Authorization to proposed agricultural development on Erf 359 Kakamas-North Settlement (**Table 1**).

***Table 2**. Details of Applicant*

Name of landowner	*Bakenrant Boerdery Pty. Ltd.*
Name of applicant:	*Bakenrant Boerdery Pty. Ltd.*
Name of contact person for applicant:	Mr. F. Burger
Company registration number:	2018/407711/07
Company / Trading name (if any):	*Bakenrant Boerdery Pty. Ltd.*
Postal address:	P.O. Box 808, Kakamas, 8870
Telephone:	054 451 8202
E-mail:	frans@bakenrant.co.za

2.2 Role, Competence and Details of the Environmental Assessment Practitioner (EAP)

The Applicant appointed The Eco Balance Planning Co. (Susan de Kock) as the independent environmental assessment practitioner (EAP) to coordinate and facilitate the Scoping and Environmental Impact Assessment process

2.2.1 Role of EAP

The role of the Environmental Assessment Practitioner (EAP) is to manage the application for Environmental Authorisation on behalf of the Applicant. The EAP must adhere to all relevant legislation and guidelines, ensuring that the reports contain all the necessary and relevant information required by the competent authority to make a decision. It is the responsibility of the EAP to perform all work relating to the application in an objective, appropriate and responsible manner. The EAP must comply with Regulation 13 of the EIA Regulations RN R. 982 of 2014 as amended GN R. 326, 2017, detailing the requirements for an EAP.

2.2.2 EAP Contact details

The EAP's contact details are as follow:

The Eco Balance Planning Co.
Susan de Kock
P.O. Box 1593, Upington, 8800
Tel: 082 679 6780
Fax: 0872 34 34 34
Email: susandekock@oranjenet.net.

2.2.3 EAP Competence

See CV attached as **Appendix 2.**

2.2.4 EAP Declaration of Independence

In terms of Regulation 13 of GN R. 326 an EAP, appointed in terms of regulation 12(1), must be independent and have expertise in conducting environmental impact assessments, including knowledge of the Act, the Regulations and any guidelines that have relevance to the proposed activity. The EAP must ensure compliance with the Regulations and perform work relating to the applicant in an objective manner, even if this results in views and findings that are not favourable to the application. The EAP must take into account, to the extent possible, the matters referred to in Regulation 18 when preparing the application and any report, plan or document relating to the application and disclose all material information in the possession of the EAP that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority in terms of the Regulations, unless access to that information is protected by law, in which case it must be indicated that such protected information exists and is only provided to the competent authority.

It should be noted that Susan de Kock may tender for any subsequent ECO-work related to this study should the proposed project by authorized by the Department of Agriculture, Environment Affairs, Land Reform and Rural Development.

I, S. de Kock, do hereby declare that I am financially and otherwise independent of the client and their consultants, and that all opinions expressed in this document are substantially my own.

2.2.5 EIA Team

The following parties are the project team members:

- EAP: The Eco Balance Planning Co. Susan de Kock
- Botanical and Ecological Specialist: Capensis (Greg Nicolson)
- Heritage Specialists: Ubique Heritage Consultants. (Heidi Fivaz & Jan Engelbrecht)
- Freshwater Report: WATSAN Africa (Dr D. van Driel)

3 THE EIA PROCESS

3.1 The principles of environmental management

The principles of environmental management as set out in section 2 of The National Environmental Management Act (No. 107 of 1998) (NEMA) will be considered. The principles pertinent to the proposed development include:

- People and their needs are placed at the forefront while serving their physical, psychological, developmental, cultural and social interests.
- Development is socially, culturally, environmentally and economically sustainable.
- The use of non-renewable natural resources is responsible and equitable.
- The negative impacts on the environment and on people's environmental rights are anticipated and prevented, and where they cannot be prevented, are minimised and remedied.
- The interests, needs and values of all interested and affected parties are taken into account in any decisions through the Public Participation Processes.
- The social, economic and environmental impacts of the activity are 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 are considered, by pursuing what is considered the best practicable environmental option.

3.2 EIA Terms of Reference

Susan de Kock is appointed as environmental consultant with the following Terms of Reference:

- Undertake an environmental evaluation of the applicable options and sites to get an understanding of biophysical characteristics and natural processes prevailing and to assess the proposed development proposals in terms of environmental characteristics by assessing the constraints and opportunities of the situation;
- Identify any anticipated impacts that might be considered at this early stage of the EIA process to suggest any specialist studies that may be required to provide additional information on the significance of impacts and mitigation that may be required to reduce negative impacts and enhance positive impacts of the proposed development;
- Coordinate specialist studies to inform the compilation of initial environmental opportunities and constraints;
- In association with the specialists, assist the appointed consulting engineers (if applicable) with the development of the optimum site development that will have the least impact on the biophysical and social environment;
- Undertake the applicable Scoping and EIA process in terms of the regulations of the NEMA to provide the relevant information for the Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform and any other government officials, to be able to make informed decisions and to issue an environmental authorisation for the proposed development;
- Undertake a comprehensive public participation process as part of the Scoping and EIA process, providing the relevant information to the public, I&APs, government officials, and other stakeholders, and to allow for adequate time for the public to respond to such information. Comments and concerns raised by I&APs must be taken into consideration in assessing the impacts of the proposed development;
- Assess alternative development options in order to reduce the significance of impact that may arise. Prescribe the necessary mitigation to enhance any positive impacts and reduce negative impacts that may arise as a result of the proposed development;
- Make the necessary environmental management recommendations for the construction and operational phases of the proposed development.

3.3 Procedures required for an Application for Authorisation

The procedures required for an Application for Authorisation to Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform would involve the following key steps:

- site visit(s) and the collection of relevant site information needed for the Application;
- coordination of pre-application meetings with relevant authorities, if necessary (including Department of Agriculture, Environment Affairs, Rural Development & Land Reform and SAHRA); in order to establish their requirements;
- public participation, including advertising, the erection of notice boards and the notification of adjacent and/or directly affected property owners;
- coordination of specialists' input or studies required;
- submission of relevant completed application forms;

- completion of draft and final reports including draft Environmental Management Programmes for public review;
- completion of final reports (including a Comments & Response Report) for public review;
- submission of the reports to the relevant authorities for consideration;
- notification of all I&APs of the outcome of the application.

4 ENVIRONMENTAL LEGISLATIVE REQUIREMENTS

This report has been prepared in compliance with the requirements of the following legislation:

- The National Environmental Management Act (No. 107 of 1998) (NEMA);
- The Environmental Impact Assessment (EIA) Regulations contained in Government Notice (GN) No. 983, 984 and 985 of 2014 as promulgated in terms of the NEMA (EIA Regulations) as amended up to and including GN 324, 325, 326 and 327 in GG 40772 of 07 April 2017.

The purpose of these regulations is to regulate procedures and set criteria as contemplated in the NEMA to enable the submission, processing, consideration and decision-making regarding applications for environmental authorisation of activities and matters pertaining thereto. The structure of this report is based on Appendix 2 (*Contents of a Scoping Report*) of GN R. 326 of the EIA Regulations as amended, which specifies the required content of a scoping report.

In terms of the NEMA EIA Regulations, the proposed development triggers the listed activities indicated within **Table 2.** The key legal requirements and obligations related to the proposed development are briefly highlighted below.

4.1 The Constitution of the Republic of South Africa

The Constitution of the Republic of South Africa states that everyone has a right:

(a) to an environment that is not harmful to their health or well-being; and

(b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –

(i) prevent pollution and ecological degradation;

(ii) promote conservation; and

(iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

4.2 National Environmental Management Act (No. 107 of 1998), as amended

The National Environmental Management Act, 1998 (No. 107 of 1998) (NEMA) makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorisation from the relevant authorities based on the findings of an environmental assessment. NEMA is a national act, which is enforced by the Department of Environmental Affairs (DEA). These powers are often delegated to the Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform

The process of applying for environmental authorisation for specific developments are governed by the NEMA and the Environmental Impact Assessment Regulations, 2014, as amended. And there are in turn three published listing notices (GNR 324, 325 and 327 of April 2017) that include activities which require environmental authorisation before commencing with a development that triggers one or more of these activities. Provision is made for two types of

processes dependent on the type of activities triggered by the proposed development, i.e. Basic Assessment and Scoping and EIA.

- Activities within Listing Notice 1 (GNR 327 of 2017) requires Basic Assessment
- Activities within Listing Notice 2 (GNR 325 of 2017) requires a Scoping and EIA process
- Activities within Listing Notice 3 (GNR 324 of 2017) requires Basic Assessment

The listed activities associated with the proposed development are listed below:

***Table 3** - Listed activities in the NEMA EIA Regulations that might potentially be triggered.*

Government Notice R. 327 Activity No(s):	**Describe the relevant Basic Assessment Activity(ies) in writing as per Listing Notice 1 (GN No. R. 327)**	**Describe the portion of the development as per the project description that relates to the applicable listed activity.**
9	The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water— (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more; excluding where— (a) such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve or railway line reserve; or (b) where such development will occur within an urban area.	An irrigation pipeline with a diameter of 500mm is included in the development.
Government Notice R. 325 Activity No(s):	**Describe the relevant Scoping and EIA Activity(ies) in writing as per Listing Notice 2 (GN No. R. 325)**	**Describe the portion of the development as per the project description that relates to the applicable listed activity.**
15	The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	More than 20 hectares of indigenous vegetation will be cleared for agricultural purposes. The vegetation within the study area is fairly homogenous and a good representation of intact Kalahari Karroid Shrubland. Alternative 1: removal of 110ha indigenous vegetation. Preferred Alternative 2: Development of the Low and Very low ecological sensitive areas (i.e. excluding the Medium and High sensitivity areas including the recommended buffers) whereby 63. 82ha of indigenous vegetation will be cleared / removed.

Government Notice R. 324 Activity No(s):	**Describe the relevant Basic Assessment Activity(ies) in writing as per Listing Notice 3 (GN No. R. 324)**	**Describe the portion of the development as per the project description that relates to the applicable listed activity.**
12	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. g. Northern Cape ii. Within critical biodiversity areas identified in bioregional plans.	More than 300 square metres of indigenous vegetation will be removed for agricultural purposes. The study area is mapped as followed: Critical Biodiversity Area 1: 14.5ha or 13.2%; Critical Biodiversity Area 2: 95.5ha or 86.8%. (**See Figure 11**.)

Activity 15 of Listing Notice 2 is triggered as indicated above, therefore a Scoping / EIA process will be required.

4.3 National Environmental Management: Biodiversity Act (No. 10 of 2004)

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 73 of the act furthermore deals with Duty of Care relating to invasive species, while 76 calls for development of invasive species monitoring, control and eradication plans by all organs of state in all spheres of government, as part of environmental management programmes required in terms of Section 11 of NEMBA.

Ecosystem threat status is derived from two sources. These include the following:

1. The National List of Ecosystems that are Threatened and in Need of Protection (Government Gazette, 2011).
2. The National Biodiversity Assessment 2018 (NBA) (SANBI 2019).

According to the Vegetation Map of South Africa, Lesotho and Swaziland (SANBI, 2018) (VEGMAP), the vegetation types occurring in the study area are Kalahari Karroid Shrubland and Lower Gariep Broken Veld. Kalahari Karroid Shrubland and Lower Gariep Broken Veld are listed as Least Threatened in The National List of Ecosystems that are Threatened and in Need of Protection. The ecosystems are listed as Least Concern in the NBA both with 99.3% still intact (Nicolson, G. 2021).

4.4 National Heritage Resources Act (No. 25 of 1999)

The protection of South Africa's heritage resources is controlled by the National Heritage Resources Act (No. 25 of 1999). Ngwao-Boswa Jwa Kapa Bokone, the authority who enforces this Act in the Northern Cape, was identified as a statutory body with an interest in this development. However, Ubique has confirmed that SAHRA (South African Heritage Resource Agency) is dealing with heritage matters in the Northern Cape.

The following triggers in terms of the NHRA are applicable to this proposed development and therefore require that SAHRA must be given an opportunity, together with the rest of the I&APs, to comment on the environmental application.

Section 38 of the NHRA states the following:

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

(a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

(c) any development or other activity which will change the character of a site (i) exceeding 5 000m^2 in extent.

UBIQUE Heritage Consultants were appointed by Eco Balance Planning Co. as independent heritage specialists in accordance with Section 38 of the NHRA and the National Environmental Management Act 107 of 1998 (NEMA) to conduct a cultural heritage assessment to determine the impact of the proposed agricultural development of Erf 359 on any sites, features, or objects of cultural heritage significance.

No significant heritage sites or features were identified within the surveyed sections of the areas earmarked for agricultural development. UBIQUE Heritage Consultants indicated that proposed development can continue. Due to the low palaeontological significance of the area, no further palaeontological heritage studies, ground-truthing and/or specialist mitigation are required (Engelbrect, J. & Fivaz, H. 2021).

4.5 Conservation of Agricultural Resources Act (No. 43 of 1983)

The Department of Forestry, Fisheries and the Environment (DFFE), Directorate: Land Use and Soil Management administers and implement the Conservation of Agricultural Resources Act, (CARA) 43 of 1983. The Act is regarded as one of the principle Acts governing the protection of agricultural natural resources. The main aim of the Act is to control the utilization of natural agricultural resources to ensure the conservation of soil, water and vegetation, as well as the combating of alien and invasive plants. According to Section 1 of the Act, conservation of natural agricultural resources includes the protection, recovery as well as the reclamation thereof.

The objectives of CARA are provided for the conservation of the natural agricultural resources by the maintenance of the production potential of the land, by combating and prevention of erosion and weakening or destruction of the water resources, and by protecting the vegetation and combating weeds and invader plants.

A permit is required when cultivating virgin soil. This application is in process with the Department of Forestry, Fisheries and the Environment (DFFE).

4.6 National Water Act (No. 36 of 1998)

The main objective of the National Water Act (NWA) (No. 36 of 1998) is to protect South Africa's water resources and aquatic ecosystems. Provisions are included in the Act requiring that a Water Use Licence be issued by the National Department of Water and Sanitation (DWS) prior to commencing or participating in activities defined as a water use in terms of Section 21 of the NWA.

The following water use activities associated with the proposed development may trigger one relevant section of the NWA:

- Section 21 (a) – taking of water.

The Applicant wishes to commence with the Water Use Licence Application on completion of the Environmental Authorization Application.

4.7 Other relevant policies and guidelines

RELEVANT POLICIES / GUIDELINES	ADMINISTERING AUTHORITY
Northern Cape Provincial Development and Resource Management Plan / Provincial Spatial Development Framework (PSDF)	Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform
IDPs & SDFs for the ZF Mgcawu District Municipality and Kai !Garib Local Municipality	ZF Mgcawu District Municipality and Kai !Garib Local Municipality
BGIS website	SANBI
2016 The Northern Cape Critical Biodiversity Areas Map	Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform
Cape Farm Mapper website	Western Cape Government: Agriculture

Table 4. *Relevant policies and guidelines*

5 DESCRIPTION OF THE RECEIVING ENVIRONMENT

This chapter provides a brief description of the existing biophysical environment within the immediate vicinity of the proposed activity and in some instances of the wider municipal area. It draws on knowledge retrieved from sources like the municipal and provincial Integrated Development Plans (IDP) and Spatial Development Frameworks (SDF), the SANBI BGIS website, the Cape Farm Mapper website, the Screening Report, specialist reports as well as discussions with various role-players and site visits. It serves to present the context against which the positive and negative impacts of the proposed activity can be assessed.

5.1 Topography and drainage

The terrain in the study area consists of flat sandy plains combined with klipveld. It is mountainous in the central southwest and northeastern parts of the site and outside the development footprint. The terrain has a slight slope towards the west and southwest. There are several waterways throughout the site, mostly flowing from the higher ground towards the southwest and west. These are all non-perennial small dry waterways. Minor natural erosion is visible on the slopes of the mountainous areas; however, no significant erosion on the development footprints (Engelbrect, J. & Fivaz, H. 2021).

5.2 Geology and soils

The geology of Kalahari Karroid Shrubland is described in the VEGMAP (Mucina and Rutherford, 2006) as: “Cenozoic Kalahari Group sands and small patches also on calcrete outcrops and screes on scarps of intermittent rivers (mekgacha). In places Dwyka Group tillites outcrop. The soils are deep (>300 mm), red-yellow, apedal, freely drained, with a high base status, typical of Ae land type” (Mucina et al. in Mucina and Rutherford, 2006). Quartz, quartzite and hornfels are visible on the surface combined with some dolomite outcrops. The rocky outcrops form

part of another vegetation type namely Lower Gariep Broken Veld and are characterised by shallow soils and exposed rocky areas (Engelbrect, J. & Fivaz, H. 2021) and (Nicolson, G. 2021)

5.3 Climate & Rainfall

Climate in the broad sense is a major determinant of the geographical distribution of species and vegetation types. However, on a smaller scale, the microclimate, which is greatly influenced by local topography, is also important. Within areas, the local conditions of temperature, light, humidity and moisture vary greatly and it is these factors which play an important role in the production and survival of plants (Tainton, 1981). The spatial and temporal distribution of rainfall is very complex and has great effects on the productivity, distribution and life forms of the major terrestrial biomes (Barbour et al. 1987). Aspects like topography, slope and altitude may result in differences in precipitation and water availability to plants within the study area.

The climatic conditions of the area can be described as follows: The summers are sweltering, the winters are short and cool, and it is dry and mostly clear year round. Over the course of the year, the temperature typically varies from 4°C to 36°C and is rarely below 0°C or above 41°C.

Average Temperature: The hot season lasts for 3.9 months, from November 21 to March 16, with an average daily high temperature above 33°C. The hottest month of the year is January, with an average high of 36°C and low of 21°C. The cool season lasts for 2.8 months, from May 24 to August 18, with an average daily high temperature below 24°C. The coldest month of the year is July, with an average low of 5°C and high of 21°C.

Rainfall: The rainy period of the year lasts for 3.8 months, from December 28 to April 21, with a sliding 31-day rainfall of at least 13 millimeters. The month with the most rain is March, with an average rainfall of 24 millimeters. The rainless period of the year lasts for 8.2 months, from April 21 to December 28. The month with the least rain is August, with an average rainfall of 1 millimeter.

5.4 Vegetation

This section of the report is quoted from the Botanical impact assessment for proposed agricultural expansion at Bakenrant Farm perseel 359, Gordonia, Kai !Garib Municipality, Northern Cape Province compiled by Greg Nicolson, August 2021.

5.4.1 SA Vegetation Map

According to the Vegetation Map of South Africa, Lesotho and Swaziland (SANBI, 2018) (VEGMAP), the vegetation types occurring in the study area are Kalahari Karroid Shrubland and Lower Gariep Broken Veld (**Figure 10**). The landscape and vegetation of the vegetation types is described by Mucina et al. (in Mucina and Rutherford, 2006) as: Kalahari Karroid Shrubland: “Low karroid shrubland on flat, gravel plains. Karoo-related elements (shrubs) meet here with northern floristic elements, indicating a transition to the Kalahari region and sandy soils.”

Lower Gariep Broken Veld: “Hills and low mountains, slightly irregular plains but with some rugged terrain (e.g. downstream of the Augrabies Falls) with sparse vegetation dominated by shrubs and dwarf shrubs, with annuals conspicuous, especially in spring, and perennial grasses and herbs. Groups of widely scattered low trees such as *Aloe dichotoma var. dichotoma* and *Acacia mellifera subsp. detinens* occur on slopes of “*koppies*” and on sandy soils of foot slopes respectively”.

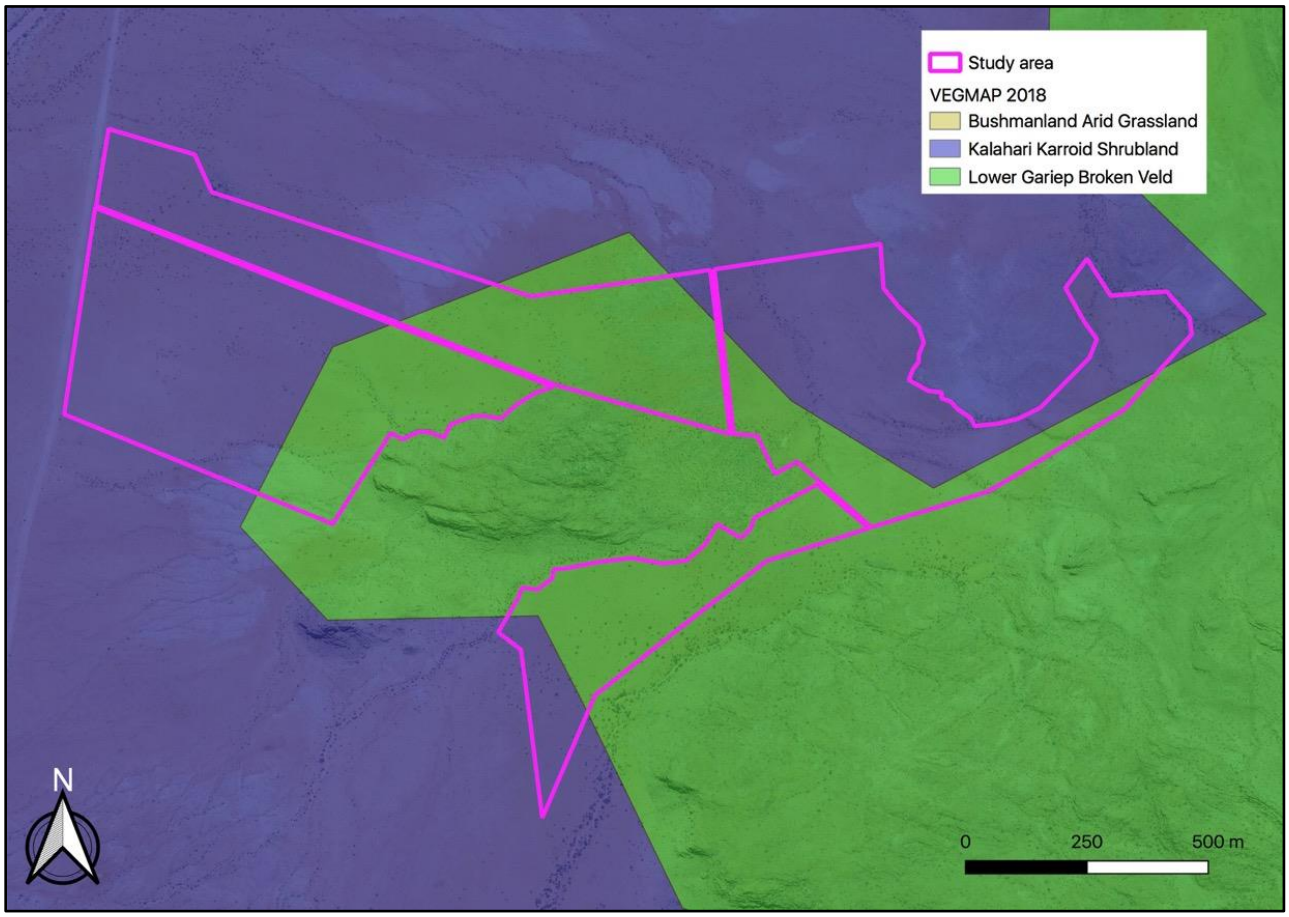


Figure 10. *The study area superimposed on a portion of The Vegetation Map of South Africa, Lesotho and Swaziland (SANBI, 2018) overlaid on a CDNGI 25cm image (Nicolson, J. 2021).*

5.4.2 Ecosystem threat status

Ecosystem threat status is derived from two sources. These include the following:

1. The National List of Ecosystems that are Threatened and in Need of Protection (Government Gazette, 2011).
2. The National Biodiversity Assessment 2018 (NBA) (SANBI 2019).

Kalahari Karroid Shrubland and Lower Gariep Broken Veld are listed as Least Threatened in The National List of Ecosystems that are Threatened and in Need of Protection. The ecosystems are listed as Least Concern in the NBA both with 99.3% still intact.

5.4.3 Critical Biodiversity Areas and Ecological Sensitive Areas

The conservation importance of all areas within the Northern Cape has been mapped in the Northern Cape Critical Biodiversity Area (CBA) Map (Northern Cape Department of Environment and Nature Conservation, 2016). The CBA map units are selected for conserving important habitats and biodiversity processes. The habitat categories are selected for various reasons and may include degraded or low quality vegetation, since they may serve as important biodiversity corridors between ecologically intact habitats. It is therefore important to ground-truth these areas and interpret the findings in relation to the objectives of the CBA Map. In this instance the study area is classified as CBA 1 and CBA 2 (**Table 5 and Figure 11)**.

CBA	Natural vegetation - Areas affected	Features associated with planning unit (hexagon)
Critical Biodiversity Area 1	14.5 ha or 13.2%	Bushmanland Arid Grassland Kalahari Karroid Shrubland Lower Gariep Broken Veld Conservation Areas All Rivers PA distance buffers 5km and 10km Large high value climate resilience areas NPAES PA and Focus Landscape structural elements Lower Gariep Alluvial Vegetation Threatened species Namakwa CBA2 and associated All natural wetlands
Critical Biodiversity Area 2	95.5 ha or 86.8%	Bushmanland Arid Grassland Kalahari Karroid Shrubland Lower Gariep Broken Veld Conservation Areas All Rivers PA distance buffers 5km and 10km Large high value climate resilience areas NPAES PA and Focus Landscape structural elements
Total	110 ha	

Table 5 *- CBA Natural vegetation areas affected (Nicolson, J. 2021).*

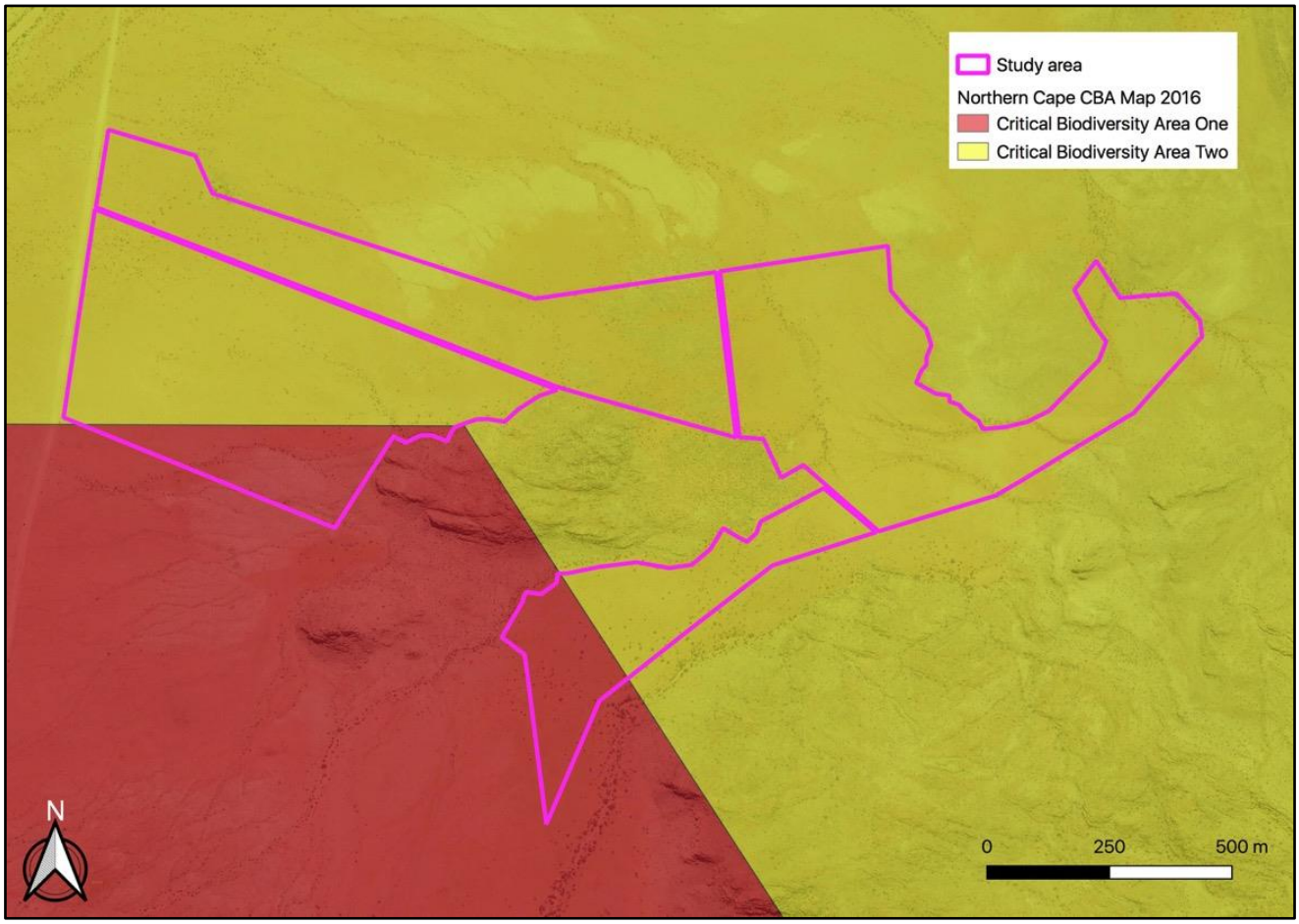


***Figure 11**. The study area in relation to the Northern Cape CBA Map (Northern Cape Department of Environment and Nature Conservation, 2016) overlaid on a CDNGI 25cm image (Nicolson, J. 2021).*

5.4.4 Habitat condition on site

The vegetation communities and condition on the site are described below according to habitat categories provided in **Table 6**. The habitats mapped are represented in **Figure 12**.

Habitat category	Description
Intact vegetation	A true representation of the original vegetation type in terms of structure and species makeup. Minimal soil disturbance. Unlikely to have ever been ploughed. Disturbance may be evident.
Semi-intact	Resembles the original vegetation type in terms of structure and species makeup but has lower species diversity than intact vegetation. Dominated by disturbance-resilient species. Soils may have been heavily disturbed in the past. Restoration potential is high.
Degraded	Only a few species representative of the original vegetation type are present. The vegetation has undergone heavy disturbance. Restoration potential is either low or moderate.
Highly degraded	The original vegetation is usually absent and has been removed in the past. Only a few

	remnant or pioneer species are present. Soils usually ploughed in the past. Restoration potential is very low.
Transformed	No remnant species exist anymore. The landscape is altered irreversibly with no restoration potential. Examples include cultivated farmland and the built environment.

Table 6. *Habitat category descriptions and criteria (Nicolson, J. 2021).*

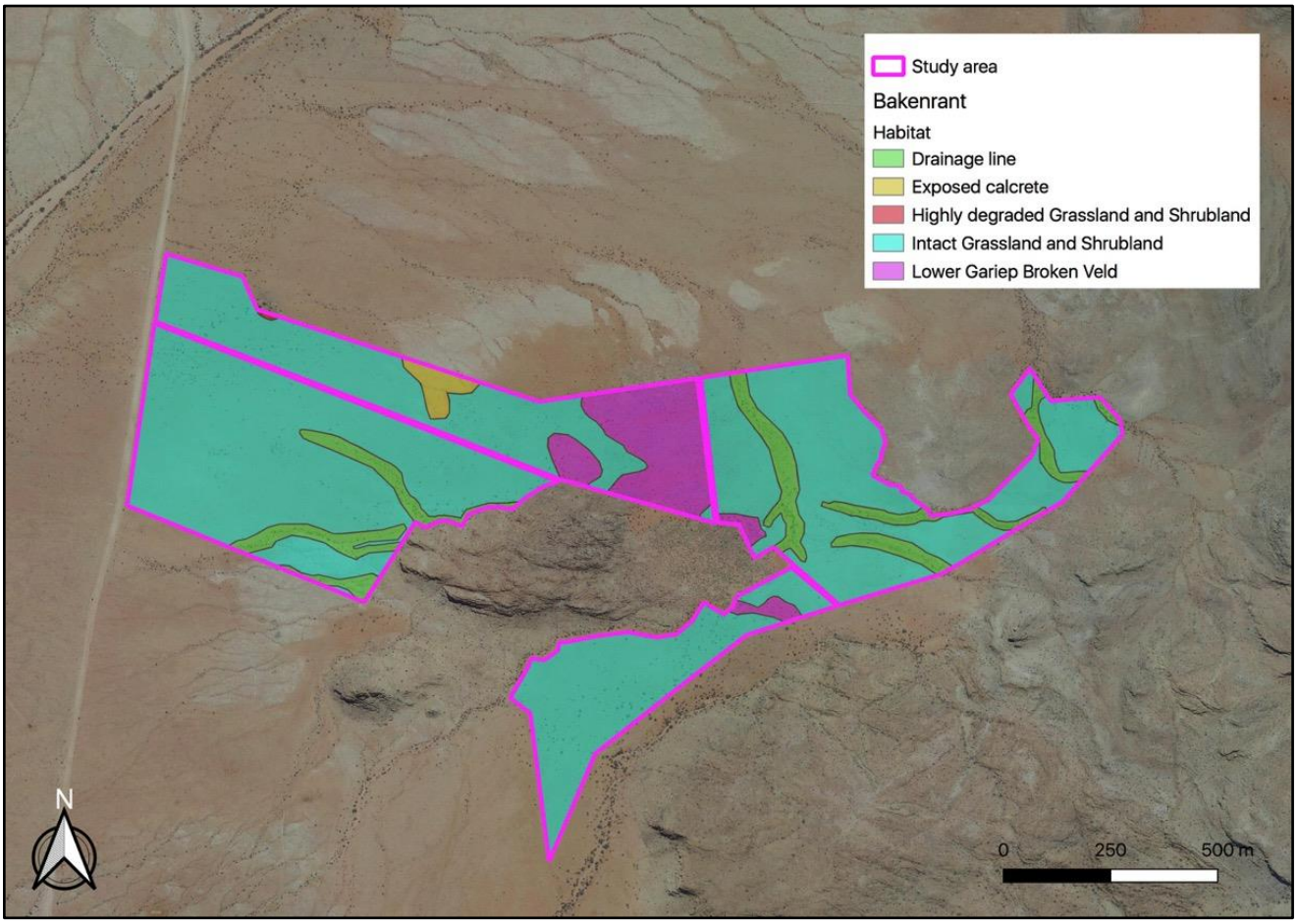


Figure 12. *Habitat map: CDNGI 25cm image showing the habitat mapped within the study area (Nicolson, J. 2021).*

The vegetation within the study area is fairly homogenous and a good representation of intact Kalahari Karroid Shrubland. The vegetation can be described as sparse shrublands with open grassy area in patches. The landscape is relatively flat and dominated by grasses with seasonal drainage lines as common features and distinguished by shrubland communities. Exposed calcrete occurs sporadically within the Kalahari Karroid Shrubland vegetation type.

Various plant communities and features associated with Kalahari Karroid Shrubland ecosystem have been mapped and include: a) Grassland and Shrubland (dominant), (b) Exposed calcrete and (c) Drainage lines. The Lower Gariep Broken Veld ecosystem occurs on the site in smaller areas.

Grassland and Shrubland: This habitat is a mosaic of grasslands on the flatter slightly elevated areas and shrublands closer to the drainage lines but also scattered within the grasslands. The grassland plant community is dominated by

about three species of grass (**Plate 1**). These form a dense cover but were dry at the time of the survey. The dominant species is Cape Bushman grass (*Stipagrostis ciliata* var. *capensis*). Other species include the soft feather pappus grass (*Enneapogon cenchroides*) and *Schmidtia kalahariensis*.

Plate 1. *A view of the dominance of grasses within parts of the site. The grasses flourish after good rains and then die back during dry periods (Nicolson, J. 2021).*

The shrubland community is dominated by a small tree, the black thorn (*Senegalia mellifera* subsp. *detinens*) **(Plate 2**) and the medium sized shrub, trithorn (*Rhigozum trichotomum*) (**Plate 3**). Other shrubs and species found in this habitat are *Boscia foetida,* greenhair tree (*Parkinsonia africana)*, devil thorn (*Tribulus* sp), *Phaeoptilum spinosum, Leucosphaera bainesii, Ptycholobium biflorum*, blue bush (*Monechma incanum*), caustic vine (*Sarcostemma viminale*), Bushmanland honeythorn (*Lycium bosciifolium*), *Barleria rigida,* namnam bush (*Tapinanthus oleifolius*), white djirrie (*Rogeria longiflora*), black eye sesame (*Sesamum capense*), *Aptosimum lineare* and *Aptosimum albomarginatum*.

Plate 2. *The black thorn tree (Senegalia mellifera subsp. detinens) is one of the dominant shrubs on the site (Nicolson, J. 2021).*

Plate 3. *Trithorn (Rhigozum trichotomum) in the foreground is one of the dominant shrubs at the site. The sparse shrub cover is seen within the grassy matrix (Nicolson, J. 2021).*

Exposed calcrete; Small areas of the site contain exposed calcrete and quartz on the soil surface (**Plate 4**). The vegetation community found in these areas is slightly different to the grassland and shrubland communities. The same grasses still occur here but in lower densities and some stem succulents occur here including: grey twin leaf (*Roepera lichtensteiniana*), common vingerpol (*Euphorbia braunsii*), common bushman candle (*Monsonia crassicaule*) and *Monsonia* sp.

Plate 4. *The exposed calcrete habitat is sparsely vegetated. The shrubs are all low-growing and succulent (Nicolson, J. 2021).*

5.5 Aquatic Ecosystems

This section of the report is quoted from the Botanical impact assessment for proposed agricultural expansion at Bakenrant Farm perseel 359, Gordonia, Kai !Garib Municipality, Northern Cape Province compiled by Greg Nicolson, August 2021.

These habitats are characterised by shallow drainage lines that flow during rainfall events. They were all completely dry at the time of the survey can be distinguished by the thicker cover of shrubs and clear drainage patterns (**Plate 5 - 7**). The same shrubs as described above for the shrubland community occur here, but in higher densities. In addition to these, other species such as herbs and succulents occur on the banks. These include Namaqua hoarypea (*Tephrosia dregeana*), *Euphorbia glanduligera, Monsonia umbellata*, fine vomit daisy (*Geigeria filifolia*), pest lizzardfoot (*Limeum aethiopicum*), river ganna (*Caroxylon aphyllum*), *Ehretia alba*, paintbrush flower (*Kleinia longiflora*), *Monechma spartioides*, thorn Karooviolet (*Aptosimum spinescens*), grey minimouth (*Microloma incanum*) and honeythorn (*Lycium* sp.).

Plate 5. *The drainage lines are conspicuous within the landscape due to the proliferation of large and medium shrubs.*

Plate 6. *The elevated moisture levels within the drainage lines are evident within the otherwise dry landscape.*

***Plate 7**. An elevated view of the study area showing shrub cover along the drainage lines.*

5.6 Heritage Resource

Section 38 of the NHRA states the following:

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

(a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

(c) any development or other activity which will change the character of a site (i) exceeding 5 000m^2 in extent.

This section of the report is quoted from the Phase 1 HIS report Bakenrant Plot 106 Kakamas-north, Northern Cape compiled by UBIQUE Heritage Consultants (Engelbrect, J. & Fivaz, H. 2021).

5.6.1 Findings and Impact on Heritage Resources

One occurrence of a low-density surface scatter of MSA/Early LSA was recorded outside the demarcated development footprints. The sample size is small, without context, of low significance and will not be impacted by the agricultural development.

The development footprint is underlain by the ancient Precambrian basement rocks of the Namaqua-Natal Province, mantled by sediments of the Gordonia Formation (Kalahari Group). A low Palaeontological Significance has been allocated to the proposed development as the Palaeontological Sensitivity of the Gordonia Formation is low. The ancient Precambrian basement rocks are zero (Butler 2021). These rocks are approximately one to two billion years old and completely unfossiliferous. Therefore, it is recommended that no further palaeontological heritage studies, ground-truthing, and/or specialist mitigation are required pending the discovery of newly discovered fossils (Butler 2021).

5.6.2 Phase 1 AIA recommendations

Based on the assessment of the potential impact of the development on the identified heritage, the following recommendations are made, taking into consideration any existing or potential sustainable social and economic benefits:

- No significant heritage sites or features were identified within the surveyed sections of the areas earmarked for agricultural developments. Therefore the proposed development can continue.
- The cultural material recorded (BKR001) to the south of the proposed development footprints is of low significance and will not be affected by the development.
- Due to the low palaeontological significance of the area, no further palaeontological heritage studies, ground-truthing and/or specialist mitigation are required. It is considered that the development of the proposed development is deemed appropriate and feasible and will not lead to detrimental impacts on the palaeontological resources of the area (Butler 2021). If fossil remains or trace fossils are discovered during any phase of construction, either on the surface or exposed by excavations the Chance Find Protocol must be implemented by the Environmental Control Officer (ECO) in charge of these developments. These discoveries ought to be protected, and the ECO must report to SAHRA (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za) so that mitigation can be carried out by a palaeontologist (Butler 2021).
- Although all possible care has been taken to identify sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the assessment. If during construction, any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. A professional archaeologist or palaeontologist, depending on the nature of the finds, must be contacted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA. UBIQUE Heritage Consultants and its personnel will not be held liable for such oversights or costs incurred as a result of such oversights.

6 OPPORTUNITIES AND CONSTRAINTS

6.1 Botanical and Freshwater Constraints

This section of the report is quoted from the Botanical impact assessment for proposed agricultural expansion at Bakenrant Farm Erf 359, Gordonia, Kai !Garib Municipality, Northern Cape Province compiled by Greg Nicolson, August 2021.

Sensitivity is defined here as the **'conservation value'** together with the **'degree of resilience to disturbance'**. The conservation value relates to the conservation status (including the ecosystem threat status) and other factors including ecological connectivity, habitat condition, persistence of ecological process and the site's role in supporting biodiversity. The degree of resilience takes into consideration factors such as sensitivity to disturbance and restoration potential.

In the case of the Study area, Very low, Low, Medium and High sensitivities apply for the following reasons (see **Figure 13**):

Very low sensitivity applies to the Highly degraded grassland habitat:

- The vegetation has been highly degraded in this area by livestock feeding and it no longer represents the original vegetation.

Low sensitivity applies to the greater part of the Intact grassland and shrubland habitat for the following reasons:

- Although intact, the vegetation within the site is very common in the surrounding habitat and is not under any threat of transformation. Over 99% of this ecosystem still remains intact.
- The greater part of this habitat has been classified as CBA 2 in the Northern Cape CBA map. This suggests that it is not considered as a conservation priority.
- The south and eastern parts of the site are mapped as CBA 1 sites. There are no obvious reasons for the distinction between CBA 2 to CBA 1. It is likely that the change is due to the proximity to the Orange River. The reasons for the classification given in the CBA map that differ from the CBA 2 areas are as follows: "Lower Gariep Alluvial Vegetation; Threatened species; Namakwa CBA2 and associated; and All natural wetlands."
- No Lower Gariep Alluvial Vegetation, or Wetlands occur in the site.
- No species of conservation concern (SCC) were found at the site.
- The total disturbance footprint is relatively small given the size of the surrounding intact vegetation.

Medium sensitivity applies to the Lower Gariep Broken Veld habitat for the following reasons:

- The shallow soils are potentially more prone to erosion.
- These areas play a role in linking higher koppies within the study area and are therefore ecologically important.
- A 20m buffer is included around the Medium sensitivity areas.

High sensitivity applies to the Drainage lines habitat for the following reasons:

- These areas are important for ecological functioning of the area as they allow for the natural flow and dispersal of water within the landscape.
- The increased moisture results in higher plant diversity and cover that in turn supports more faunal activity.
- A 30m buffer around the drainage lines is included in the High sensitivity area.

It is strongly recommended that no development takes place within the Medium or High sensitivity areas of the study area, including the associated buffers. Furthermore, small areas that fall outside of the buffers but between two buffered areas should not be developed as this would fragment the sensitive areas. Based on this a constraints map showing the No-Go areas has been produced (**Figure 13**).

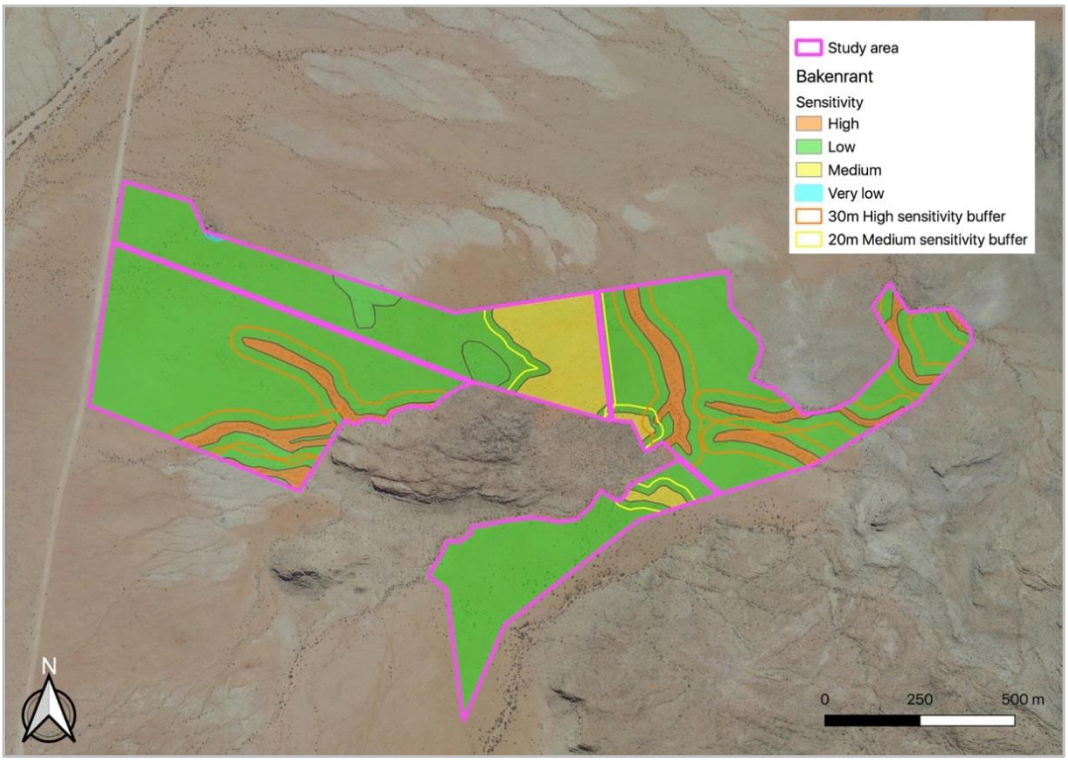


Figure 13. *Sensitivity Map CDNGI 25cm image showing the sensitivities mapped within the Study area (Nicolson, J. 2021).*

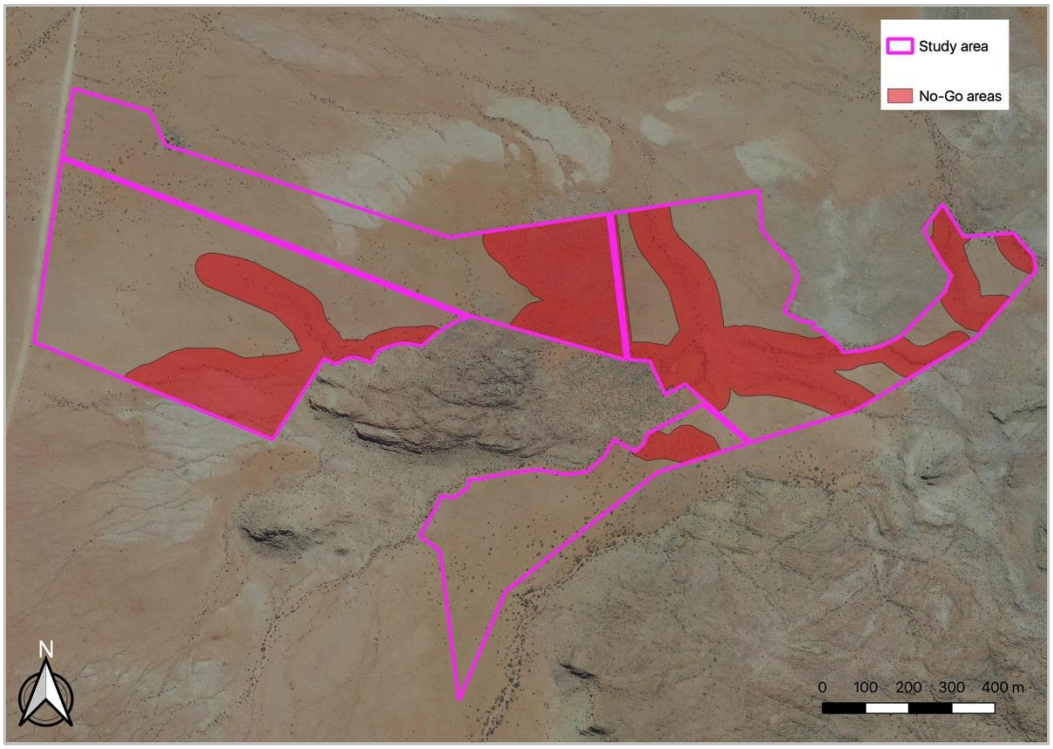


Figure 14*. Constraints map: CDNGI 25cm image showing the No-Go areas mapped within the Study area. The unshaded areas are potentially developable from a botanical perspective (Nicolson, J. 2021).*

6.2 Archaeology and Palaeontology Constraints

As per Section 5.6.

6.3 Cultural Landscape

The surrounding landscape is largely agricultural in nature. As a result, the activity will be in keeping with the surrounding environment and will therefore not impact on the cultural landscape.

7 ALTERNATIVES

In terms of the NEMA EIA Regulations one of the criteria to be taken into account by the Competent Authority when considering an application is "*any feasible and reasonable alternatives to the activity which is the subject of the application and any feasible and reasonable modifications or changes to the activity that may minimize harm to the environment*". Alternatives are defined in the Regulations as "*different means of meeting the general purpose and requirements of the activity*". It is therefore necessary to provide a description of the need and desirability of the proposed activity and any identified alternatives to the proposed activity that are feasible and reasonable, including the advantages and disadvantages that the proposed activity or alternatives will have on the environment and on the community that may be affected by the activity.

7.1 Layout & Location Alternatives

Two layout and location alternatives are assessed for the proposed project and are as follows:

- Alternative 1: Development of the entire Study area 110 ha. See Appendix 3 for the coordinates of the Layout Alternative 2. **Figure 15.**
- Preferred Alternative 2: Development of the Low and Very low ecological sensitive areas excluding the Medium and High sensitivity areas including the recommended buffers with a combined surface area of 63. 82 ha (**Figure 16**).

Figure 15. *Layout Alternative 1 indicated in white.*

Figure 16. *Layout Alternative 1 indicated in green (avoiding all areas with a high botanical sensitivity and no-go areas (watercourses and buffer areas).*

7.2 No-Go Alternative

The 'No Go' or no development scenario takes into consideration the impacts associated with the no construction option. It is a prediction of the future state of the affected area in the event of no construction activities taking place and is based on the current and/or anticipated future land use. If no construction were to take place it is unlikely that any changes to the status quo would occur and this would have a Neutral impact.

8 DESCRIPTION OF THE POTENTIAL ENVIRONMENTAL IMPACTS

8.2 Potential Botanical Impacts

- Loss of vegetation type and ecological processes – including indigenous vegetation and ecologically important species.
- Construction phase: Most of the impacts would occur during this phase since it would involve clearing the vegetation. The total area of Study area is approximately 110 ha and includes mostly Intact Kalahari Karroid Shrubland habitat.
- Operational phase: The operational phase impacts are related to the potential for exotic species to colonize and spread from the construction areas and other disturbed parts of the site post-construction. Soil erosion is also likely to occur where soils are shallow and become disturbed.
- Loss of species of conservation concern – associated with the loss of indigenous vegetation
- Construction and Operational phase: No SCC was found in the study area and the impact is therefore rated as "Not significant" for both alternatives (Nicolson, J. 2021).

Proposed mitigation measures:

- Avoidance is the main mitigation for the construction phase. The Medium and High sensitivity areas including their buffers and the areas between the buffers that are too small to develop must be excluded from the development footprint (Nicolson, J. 2021).
- The passive rehabilitation of the construction areas and any other disturbed parts of the site are required during the operational phase of the project. The site must be visited every six months for three years to inspect the site for the establishment of any exotic or invasive species. If these are found they must be removed by hand when they are seedlings. Exotic grasses and the honey mesquite are potential species to look for at this site. Signs of soil erosion must also be monitored and remedied where required (Nicolson, J. 2021).
- Effective measures must be implemented to prevent soil erosion along farm tracks.
- Effective measures must be implemented to manage run-off and prevent soil erosion within the post construction footprint areas.
- Effective measures should be implemented for the long term maintenance and management of farm track-watercourse crossings.
- Rocks and vegetation debris should not be dumped onto natural vegetation outside of the proposed development footprint areas.
- Any animals encountered during the land clearing activities should be left unharmed and allowed to safely move to adjacent natural areas. Where practical (e.g. tortoises), animals should be relocated to adjacent natural areas

8.3 Potential impacts on drainage lines:

- Disturbance and modification or loss of aquatic habitat and its associated biota (Construction and Operational Phases)
- Increased potential for alien vegetation infestation and erosion (Construction and Operational Phases) Invasive vegetation recruits rapidly into disturbed areas. The proposed activity for the operation phase could therefore be expected to facilitate the spread of alien vegetation within the drainage lines.

Disturbance and modification or loss of drainage line habitat and its associated biota

Proposed mitigation measures

- The areas disturbed within the drainage lines associated with the proposed activities should be minimised.
- Construction works should preferably be undertaken in the dry season to help limit the extent of runoff related impacts (sedimentation and erosion) on the surrounding aquatic habitats.
- Ongoing monitoring and control of alien invasive plants and erosion within the drainage lines, particularly within the disturbed areas, will be required.
- Maintenance activities associated with the longer-term operation activities of the project should be carried out in accordance with the approved Maintenance Management Plan for the site.
- The recommended buffers that will remain along the drainage lines should be vegetated with suitable indigenous vegetation and should be kept clean of alien vegetation.
- During operation, these areas should not be used for access roads, turning areas or for dumping or storage of material.
- There should be minimal crossing of the drainage lines and their associated buffers to allow for infrastructure such as road and pipeline crossings.

Increased potential for alien vegetation infestation and erosion

Proposed mitigation measures:

- The drainage lines within the site should be kept clear of alien invasive vegetation.

- Ongoing monitoring of alien vegetation recruiting into the disturbed areas should be undertaken that the vegetation removed.
- Follow up clearing should take place at least annually.
- The proposed buffers along the drainage lines on site are intended to reduce the erosion potential of the streams. These areas should remain vegetated with suitable indigenous vegetation and keep clear of alien vegetation.
- Any disturbed areas need to be re-vegetated following construction.
- Monitoring should take place to detect any erosion so that erosion mitigation can take place.

8.4 Potential Impacts on Heritage Resources

The HIA identified no significant heritage resources that may be impacted negatively by the proposed development (Engelbrect, J. & Fivaz, H. 2021).

8.5 Cumulative Impacts

Cumulative impacts are those impacts linked to increased loss of vegetation type or the ecosystems listed in the National List of Threatened Terrestrial Ecosystems (Government Gazette, 2011). Cumulative impacts are assessed as the overall impact of loss of habitat in relation to loss of the same or similar habitat at a local scale due to past, present and future habitat loss. The loss of or disturbance to 110 ha Kalahari Karroid Shrubland is very low in the context of the remaining 99.3% (Nicolson, J. 2021).

8.6 No-go Alternative Impacts

The No-go Alternative assumes that the status quo within the site will be maintained. The No-go Alternative would thus have very low significance impacts.

9 RATIONALE FOR THE PROPOSED DEVELOPMENT (NEED AND DESIRABILITY)

The table below is used to motivate the Need and Desirability of this proposal. Please note that this table will be further informed by the outcomes of the Statutory Scoping and EIA Phases and will be updated accordingly.

Guideline	EAP Response
▪ How will this development (and its separate elements/aspects) impact on the ecological integrity of the area? ▪ How were the following ecological integrity considerations taken into account: • Threatened Ecosystems, • Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure, • Critical Biodiversity Areas (“CBAs”) and Ecological Support Areas (“ESAs”), • Conservation targets, • Ecological drivers of the ecosystem, • Environmental attributes and management proposals	With specific reference to the ecological integrity of the area two alternatives was assessed • Alternative 1: Development of the entire study area 110 ha (**Figure 15**). • Preferred Alternative 2: Development of the Low and Very low ecological sensitive areas excluding the Medium and High sensitivity areas including the recommended buffers with a combined surface area of 63. 82 ha (**Figure 16**) Ecological impacts that were assessed and included in this report are as follow: • Avoidance is the main mitigation for the construction phase. The Medium and High sensitivity areas including their buffers and the areas between the buffers that are too small to develop must be excluded from the development footprint (Nicolson, J. 2021).

contained in relevant Environmental Management Frameworks, • Environmental attributes and management proposals contained in relevant Spatial Development Framework, and • Global and international responsibilities relating to the environment (e.g. RAMSAR sites, Climate Change, etc.).	• The passive rehabilitation of the construction areas and any other disturbed parts of the site are required during the operational phase of the project (Nicolson, J. 2021). Aquatic habitat impacts that were assessed and included in this report are as follow: • Disturbance and modification or loss of aquatic habitat and its associated biota. • Increased potential for alien vegetation infestation and erosion.
▪ How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy? ▪ How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	A positive process will be followed by the project team to firstly avoid negative impacts by using the specialists' constraints analyses to inform the layout. If impacts cannot be avoided, specialists will provided mitigation measures to reduce the negative impacts to an acceptable level. Management/Operational measures will also be discussed and implemented. Further detail will be provided in the EIR and the Environmental Management Programme (EMPr). Potential botanical impacts include: • Loss of vegetation type and ecological processes – including indigenous vegetation and ecologically important species. Potential freshwater impacts include: • Disturbance and modification or loss of aquatic habitat and its associated biota (Construction and Operational Phases) • Increased potential for alien vegetation infestation and erosion (Construction and Operational Phases) Potential heritage impacts include: • This HIA identified no significant heritage resources that may be impacted negatively by the proposed development (Engelbrect, J. & Fivaz, H. 2021).
▪ What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?	No waste or pollution will be generated by this proposal.
▪ How will this development use and/or impact on non-	No non-renewable resources will be required.

renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	
▪ How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts? ▪ Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialised growth)? (note: sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life) ▪ Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used (i.e. what are the opportunity costs of using these resources for the proposed development alternative?). ▪ Do the proposed location, type and scale of development promote a reduced dependency on resources?	Use of non-renewable resources, such as electricity and water, will be limited.
▪ How will the ecological impacts resulting from this development impact on people's environmental right in terms following: o Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space),	The proposed project will not unduly impact on people's environmental rights. Farm workers, their families and the farmer will benefit from the development of the agricultural potential of the farm.

air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts? o Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts? o Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)? o Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area? o Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations? o Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?	In order to arrive at the preferred alternative, a botanist, a heritage consultant and the water use license consultant were appointed as part of the pre-application phase to provide their constraints and conditions (within their respective areas of expertise). This was done to identify any issues that could potentially result in fatal flaws with the proposed project and to find ways to avoid any significant environmental impacts.
▪ What is the socio-economic context of the area, based on, amongst other considerations, the following considerations?: o The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area, o Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.), o Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.), and o Municipal Economic Development Strategy ("LED Strategy").	The site is zoned for agriculture. The sites are surrounded by agricultural land/operating farms consisting of orchards, vineyards, farm dams, farm worker housing and homesteads. The proposed development will therefore be consistent with the existing land use on the farm as well as the surrounding areas.

▪ Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area? o Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?	Although the proposed activity will offer a relatively small benefit to society in general and may not be considered a societal priority, it will still have a positive benefit for the local community. The proposal will result in positive impacts for the community as those already employed on the farm will have increased job security, additional employment opportunities will be created for the local community (who live in close proximity to the farm) and the economic development of the area will benefit. An indirect impact of the proposal is an increase in agricultural produce which is not only beneficial to the local area but to the entire region and possibly the country too. The direct and indirect positive impacts resulting from the proposed activity can be safeguarded through the implementation of best-farming practices and compliance with any recommendations made by the Department of Agriculture.
▪ How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	Agriculture is standard practice within the area and therefore little impact will be caused to people's health and wellbeing (in terms of noise, odours, visual character and sense of place) as a result of this activity. The location of the site also limits the impacts that the activity will have on people as the site is located outside any towns. No negative socio-economic impacts are therefore expected should this proposal be approved. The site is located on an operational farming unit located within an agricultural area – the sense of place will not be affected by the proposed activities.
▪ How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	Those already employed on the farm will have increased job security and additional permanent and seasonal jobs will be created by the propose development (positive impact). There will also be an increase in agricultural produce which is not only beneficial to the local area but to the entire region. The farming operation will be subject to WITA and GlobalGap monitoring and audits.
▪ Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term?	Farm workers, their families and the farmer will benefit from the development of the agricultural potential of the farm.
▪ In terms of location, describe how the placement of the proposed development will: o result in the creation of residential and employment opportunities in close proximity to or integrated with each other,	The sites are located on an operational farming unit located within an agricultural area. The proposal will result in positive impacts for the community as those already employed on the farm will have increased job security, additional employment opportunities will be created for the

○ reduce the need for transport of people and goods, ○ result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport), ○ compliment other uses in the area, ○ be in line with the planning for the area, ○ for urban related development, make use of underutilised land available within the urban edge, ○ optimise the use of existing resources and infrastructure, consider opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement), discourage "urban sprawl" and contribute to compaction/densification, ○ contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs, ○ encourage environmentally sustainable land development practices and processes, ○ take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.), ○ result in investment in the settlement or area in question that will generate the highest socioeconomic returns (i.e. an area with high economic potential), ○ impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area, and ○ in terms of the nature, scale and location of the development, promote or act as a catalyst to create a more integrated settlement?	local community (who live in close proximity to the farm) and the economic development of the area will benefit.
▪ How were a risk-averse and cautious approach applied in terms of socio-economic impacts?: ○ What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)? ○ What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and	The proposed development will not result in any negative socio-economic impacts.

sustainability) associated with the limits of current knowledge? o Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development (and its alternatives)?	
▪ How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following: o Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts? o Positive impacts. What measures were taken to enhance positive impacts?	Due to the localised nature of the proposed development and the relatively small scale, it is anticipated that this application will have no impact on the existing rights of surrounding properties. I&APs and Stakeholders will be allowed the opportunity to consider and submit comment, thereby ensuring that all people's needs, rights and concerns will be addressed through this process.
▪ Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?	No natural resources will be over-utilised.
▪ What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	The proposal will result in job security for those already employed on the working farm and increase in incomes for the farmer and farm workers.
▪ What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)?	Those already employed on the farm will have increased job security. No adverse impacts are expected.
▪ Considering the need for social equity and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered?	The preferred alternative is considered the best practicable environmental option.
▪ What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	Those already employed on the farm will have increased job security and additional employment opportunities will be created for the local community should the farm increase its agricultural lands.
▪ What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	An EMPr for the construction and operational phases of the proposed development will be developed in the EIA phase and will specify responsibilities for environmental issues throughout the life of the development.

▪ What measures were taken to ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge?	The Public Participation Process to be undertaken as part of the Scoping and EIA process as detailed in Section 11 of this report. Various methods will be employed to notify potential Interested and Affected Parties of the proposed project, including site notices, advertisements in newspapers and written notifications of all adjacent landowners and occupiers.
▪ Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g.. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?	The public participation process will incorporate engagement with local councilors, farming associations and the Irrigation Board. The local community will have an opportunity to raise any concerns they may have, and these concerns will be addressed throughout the process.
▪ What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?	An EMPr will be developed to address health and safety concerns. An Environmental Control Officer (ECO) must be appointed to monitor compliance with the EMPr during the development phase. This will be a condition of the environmental authorisation.
▪ Describe how the development will impact on job creation in terms of, amongst other aspects: o the number of temporary versus permanent jobs that will be created, o whether the labour available in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area), the distance from where labourers will have to travel, the location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits), and o the opportunity costs in terms of job creation (e.g. a mine might create 100 jobs in the short and medium term, but impact on 1000 permanent agricultural jobs, etc.).	Farm workers already employed on the farm will have increased job security. It is unclear if the farm workers will be used during the construction phase or if an outside contractor will be appointed. A few operational jobs may be created as a result of increased agricultural land.
▪ What measures were taken to ensure: o that there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment, and o that actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?	The authority consultation process carried out by the EAP will assist in coordinating the policies, legislation and mandates of the various State Departments/Organs of State. In terms of the Agreement for the One Environmental System (section 50A of the NEMA and sections 41 (5) and 163 A of the NWA) the process for a Water Use License Application (WULA) and EIA will be aligned and integrated

	with respect to the fixed synchronised timeframes, as prescribed in the EIA Regulations 2014, as amended and the 2017 WULA Regulations (GN R. 267 of 24 March 2017). The EIA process will therefore take cognisance of this and will be carried out accordingly.
▪ What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?	The EIA process, including the public participation, is a means of managing potential impacts on environmental resources and determining whether the proposed use of resources is in the public interest. This will be evaluated in the specialist impact assessments.
▪ Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?	Mitigation measures are to be further developed in the EIA Phase
▪ What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be borne by those responsible for harming the environment?	Mitigation measures are to be further developed in the EIA Phase. These measures will become conditions of approval in the Environmental Authorisations, should the proposal be granted, and will form a key part of the EMPr for the proposed development. Responsibility for their implementation and for compliance with any authorisations would lie with the Applicant.
▪ Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?	A preliminary identification of alternatives is included in Section 7 this Draft Scoping Report. Further alternatives may be identified during the scoping and EIA phases of this process. The current preferred alternative is considered the best practicable environmental option since takes the botanical and freshwater constraints of the farm into account.
▪ Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?	To be discussed in the EIR. A preliminary discussion of Potential Impacts and Cumulative impacts is included in Section 8 of this Report.

***Table 7**. Need and Desirability.*

10 PUBLIC PARTICIPATION PROCESS

The section below outlines the public participation process to be undertaken as part of the application process as per the 2014 EIA Regulations, as amended. Any issues and concerns raised will be considered and evaluated in the Statutory Scoping and EIA phases. Public participation plays an important role in the compilation of a Scoping and EIA Report as well as the planning, design and implementation of the project. Public participation is a process leading to informed decision-making, through joint effort by:

- the Applicant,
- technical experts (specialists);
- governmental authorities and

- Interested and Affected Parties (I&APs).

Public participation is a vehicle for public input, which aims to achieve the following:

- facilitates negotiated outcomes,
- creates trust and partnership,
- minimises negative effects and maximises positive effects.

It also provides an indication of issues, which may

- prevent the project continuing,
- cause costly delays later, and
- results in enhanced and shared benefits.

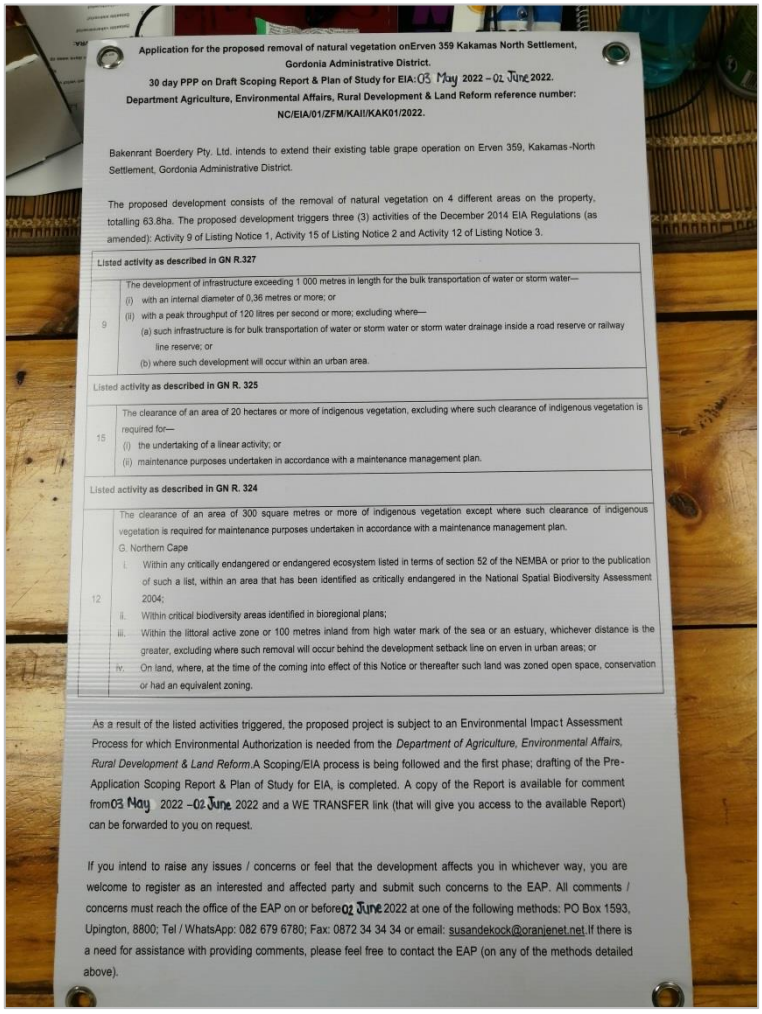
Public Participation tasks undertaken during the Scoping Phase

Two public participation processes ("PPP") were implemented: a 30day PPP on Draft Scoping Report and a 30 day PPP on the Final Scoping Report.

10.1 PPP on Draft Scoping Report: 03 May 2022 – 03 June 2022 (Appendix 4.1):

- A Notice board was fixed at the entrance to the property (**Plate 8**).
- This notice board contained all the required information plus contact details of the EAP should any I&AP require a copy of the Draft Scoping Report.
- Notification letters (Appendix 4.1.1) were sent via email to neighbours (including owners, persons in control of, and occupiers of land adjacent to the property). In the instance where neighbours do not have not have access to email service/access, a letter drop or fax option will be considered. See Appendix 4.1.2 for proof of postage.
- The contact details of the EAP as well as information on how to obtain a copy of the Draft Scoping Report were detailed in these Notification Letters.
- A notification letter (Appendix 4.1.1) as well as an electronic copy of the Draft Scoping Report was sent via email and WE TRANSFER to the relevant municipal councillor. See Appendix 4.1.2 for proof of postage.
- A notification letter (Appendix 4.1.1) as well as an electronic copy of Draft Scoping Report were sent via email and WE TRANSFER to the Municipal Manager (MM) of the Kai !Garib Municipality as well as to the Municipal Manager (MM) of the ZM Mquwu District Municipality. See Appendix 4.1.2 for proof of postage.
- A notification letter (Appendix 4.1.1) as well as an electronic copy of the Draft Scoping Report was sent via email and WE TRANSFER to officials representing Organs of State as listed below. (See Appendix 4.1.2 for proof of postage.)
    - Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform ;
    - Department of Agriculture, Forestry and Fisheries;
    - Department of Water and Sanitation;
    - Kakamas Water Users Association;
    - South African Heritage Resource Agency (SAHRA);
    - ZF Mgcawu District Municipality;
    - Kai !Garib Local Municipality.
- An advertisement was placed in the Gemsbok newspaper of 28 April 2022 (**Plate 9**) indicating how and where I&AP's can register as well as information on where a copy of the Draft Scoping Report, including Appendices, can be accessed.

Plate 8. *Notice board at the entrance to the property.*



Application for the proposed removal of natural vegetation onErven 359 Kakamas North Settlement, Gordonia Administrative District.

30 day PPP on Draft Scoping Report & Plan of Study for EIA:03 May **2022 –** 02 June **2022.**

Department Agriculture, Environmental Affairs, Rural Development & Land Reform reference number: NC/EIA/01/ZFM/KAII/KAK01/2022.

Bakenrant Boerdery Pty. Ltd. intends to extend their existing table grape operation on Erven 359, Kakamas -North Settlement, Gordonia Administrative District.

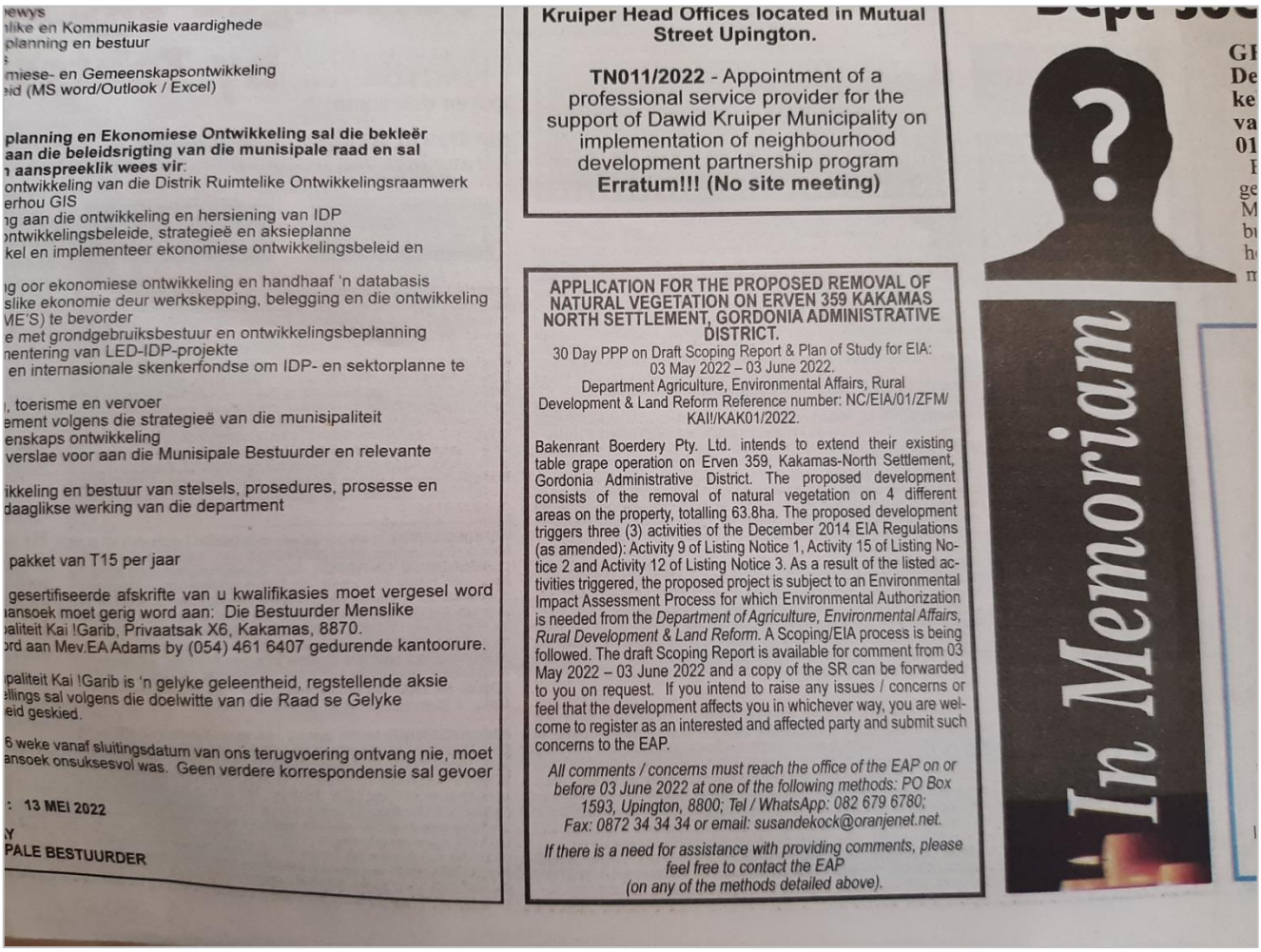
The proposed development consists of the removal of natural vegetation on 4 different areas on the property, totalling 63.8ha. The proposed development triggers three (3) activities of the December 2014 EIA Regulations (as amended): Activity 9 of Listing Notice 1, Activity 15 of Listing Notice 2 and Activity 12 of Listing Notice 3.

Listed activity as described in GN R.327	
9	The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water— (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more; excluding where— (a) such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve or railway line reserve; or (b) where such development will occur within an urban area.
Listed activity as described in GN R. 325	
15	The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.
Listed activity as described in GN R. 324	
12	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. G. Northern Cape i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; ii. Within critical biodiversity areas identified in bioregional plans; iii. Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuary, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas; or iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.

As a result of the listed activities triggered, the proposed project is subject to an Environmental Impact Assessment Process for which Environmental Authorization is needed from the *Department of Agriculture, Environmental Affairs, Rural Development & Land Reform*.A Scoping/EIA process is being followed and the first phase; drafting of the Pre-Application Scoping Report & Plan of Study for EIA, is completed. A copy of the Report is available for comment from03 May 2022 –02 June 2022 and a WE TRANSFER link (that will give you access to the available Report) can be forwarded to you on request.

If you intend to raise any issues / concerns or feel that the development affects you in whichever way, you are welcome to register as an interested and affected party and submit such concerns to the EAP. All comments / concerns must reach the office of the EAP on or before02 June 2022 at one of the following methods: PO Box 1593, Upington, 8800; Tel / WhatsApp: 082 679 6780; Fax: 0872 34 34 34 or email: susandekock@oranjenet.net.If there is a need for assistance with providing comments, please feel free to contact the EAP (on any of the methods detailed above).

Plate 9. *The information portrait in the newspaper advertisement of 28 April 2022.*



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planning en bestuur
miese- en Gemeenskapsontwikkeling
eid (MS word/Outlook / Excel)

planning en Ekonomiese Ontwikkeling sal die bekleër aan die beleidsrigting van die munisipale raad en sal n aanspreeklik wees vir:
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enskaps ontwikkeling
verslae voor aan die Munisipale Bestuurder en relevante

ikkeling en bestuur van stelsels, prosedures, prosesse en
daaglikse werking van die department

pakket van T15 per jaar

gesertifiseerde afskrifte van u kwalifikasies moet vergesel word
ansoek moet gerig word aan: Die Bestuurder Menslike
aliteit Kai !Garib, Privaatsak X6, Kakamas, 8870.
rd aan Mev.EA Adams by (054) 461 6407 gedurende kantoorure.

paliteit Kai !Garib is 'n gelyke geleentheid, regstellende aksie
llings sal volgens die doelwitte van die Raad se Gelyke
eid geskied.

6 weke vanaf sluitingsdatum van ons terugvoering ontvang nie, moet
ansoek onsuksesvol was. Geen verdere korrespondensie sal gevoer

: 13 MEI 2022
Y
PALE BESTUURDER

Kruiper Head Offices located in Mutual Street Upington.

TN011/2022 - Appointment of a professional service provider for the support of Dawid Kruiper Municipality on implementation of neighbourhood development partnership program
Erratum!!! (No site meeting)

APPLICATION FOR THE PROPOSED REMOVAL OF NATURAL VEGETATION ON ERVEN 359 KAKAMAS NORTH SETTLEMENT, GORDONIA ADMINISTRATIVE DISTRICT.

30 Day PPP on Draft Scoping Report & Plan of Study for EIA: 03 May 2022 – 03 June 2022.
Department Agriculture, Environmental Affairs, Rural Development & Land Reform Reference number: NC/EIA/01/ZFM/KAI!/KAK01/2022.

Bakenrant Boerdery Pty. Ltd. intends to extend their existing table grape operation on Erven 359, Kakamas-North Settlement, Gordonia Administrative District. The proposed development consists of the removal of natural vegetation on 4 different areas on the property, totalling 63.8ha. The proposed development triggers three (3) activities of the December 2014 EIA Regulations (as amended): Activity 9 of Listing Notice 1, Activity 15 of Listing Notice 2 and Activity 12 of Listing Notice 3. As a result of the listed activities triggered, the proposed project is subject to an Environmental Impact Assessment Process for which Environmental Authorization is needed from the *Department of Agriculture, Environmental Affairs, Rural Development & Land Reform*. A Scoping/EIA process is being followed. The draft Scoping Report is available for comment from 03 May 2022 – 03 June 2022 and a copy of the SR can be forwarded to you on request. If you intend to raise any issues / concerns or feel that the development affects you in whichever way, you are welcome to register as an interested and affected party and submit such concerns to the EAP.

All comments / concerns must reach the office of the EAP on or before 03 June 2022 at one of the following methods: PO Box 1593, Upington, 8800; Tel / WhatsApp: 082 679 6780; Fax: 0872 34 34 34 or email: susandekock@oranjenet.net.

If there is a need for assistance with providing comments, please feel free to contact the EAP (on any of the methods detailed above).

***Figure 17**. Newspaper advertisement (Gemsbok Newspaper of 28 April 2022).*

10.2 PPP on Final Scoping Report: 13 June 2022 – 13 July 2022 (Appendix 4.2):

- Official notification letters (Appendix 4.2.1) were distributed (via post, email, etc.) to all registered I&Aps (Appendix 4.2.2) informing them of the statutory process and the availability of the Final Scoping Report for comment. See Appendix 4.2.3 for proof of postage.
- The Final Scoping Report and Plan of Study for EIA was circulated for comment to all registered I&APs and Commenting Authorities for an additional 30-day commenting period. Comment was requested in terms of Section 24O of NEMA (Act 107 of 1998).
- All comments received during this commenting period were included in the Comments and Response Report.

10.3 PPP tasks to be conducted during the EIA phase: 06 October 2022 – 07 November 2022 (Appendix 4.3)

On 04 October, a notification letter (Appendix 4.3.1) as well as an electronic copy of the Draft EIA Report, including the EMP, was sent via email and WE TRANSFER to all registered Interested & Affected Parties (Appendix 4.3.2). Proof of emails sent as well as of WE TRANSFER links sent will be included in the Final EIAR (Appendix 4.3.3).

The following State Departments / Organs of State were identified as registered I&AP's and were notified of the commenting period on the draft EIAR:

- Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform ;
- National Department of Agriculture, Forestry and Fisheries;
- Department of Water and Sanitation;

- Kakamas Water Users Association;
- South African Heritage Resource Agency (SAHRA);
- ZF Mgcawu District Municipality;
- Kai !Garib Local Municipality.

The comments received from during the PPP will be consolidated into a Comments and Response Report (Appendix 4.4) inserted in the EIA-report. This would take the form of an issues trail, which will summarise the issues raised and provided responses thereto.

Proof of the PPP conducted during the EIA phase of the application will be included in the Final EIAR.

11. Specialists studies undertaken

The following specialist studies were undertaken:

- Botanical Impact Assessment
- Heritage Impact Assessment
- Freshwater Impact Assessment
- Soil Suitability Study

11.1 Botanical Impact Assessment

The Botanical Assessment was undertaken by Mr. Greg Nicholson and a copy of the Botanical Assessment Report is attached as Appendix 5.

The site was visited on 27th and 28th of April 2021. The Terms of Reference were as follow:

- Identify and describe biodiversity patterns at community and ecosystem level (main vegetation type, plant communities in the vicinity and threatened/vulnerable ecosystems), at species level (threatened Red List species, presence of alien species) and in terms of significant landscape features.
- Assess the local and regional importance of the vegetation communities and plant species within the affected areas based on the relevant biodiversity plans, bioregional planning documents and Environmental Management Frameworks.
- Determine the implications that the proposed project has for the relevant fine-scale biodiversity plan (in this case the, 2012 Northern Cape CBA Map).
- Describe the sensitivity of the site and its environs and map these resources.
- Identify any areas not suitable for construction activities (No-Go Areas) and related buffers that should be observed.
- Describe the direct, indirect and cumulative botanical impacts (both before and after mitigation) and provide an assessment of the significance of the impacts.
- Describe the measures to mitigate any impacts, and an indication of whether or not the measures (if implemented) would change the significance of the impact.
- On the basis of the impact assessment findings provide an authorisation opinion regarding whether or not the proposed activity should proceed.

FINDINGS:

Landscape & Geology

The study area occurs on a generally flat area with very small undulations and seasonal drainage lines. The drainage lines are prominent features in the landscape. Rocky outcrops and one small hill occur on the edges of the site, however, most of these areas are excluded from the proposed development area. The geology of Kalahari Karroid Shrubland is described in

the VEGMAP (Mucina and Rutherford, 2006) as: "*Cenozoic Kalahari Group sands and small patches also on calcrete outcrops and screes on scarps of intermittent rivers (mekgacha). In places Dwyka Group tillites outcrop. The soils are deep (>300 mm), red-yellow, apedal, freely drained, with a high base status, typical of Ae land type*" (Mucina et al. in Mucina and Rutherford, 2006). The rocky outcrops form part of another vegetation type namely Lower Gariep Broken Veld and are characterised by shallow soils and exposed rocky areas.

Vegetation description

According to the Vegetation Map of South Africa, Lesotho and Swaziland (SANBI, 2018) (VEGMAP), the vegetation types occurring in the study area are Kalahari Karroid Shrubland and Lower Gariep Broken Veld (**Figure 18**). The landscape and vegetation of the vegetation types is described by Mucina et al. (in Mucina and Rutherford, 2006) as: Kalahari Karroid Shrubland: "Low karroid shrubland on flat, gravel plains. Karoo-related elements (shrubs) meet here with northern floristic elements, indicating a transition to the Kalahari region and sandy soils."

Lower Gariep Broken Veld: "Hills and low mountains, slightly irregular plains but with some rugged terrain (e.g. downstream of the Augrabies Falls) with sparse vegetation dominated by shrubs and dwarf shrubs, with annuals conspicuous, especially in spring, and perennial grasses and herbs. Groups of widely scattered low trees such as *Aloe dichotoma var. dichotoma* and *Acacia mellifera subsp. detinens* occur on slopes of "*koppies*" and on sandy soils of foot slopes respectively".

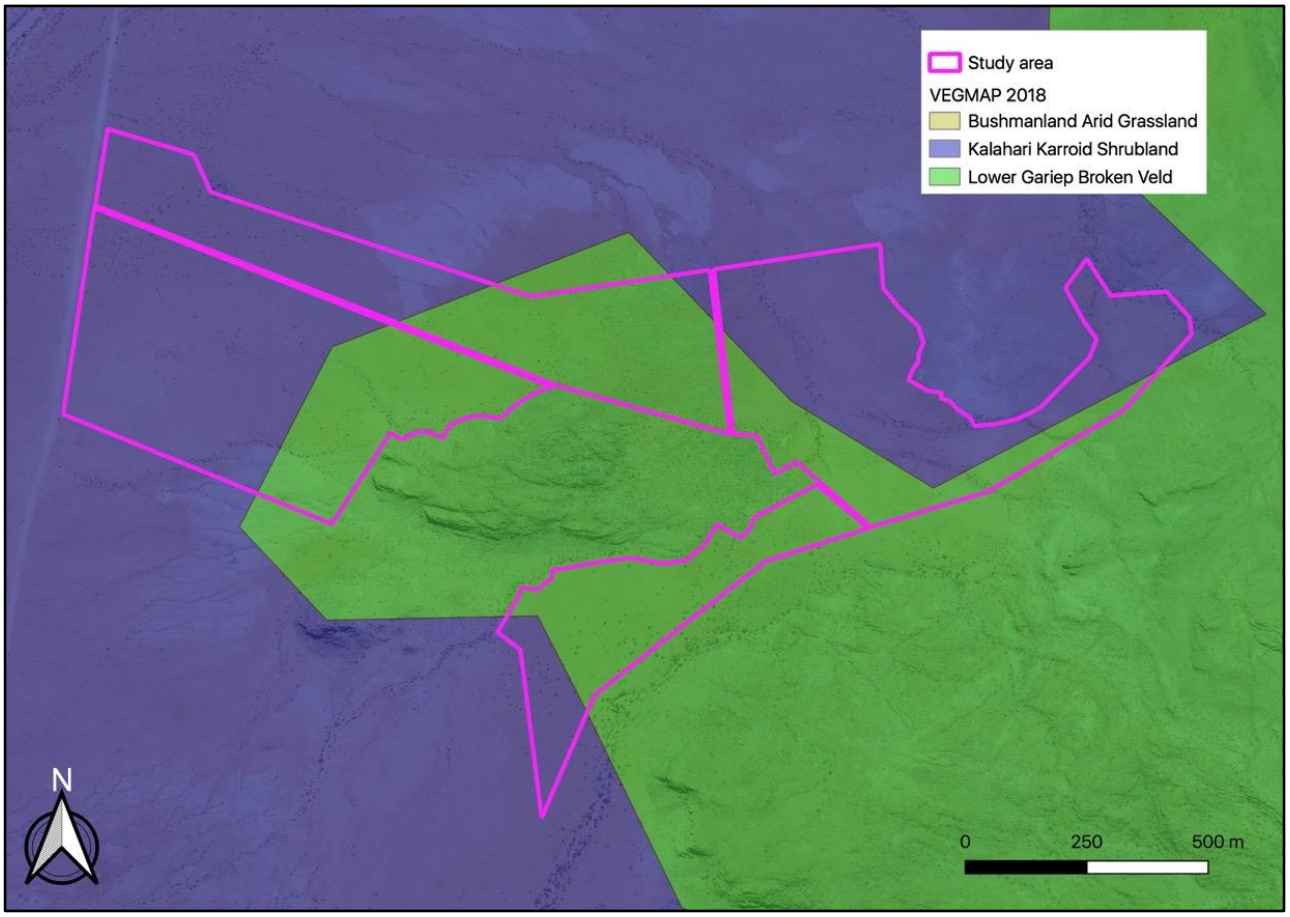

Figure 18. *The study area superimposed on a portion of The Vegetation Map of South Africa, Lesotho and Swaziland (SANBI, 2018) overlaid on a CDNGI 25cm image (Nicolson, J. 2021).*

Ecosystem Threat Status

Ecosystem threat status is derived from two sources. These include the following:

1. The National List of Ecosystems that are Threatened and in Need of Protection (Government Gazette, 2011).
2. The National Biodiversity Assessment 2018 (NBA) (SANBI 2019).

Kalahari Karroid Shrubland and Lower Gariep Broken Veld are listed as Least Threatened in The National List of Ecosystems that are Threatened and in Need of Protection. The ecosystems are listed as Least Concern in the NBA both with 99.3% still intact.

Conservation Plan

The conservation importance of all areas within the Northern Cape has been mapped in the Northern Cape Critical Biodiversity Area (CBA) Map (Northern Cape Department of Environment and Nature Conservation, 2016). The CBA map units are selected for conserving important habitats and biodiversity processes. The habitat categories are selected for various reasons and may include degraded or low quality vegetation, since they may serve as important biodiversity corridors between ecologically intact habitats.

***Figure 19**. The study area in relation to the Northern Cape CBA Map (Northern Cape Department of Environment and Nature Conservation, 2016) overlaid on a CDNGI 25cm image (Nicolson, J. 2021).*

The Vegetation of the Study Area

The vegetation communities and condition on the site are described below according to habitat categories provided in **Table 8**. The habitats mapped are represented in **Figure 20**.

Habitat category	Description
Intact vegetation	A true representation of the original vegetation type in terms of structure and species makeup. Minimal soil disturbance. Unlikely to have ever been ploughed. Disturbance may be evident.
Semi-intact	Resembles the original vegetation type in terms of structure and species makeup but has lower species diversity than intact vegetation. Dominated by disturbance-resilient species. Soils may have been heavily disturbed in the past. Restoration potential is high.

Degraded	Only a few species representative of the original vegetation type are present. The vegetation has undergone heavy disturbance. Restoration potential is either low or moderate.
Highly degraded	The original vegetation is usually absent and has been removed in the past. Only a few remnant or pioneer species are present. Soils usually ploughed in the past. Restoration potential is very low.
Transformed	No remnant species exist anymore. The landscape is altered irreversibly with no restoration potential. Examples include cultivated farmland and the built environment.

Table 8. *Habitat category descriptions and criteria (Nicolson, J. 2021).*

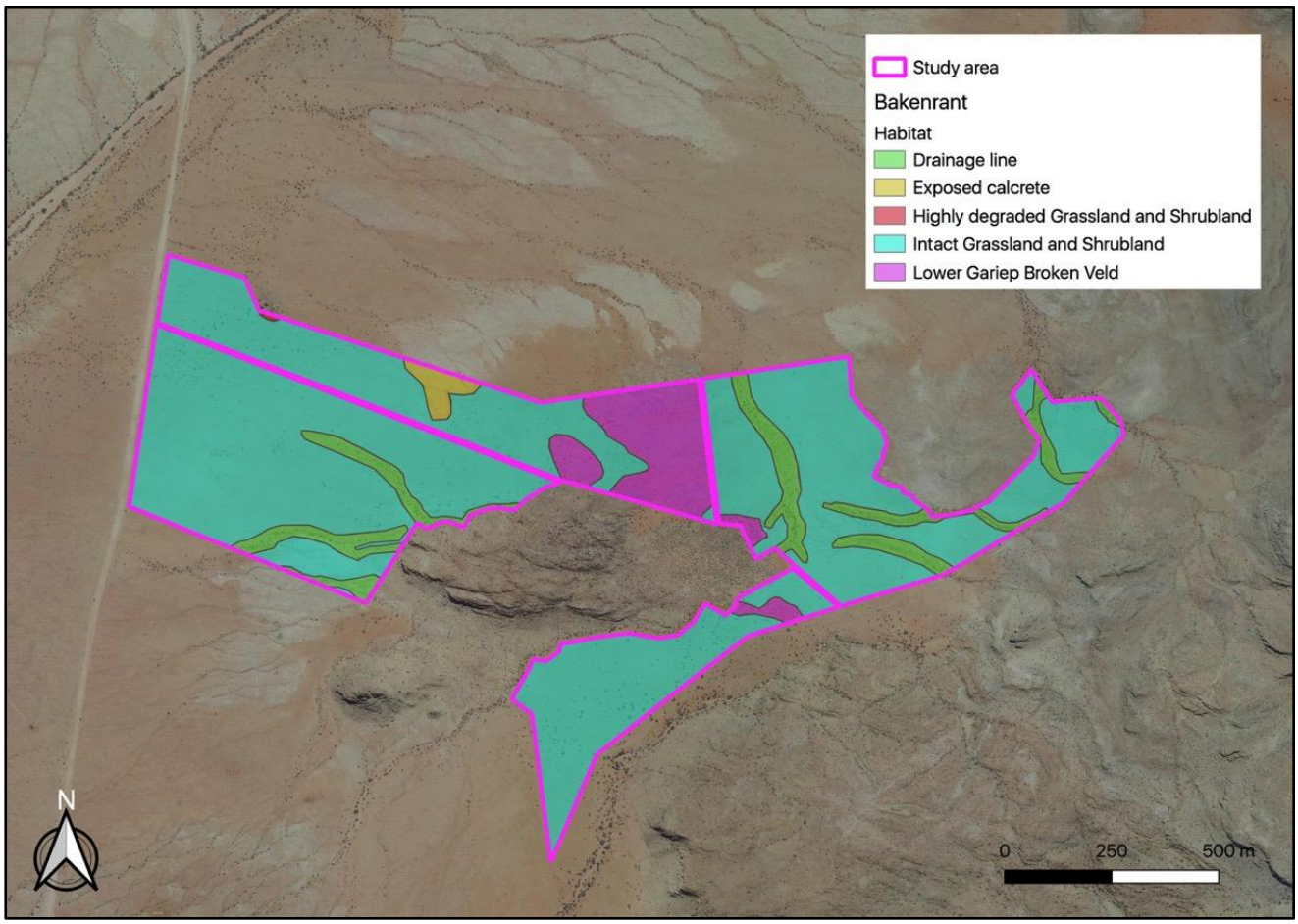

Figure 20. *Habitat map: CDNGI 25cm image showing the habitat mapped within the study area (Nicolson, J. 2021).*

The vegetation within the study area is fairly homogenous and a good representation of intact Kalahari Karroid Shrubland. The vegetation can be described as sparse shrublands with open grassy area in patches. The landscape is relatively flat and dominated by grasses with seasonal drainage lines as common features and distinguished by shrubland communities. Exposed calcrete occurs sporadically within the Kalahari Karroid Shrubland vegetation type.

Various plant communities and features associated with Kalahari Karroid Shrubland ecosystem have been mapped and include: a) Grassland and Shrubland (dominant), (b) Exposed calcrete and (c) Drainage lines. The Lower Gariep Broken Veld ecosystem occurs on the site in smaller areas.

Grassland and Shrubland: This habitat is a mosaic of grasslands on the flatter slightly elevated areas and shrublands closer to the drainage lines but also scattered within the grasslands. The grassland plant community is dominated by about three

species of grass (**Plate 1**). These form a dense cover but were dry at the time of the survey. The dominant species is Cape Bushman grass (*Stipagrostis ciliata* var. *capensis*). Other species include the soft feather pappus grass (*Enneapogon cenchroides*) and *Schmidtia kalahariensis*.

Plate 10. *A view of the dominance of grasses within parts of the site. The grasses flourish after good rains and then die back during dry periods (Nicolson, J. 2021).*

The shrubland community is dominated by a small tree, the black thorn (*Senegalia mellifera* subsp. *detinens*) **(Plate 11**) and the medium sized shrub, trithorn (*Rhigozum trichotomum*) (**Plate 12**). Other shrubs and species found in this habitat are *Boscia foetida,* greenhair tree (*Parkinsonia africana)*, devil thorn (*Tribulus* sp), *Phaeoptilum spinosum, Leucosphaera bainesii, Ptycholobium biflorum*, blue bush (*Monechma incanum*), caustic vine (*Sarcostemma viminale*), Bushmanland honeythorn (*Lycium bosciifolium*), *Barleria rigida,* namnam bush (*Tapinanthus oleifolius*), white djirrie (*Rogeria longiflora*), black eye sesame (*Sesamum capense*), *Aptosimum lineare* and *Aptosimum albomarginatum*.

Plate 11. *The black thorn tree (Senegalia mellifera subsp. detinens) is one of the dominant shrubs on the site (Nicolson, J. 2021).*

Plate 12. *Trithorn (Rhigozum trichotomum) in the foreground is one of the dominant shrubs at the site. The sparse shrub cover is seen within the grassy matrix (Nicolson, J. 2021).*

Exposed calcrete; Small areas of the site contain exposed calcrete and quartz on the soil surface (**Plate 13**). The vegetation community found in these areas is slightly different to the grassland and shrubland communities. The same grasses still occur here but in lower densities and some stem succulents occur here including: grey twin leaf (*Roepera lichtensteiniana*), common vingerpol (*Euphorbia braunsii*), common bushman candle (*Monsonia crassicaule*) and *Monsonia* sp.

Plate 13. *The exposed calcrete habitat is sparsely vegetated. The shrubs are all low-growing and succulent (Nicolson, J. 2021).*

Drainage Lines

These habitats are characterised by shallow drainage lines that flow during rainfall events. They were all completely dry at the time of the survey can be distinguished by the thicker cover of shrubs and clear drainage patterns (**Plate 14, Plate 15 & Plate 15**). The same shrubs as described above for the shrubland community occur here, but in higher densities. In addition to these, other species such as herbs and succulents occur on the banks. These include Namaqua hoarypea (*Tephrosia dregeana*), *Euphorbia glanduligera, Monsonia umbellata*, fine vomit daisy (*Geigeria filifolia*), pest lizzardfoot (*Limeum aethiopicum*), river ganna (*Caroxylon aphyllum*), *Ehretia alba*, paintbrush flower (*Kleinia longiflora*), *Monechma spartioides*, thorn Karooviolet (*Aptosimum spinescens*), grey minimouth (*Microloma incanum*) and honeythorn (*Lycium* sp.).

Plate 14. *The drainage lines are conspicuous within the landscape due to the proliferation of large and medium shrubs.*

Plate 15. *The elevated moisture levels within the drainage lines are evident within the otherwise dry landscape.*

Plate 16*. An elevated view of the study area showing shrub cover along the drainage lines.*

Lower Gariep Broken Veld

This habitat occurs on the rocky outcrops and hills surrounding the plains (shrublands and grasslands community). The soils are shallow and overlay the exposed rocks and boulders in the lower parts and rise to craggy and rocky hills (**Plate 17** & **Plate 18**). This habitat has mostly been excluded from the proposed development area as they are likely to be less suitable for cultivation. However, small parts of this habitat do fall within the study area.

Plate 17. *The exposed rocks associated with the Lower Gariep Broken Veld occur on slopes and flats.*

Species noted in this habitat include: stack lashes (*Blepharis mitrata*), *Hibiscus elliotiae*, Gariep currantrhus (*Searsia populifolia*), yellow mousewhiskers (*Cleome angustifolia*), *Abutilon pycnodon*, Jaybees (*Jamesbrittenia* sp.), white djirrie (*Rogeria longiflora*), pepperbush (*Montinia caryophyllacea*), *Barleria lichtensteiniana*, Karas milkbush (*Euphorbia gregaria*), panicgrass (*Panicum* cf. *coloratum*).

Plate 18. *The koppies associated with the Lower Gariep Broken Veld are excluded from the development proposal. A portion of the lower lying areas fall within the development footprint (blue rectangle).*

Sensitivity and Constraints

Sensitivity is defined here as the **'conservation value'** together with the **'degree of resilience to disturbance'**. The conservation value relates to the conservation status (including the ecosystem threat status) and other factors including ecological connectivity, habitat condition, persistence of ecological process and the site's role in supporting biodiversity. The degree of resilience takes into consideration factors such as sensitivity to disturbance and restoration potential.

In the case of the Study area, Very low, Low, Medium and High sensitivities apply for the following reasons (see **Figure 21**):

Very low sensitivity applies to the Highly degraded grassland habitat:

1. The vegetation has been highly degraded in this area by livestock feeding and it no longer represents the original vegetation.

Low sensitivity applies to the greater part of the Intact grassland and shrubland habitat for the following reasons:

1. Although intact, the vegetation within the site is very common in the surrounding habitat and is not under any threat of transformation. Over 99% of this ecosystem still remains intact.
2. The greater part of this habitat has been classified as CBA 2 in the Northern Cape CBA map. This suggests that it is not considered as a conservation priority.
3. The south and eastern parts of the site are mapped as CBA 1 sites. There are no obvious reasons for the distinction between CBA 2 to CBA 1. It is likely that the change is due to the proximity to the Orange River. The reasons for the classification given in the CBA map that differ from the CBA 2 areas are as follows: "*Lower Gariep Alluvial Vegetation; Threatened species; Namakwa CBA2 and associated; and All natural wetlands.*"
4. No Lower Gariep Alluvial Vegetation, or Wetlands occur in the site.
5. No species of conservation concern (SCC) were found at the site.
6. The total disturbance footprint is relatively small given the size of the surrounding intact vegetation.

Medium sensitivity applies to the Lower Gariep Broken Veld habitat for the following reasons:

1. The shallow soils are potentially more prone to erosion.
2. These areas play a role in linking higher koppies within the study area and are therefore ecologically important.
3. A 20m buffer is included around the Medium sensitivity areas.

High sensitivity applies to the Drainage lines habitat for the following reasons:

1. These areas are important for ecological functioning of the area as they allow for the natural flow and dispersal of water within the landscape.
2. The increased moisture results in higher plant diversity and cover that in turn supports more faunal activity.
3. A 30m buffer around the drainage lines is included in the High sensitivity area.

It is strongly recommended that no development takes place within the Medium or High sensitivity areas of the study area, including the associated buffers. Furthermore, small areas that fall outside of the buffers but between two buffered areas should not be developed as this would fragment the sensitive areas. Based on this a constraints map showing the No-Go areas has been produced (**Figure 22**).

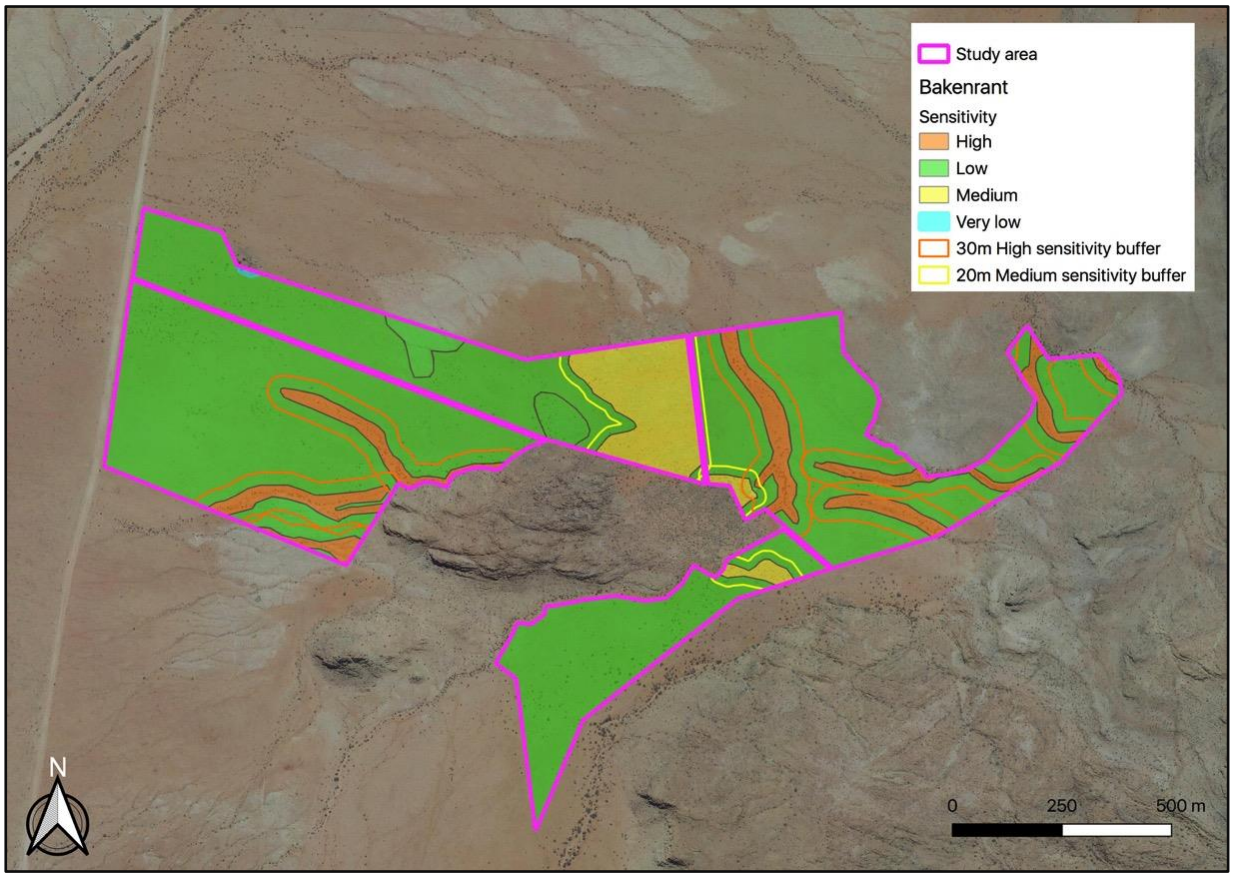

Figure 21. *SENSITIVITY MAP: CDNGI 25cm image showing the sensitivities mapped within the Study area.*

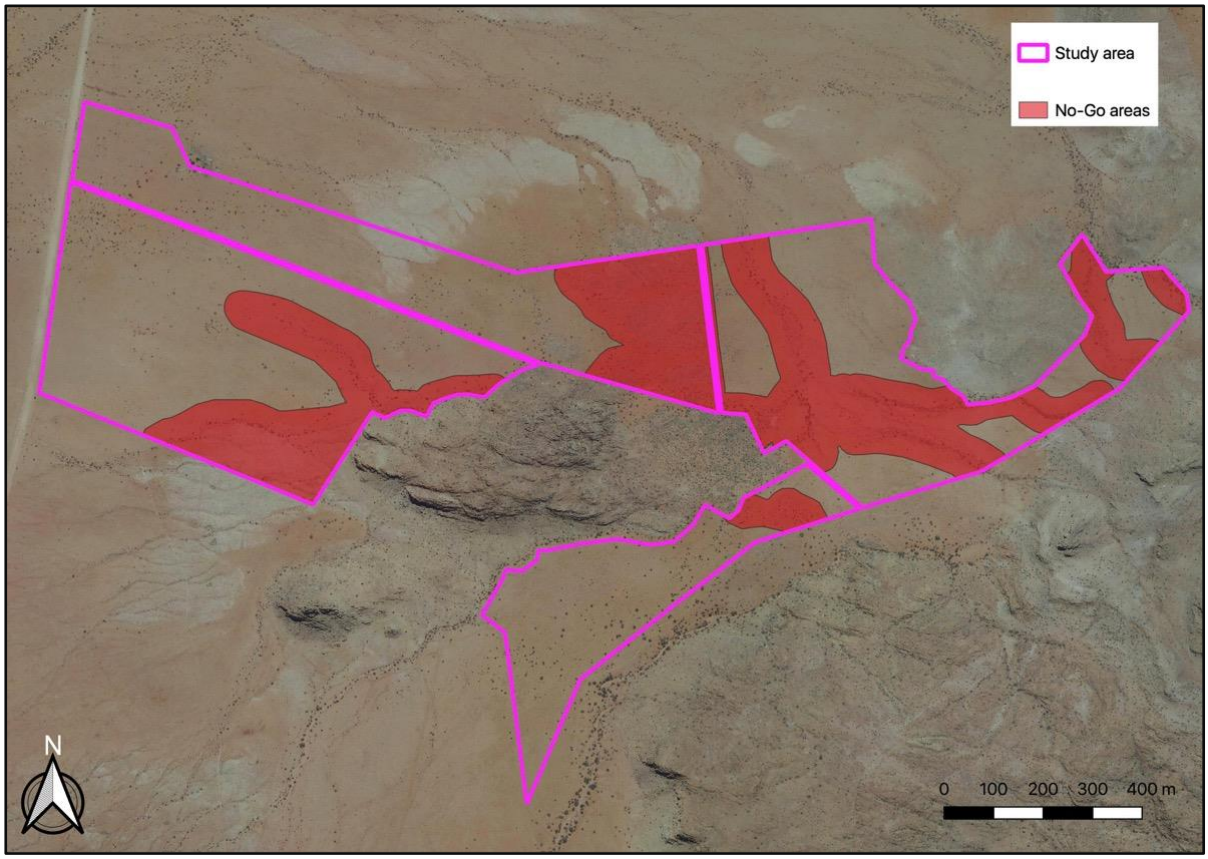

Figure 22*. CONSTRAINTS MAP: CDNGI 25cm image showing the No-Go areas mapped within the Study area. The unshaded areas are potentially developable from a botanical perspective.*

Impact Assessment

The impact assessment is a measure of the impacts likely to occur on the affected environment, specifically the vegetation, ecological processes, important species and habitats. They are considered for (a) the 'No Go' scenario and (b) the direct, indirect and cumulative impacts of the proposed project. Impacts are assessed for both construction and operational phases. Two alternatives are assessed for the proposed project and are as follows:

Alternative 1: Development of the entire Study area (110 ha)
Alternative 2: Development of the Low and Very low sensitivity areas (i.e. excluding the Medium and High sensitivity areas including the recommended buffers)(63. 82 ha).

'No Go' or No Development Scenario

The 'No Go' or no development scenario takes into consideration the impacts associated with the no construction option. It is a prediction of the future state of the affected area in the event of no construction activities taking place and is based on the current and/or anticipated future land use. If no construction were to take place it is unlikely that any changes to the status quo would occur and this would have a **Neutral** impact.

Direct impacts

Direct impacts are those that would occur as a direct result of the development of the proposed agricultural expansion. The development scenario is assessed for the construction and operational phases of the project according to the following interrelated components:

1. Loss of vegetation type and ecological processes – including indigenous vegetation and ecologically important species.
2. Loss of species of conservation concern – associated with the loss of indigenous vegetation.

Construction phase: Loss of vegetation and ecological processes

Most of the impacts would occur during this phase since it would involve clearing the vegetation. The total area of Study area is approximately 110 ha and includes mostly Intact Kalahari Karroid Shrubland habitat. The impact of this loss of vegetation is **High negative** without mitigation. The proposed mitigation is to exclude the Medium and High sensitivity areas along with the proposed buffers from the development footprint. This mitigation is analogous to Alternative 2 and the impact is rated as Low negative.

Construction phase: Loss of species of conservation concern

No SCC were found in the study area and the impact is therefore rated as "Not significant" for both alternatives. No protected trees were found within the study area. A number of species that are protected according to the Northern Cape Nature Conservation Act do occur on the site and within the areas proposed for development. This may require a permit for their removal. However, these are all listed as Least Concern in the Red list of South African plants in the latest assessment and it is based on this that the significance is not rated as Low, Medium or High.

Operational phase: Loss of vegetation and ecological processes

The operational phase impacts are related to the potential for exotic species to colonize and spread from the construction areas and other disturbed parts of the site post-construction. Soil erosion is also likely to occur where soils are shallow and become disturbed. The impacts are expected to be **Medium negative** without mitigation and **Low negative** with mitigation for both alternatives.

Operational phase: Loss of species of conservation concern

No SCC were found in the study area and the impact is therefore rated as “Not significant” for both alternatives. No protected trees were found within the study area. A number of species that are protected according to the Northern Cape Nature Conservation Act do occur on the site and within the areas proposed for development. This may require a permit for their removal. However, these are all listed as Least Concern in the Red list of South African plants in the latest assessment and it is based on this that the significance is not rated as Low, Medium or High.

Mitigation: Construction phase

Avoidance is the main mitigation for the construction phase. The Medium and High sensitivity areas including their buffers and the areas between the buffers that are too small to develop must be excluded from the development footprint.

Mitigation: Operational phase

The passive rehabilitation of the construction areas and any other disturbed parts of the site are required during the operational phase of the project. The site must be visited every six months for three years to inspect the site for the establishment of any exotic or invasive species. If these are found they must be removed by hand when they are seedlings. Exotic grasses and the honey mesquite are potential species to look for at this site. Signs of soil erosion must also be monitored and remedied where required.

Indirect Impacts

Indirect impacts are those that do not occur as a direct result of the activity on the site but that occur further away. In this case no indirect impacts are expected.

Cumulative Impacts

Cumulative impacts are those impacts linked to increased loss of vegetation type or the ecosystems listed in the National List of Threatened Terrestrial Ecosystems (Government Gazette, 2011). Cumulative impacts are assessed as the overall impact of loss of habitat in relation to loss of the same or similar habitat at a local scale due to past, present and future habitat loss. The loss of or disturbance to 110 ha Kalahari Karroid Shrubland is very low in the context of the remaining 99.3%. The cumulative impact is therefore rated as **Low negative** for both alternatives.

Conclusions and Recommendations

The agricultural expansion will result in the loss of and disturbance to 110 ha (Alternative 1) or 63.82 ha (Alternative 2) of Kalahari Karroid Shrubland (minimal loss of Lower Gariep Broken Veld would also occur). The ecosystem is largely intact and extensive in the surrounding area. The site and surrounds have been classified as CBA 2 or CBA 1 in the Northern Cape CBA map. It is likely that the *key* reasons (based on the CBA reasons layer) that the site has been classified as a CBA are: proximity to the Augrabies Falls National Park, Proximity to NPAES area, Proximity to the Orange River. All of these are valid reasons, however, the proposed development would not have a significant or direct impact on any of the abovementioned features.

The disturbance to or loss of the vegetation and ecological processes within the drainage lines and the large area proposed for development are the major concerns. The loss of ecological functioning and water dispersal within the landscape would have a **High negative** impact if no mitigation were to be implemented. The proposed mitigation is to avoid all medium and High sensitivity areas, including a 20m or 30m buffer for each sensitivity category respectively. If this is realized, then the overall impact would be reduced to **Low negative** for the construction phase.

Impacts during the operational phase are rated as **Medium negative** without mitigation for both alternatives. This must be mitigated through monitoring and removal of exotic species, which may establish in the disturbed areas. Monitoring and remediation of soil erosion is also required (these are essential mitigation).

No species of conservation concern were found at the site, and therefore, the Terrestrial Flora Species compliance statement appears as Appendix 4 of the Botanical Assessment Report. A list of all species found on the site and surrounds appears in Appendix 5. It is noted that a number of regionally Protected species (Northern Cape Nature Conservation Act) do occur on the site, however, these are all listed as Least Concern in the latest assessment of South African Plants (redlist.org.za). A permit may be required for the removal of these species.

If the recommended mitigation measures are implemented, the development of the agricultural expansion is supported from a botanical perspective.

11.2 Heritage Impact Assessment

UBIQUE Heritage Consultants were appointed by Eco Balance Planning Co. as independent heritage specialists in accordance with Section 38 of the NHRA and the National Environmental Management Act 107 of 1998 (NEMA) to conduct a cultural heritage assessment to determine the impact of the proposed agricultural development of Bakenrant, Plot 106, Kakamas-North of Kai !Garib Local Municipality, Z.F. Mgcawu District Municipality, Northern Cape, on any sites, features, or objects of cultural heritage significance.

A Copy of the Heritage Impact Assessment Report is attached as Appendix 6.

Survey

A systematic survey of the proposed project area to locate, identify, record, photograph, and describe archaeological, historical or cultural interest sites were completed. UBIQUE Heritage Consultants inspected the proposed development and surrounding areas on the 19th to 21st of April 2021 and completed a controlled-exclusive, pre-planned, pedestrian and vehicular survey. They conducted an inspection of the surface of the ground, wherever the surface was visible. This was done with no substantial attempt to clear brush, sand, deadfall, leaves or other material that may cover the surface and with no effort to look beneath the surface beyond the inspection of rodent burrows, cut banks and other exposures fortuitously observed.

The Terms of Reference for the HIA/ AIA addressed the following key aspects:

- 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. In addition, the HIA/AIA should comply with the requirements of NEMA, including providing the assumptions and limitations associated with the study; the details, qualifications and expertise of the person who prepared the report; and a statement of competency.

Findings and Impact on Heritage Resources

Only one occurrence of lithic material was recorded outside to the south of the project development footprint (BKR001). The low-density surface scatter included chunks, chips, one bladelet and possible scrapers from cryptocrystalline silicates (CCS) and Banded Ironstone Formation (BIF).

The lithic material shows various degrees of weathering and is without substantial archaeological context or matrix, and is therefore deemed of minor scientific importance and not conservation worthy (NCW). It is also situated outside the designated project area.

The material is given a 'General' Protection C (Field Rating IV C). This means that it has been sufficiently recorded (in Phase 1). It requires no further action.

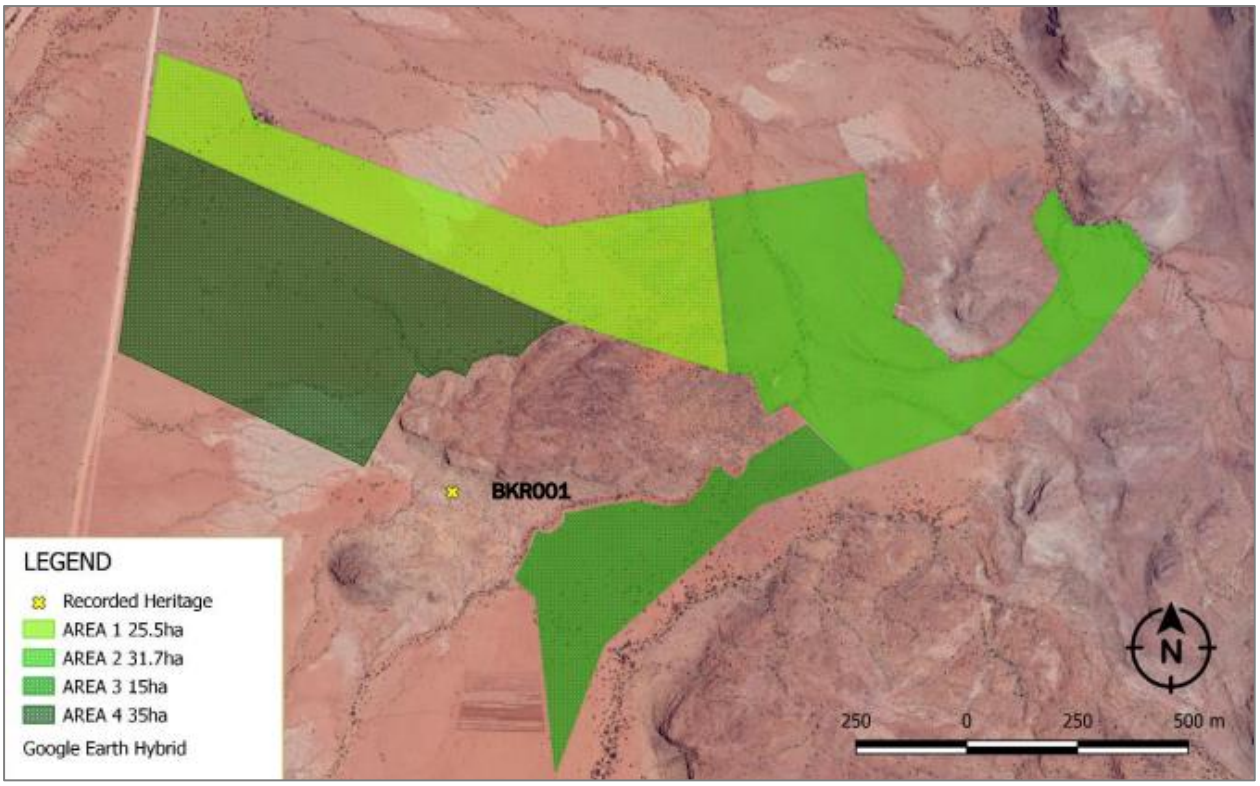

***Figure 23**. Distribution of identified heritage resources, Plot 106 Kakamas-North.*

***Figure 24.** Photographic selection of the lithic material recorded.*

The development footprint is underlain by the ancient Precambrian basement rocks of the Namaqua-Natal Province, mantled by sediments of the Gordonia Formation (Kalahari Group). A low Palaeontological Significance has been allocated to the proposed development as the Palaeontological Sensitivity of the Gordonia Formation is low. The ancient Precambrian basement rocks are zero (Butler 2021). These rocks are approximately one to two billion years old and completely

unfossiliferous. Therefore, it is recommended that no further palaeontological heritage studies, ground-truthing, and/or specialist mitigation are required pending the discovery of newly discovered fossils (Butler 2021).

Figure 25. *SAHRIS PalaeoSensitivity Map, indicating Moderate (green), Low (blue), Insignificant/Zero (grey), and Unknown (clear)) palaeontological significance in the study area, (https://sahris.sahra.org.za/map/palaeo).*

Phase 1 AIA recommendations

Based on the assessment of the potential impact of the development on the identified heritage, the following recommendations are made, taking into consideration any existing or potential sustainable social and economic benefits:

- No significant heritage sites or features were identified within the surveyed sections of the areas earmarked for agricultural developments. Therefore the proposed development can continue.

- The cultural material recorded (BKR001) to the south of the proposed development footprints is of low significance and will not be affected by the development.

- Due to the low palaeontological significance of the area, no further palaeontological heritage studies, ground-truthing and/or specialist mitigation are required. It is considered that the development of the proposed development is deemed appropriate and feasible and will not lead to detrimental impacts on the palaeontological resources of the area (Butler 2021). If fossil remains or trace fossils are discovered during any phase of construction, either on the surface or exposed by excavations the Chance Find Protocol must be implemented by the Environmental Control Officer (ECO) in charge of these developments. These discoveries ought to be protected, and the ECO must report to SAHRA (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za) so that mitigation can be carried out by a palaeontologist (Butler 2021).

- Although all possible care has been taken to identify sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the assessment. If during construction, any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous

ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. A professional archaeologist or palaeontologist, depending on the nature of the finds, must be contacted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA. UBIQUE Heritage Consultants and its personnel will not be held liable for such oversights or costs incurred as a result of such oversights.

Conclusion

This HIA identified no significant heritage resources that may be impacted negatively by the proposed development. The development of four parcels of land for agricultural purposes on Erf 359, Kakmas-North, Kai !Garib Local Municipality, Z.F. Mgcawu District Municipality, Northern Cape may continue, provided the recommendations stipulated within this report, and the subsequent decision by SAHRA, are followed.

11.3 Freshwater Impact Assessment

WATSAN AFRICA (Dr D. van Driel) was appointed to implement a Freshwater Impact Assessment. The subsequent report is attached as Appendix 7.

Dr van Driel visited the proposed development site on 30 September 2022. The Terms of Reference for the Freshwater Assessment was:

Freshwater impact assessment and Department of Water and Sanitation (DWS) risk assessment, including:

- Initialisation;
- Site assessment;
- Freshwater impact assessment report;
- WS risk assessment for water use authorisation consideration;
- Review and liaison.

Drainage Lines:

The property is in the D81A quaternary catchment.

The landscape around much of the Lower Orange River is dominated by a dense succession of drainage lines. They spread along the river with many smaller tributaries to cover the entire area. The iron oxides in the sands renders a red hue that is visible from space on the Google Earth images. These reds are concentrated in the drainage lines, making them even more visible.

The drainage lines are mostly dry, with water only during rains and perhaps shortly thereafter. During the odd thunderstorm, drainage lines can come down in flood. These floods maintain the drainage line's morphological integrity, as sediments are moved and these water ways are scoured out.

Because rainfall events are far apart, the drainage lines must have been form over millennia, even since geological times.

Drainage lines each have their own sub-catchment. Sub-catchments can be small, only a few hectares, others can be very large, many thousands of hectares.

Drainage lines often dissipate, spread out over the flat landscape, into sheet wash plains, where deposition of sediments may be evident. Drainage lines can re-emerge from sheet wash plains as distinct water corridors.

Shallow, unconfined groundwater migrates down the drainage lines, providing moist to vegetation that would otherwise not be present in an arid landscape. This vegetation is higher and denser than away from the drainage lines. The lines of trees or scrub along the drainage lines offer habitat to a variety of organisms, including reptiles and birds, that would be absent, were it not for drainage lines. The ecological significance of drainage lines is in its provision of habitat variability.

Much of the discussion in this report is about these drainage lines.

Around the Orange River, large-scale agriculture has changed the drainage lines into drainage channels among the vineyards and orchards. The upper reaches away from the rivers are less impacted, even near-pristine, as intense agriculture is not possible, apart from those areas where water is piped over long distances from the Orange River.

Sub Catchments:

Erf 359 straddles two sub-catchments, a very large one and a much smaller one (**Figure 26**). The proposed pipeline runs over a tiny drainage line that stretches from the Orange River to the hill above. From there it carries on across the adjacent sub-catchment all the way to the land now under consideration (**Figure 26**).

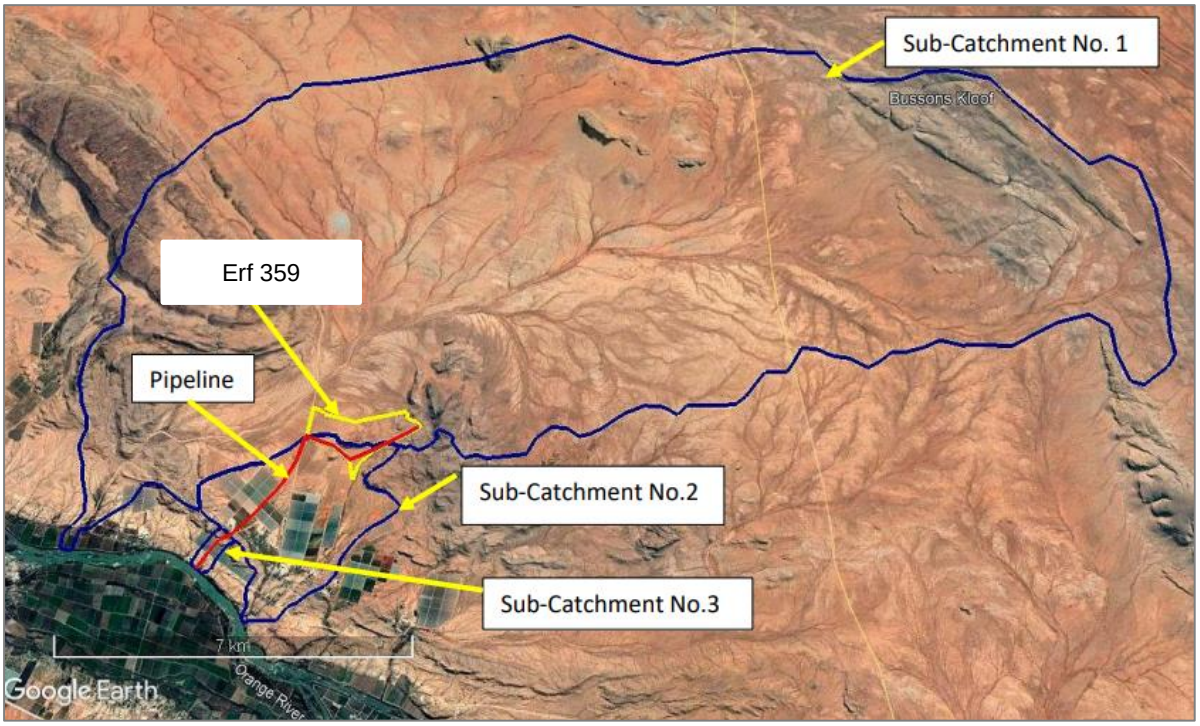

Figure 26. *Sub catchments.*

The drainage lines are highlighted in the sub-catchments (**Figure 27**).

The Khamkirri River is nothing but a very large, mostly dry drainage line. It is some 30m wide, with a sandy bottom and with relatively high riparian vegetation on the one bank. The relatively large size of this drainage line indicates with how much force it can come down in flood, albeit a very scarce occasion. The well-developed riparian zone indicates that a substantial volume of persistent groundwater follows the drainage line. A slab of concrete covers the riverbed at the road crossing.

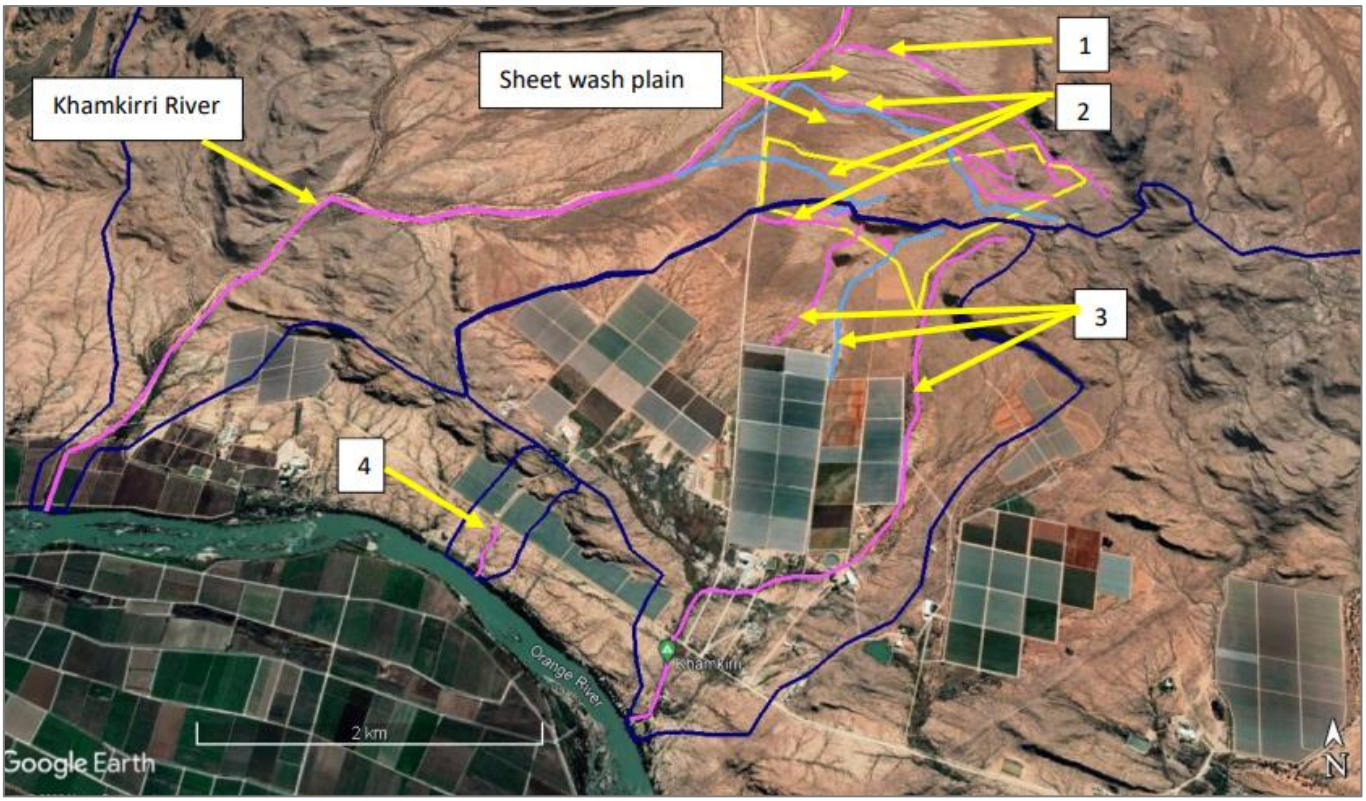

Figure 27. *Drainage lines on the property and surrounding area.*

Figure 28 is an enlarged version of a map to explain the drainage lines on Erf 359.

The grassy plains of Erf 359 are interrupted by rocky outcrops. Some of the drainage line rise on the slopes of these outcrops. A line of three of these outcrops stretches over the farm from southwest to northeast. The centre outcrop is the largest of the three.

The distinct drainage lines on Erf 359 are clearly marked by a line of trees. These trees are mostly swarthaak (*Senegalia mellifera*). The drainage lines transverse the grass-covered plains of sandy red soils.

Drainage lines often dissipate into sheet wash plains, where the tree lines break up into a sparse and scattered stand of trees. These sheet wash plains can be sandy or covered with quarzitic gravel.

Most of the drainage lines have a sandy bottom.

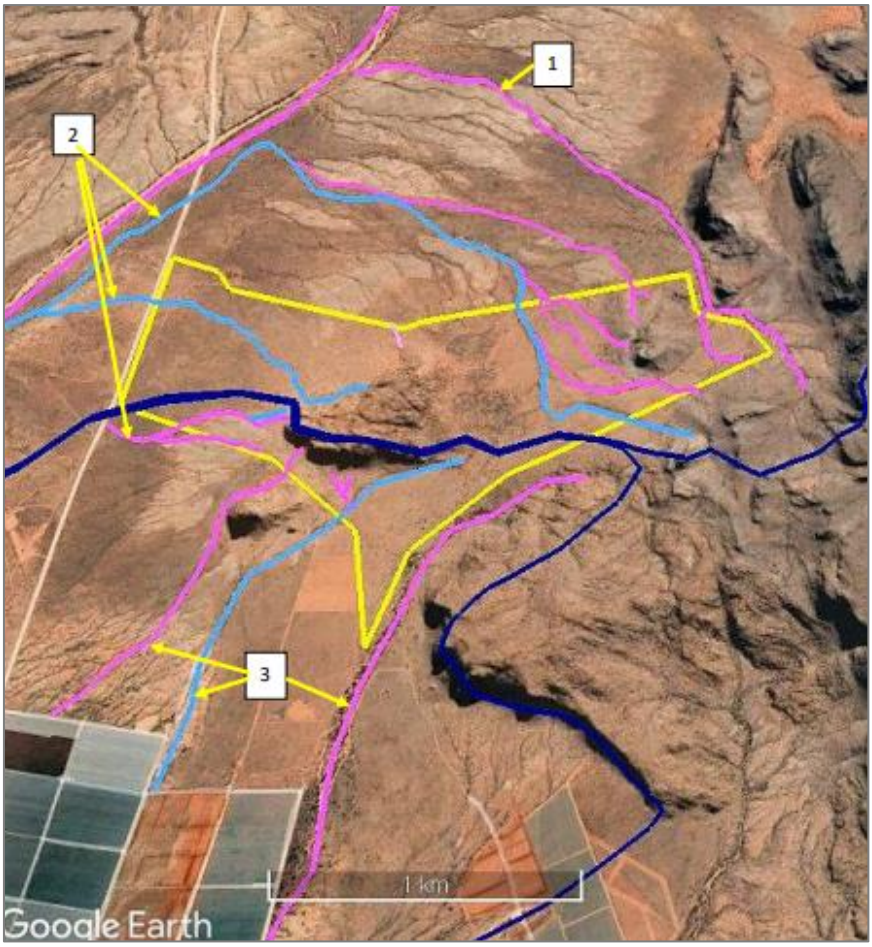

Figure 28. *Enlarged version of a map to explain the drainage lines on Erf 359.*

Drainage Line No.1 is a tributary of the Khamkirri River that skirts the northeastern boundary of Erf 359. A small arm of this drainage line crosses the boundary of Erf 359 (**Figure 27**). An enlarged version of the map illustrates this more clearly **Figure 28**).

Drainage Line No.2 is another tributary of the Khamkirri River. It breaks up into several smaller arms, some of which rise on the hills to the southeast of Erf 359 and others on the slope of the most easterly rocky outcrop on the farm. These arms run in a north-westerly direction to unite and then run parallel to the Khamkirri River. Just prior to the confluence with the river, it receives another branch that rises on the slope of the center larger outcrop. The most southerly branch from the central outcrop dissipates into a sheet wash plain and it cannot be established where it again connects to the drainage line.

Drainage Line No.3 rises on the southern slopes of the center larger rocky outcrop and proceeds to the Orange River to the south across Sub-Catchment No.2. Two of these branches stop against the vineyards. The third one skirts the vineyards on the and connects to the main branch of the drainage line that connects to the Orange River.

Present Ecological State

Drainage line No.1 and No.2 are in a similar ecological state and hence have been lumped together for this prescribes evaluation. Cattle were noticed on the property as well as a rhebok and springboks. The only modifications were the road crossings. The drainage lines are in a near-pristine condition with very little human impact.

Drainage Line No.3 scores a “C”, with marked modifications, but with some ecological functioning still intact, thanks to the one arm that flows around the vineyards.

Ecological Importance

The Ecological Importance (EI) is based on the presence of especially fish species that are endangered on a local, regional or national level (Table 6). There are no fish in the drainage lines, as there is no permanent water.

According to this assessment, which is prescribed for WULA's, the drainage lines are not important. Shepard's trees (*Boscia albitrunca*) were recorded in some of the drainage lines. This is a protected tree species.

The development on Erf 359 will not add or detract to the importance of the Orange River, as measured by the fish species assemblage, as it has little if any impact

Ecological Sensitivity

Ecological Sensitivity (ES) is often described as the ability of aquatic habitat to assimilate impacts. It is not sensitive if it remains the same despite of the onslaught of impacts. Put differently, sensitive habitat changes substantially, even under the pressure of slight impacts.

The Ecological Sensitivity also refers to the potential of aquatic habitat to bounce back to an ecological condition closer to the situation prior to human impact. If it recovers, it is not regarded as sensitive.

The drainage lines and its riparian zones will take many decades, if not centuries, to bounce back once obliterated by large-scale agriculture. In these arid zones, vegetation is very slow to re-establish itself. From this point of view, the drainage lines can be viewed as ecologically highly sensitive.

The Lower Orange River has absorbed numerous and deep-cutting human impacts. Yet is still functions as an aquatic ecosystem. In the highly improbable event of ceased human impact, the river here would probably bounce back to its previous glory. In this respect the river cannot be categorised as sensitive. It is dreaded among conservation minded people that the Lower Orange River might have some more capacity to absorb further impact.

Probable Impacts and Mitigating Measures

The impacts under discussion are those on the drainage lines and the aquatic environment, including the riparian zone.

New vineyards can be developed right through and over drainage lines. This is a direct impact with the destruction of drainage lines. It can be avoided by not establishing vineyards in the vicinity of any drainage line. This is mostly not possible, as the landscape around the Orange River is criss-crossed by a dense tapestry of drainage lines. If vineyards in the region are established, it seldom leaves drainage lines untouched.

The NEMA and its regulations demand that a 32m controlled buffer zone be left on both banks of any drainage line. This can readily be implemented, with the buffer zones in place.

However, vineyards are irrigated and the agricultural return flow can end up in the drainage lines, in which events the riparian vegetation eventually dies off and generally does not survive the development, despite of the buffer zones.

The NWA demands a 100m buffer zone. This eliminates such a large surface area of potential vineyard that it mostly does not render the development viable. Land is limited around the Orange River, with little to spare for very wide buffer zones. Moving further inland where land is available brings about much longer pipelines and pumping costs.

Figure 29 illustrates the placement of the vineyards in relation to the drainage lines. Clearly, there is a conscious attempt to place the blocks away from the drainage lines, for which credit is due, to let the drainage lines pass between the blocks, wherever possible. If the buffer zones are wide enough, with an effective control of return flow, those drainage lines may

remain intact. The drainage line in the largest block to the northwest of the farm will predictably not make it, the ones on the eastern side of the farm stand a better chance and the drainage line adjacent and to the south of the large rocky outcrop stands the best chance.

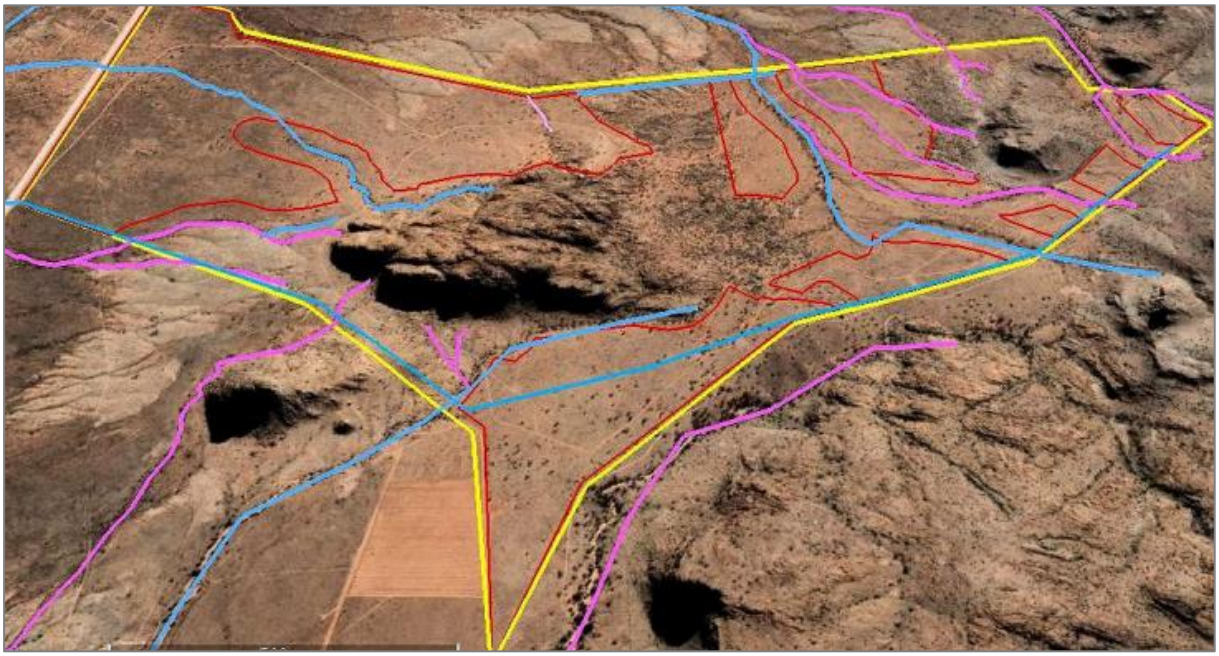

Figure 29. *New blocks and drainage lines.*

The volume of agricultural return flow can be limited by not over-irrigating the vineyards. State-of-the-art technology allows for measuring the moisture content in the soil and signal the information to the farm manager's cell phone so that he or she can adjust the irrigation schedule accordingly. Judging from the large return flow volume in some of the districts, irrigation experts agree that much can be done to reduce return flow substantially.

Large reedbeds developed downstream of vineyards in the area. These reeds cover land between the vineyards and the Orange River. This will probably happen at the new vineyards at Erf 359 as well. The land adjacent and south of the farm has already been impacted, with existing vineyards and concomitant reedbeds downstream towards the banks of the Orange River. The new vineyards at Erf 359 can compound the impact. This is a consequence that decision-makers will have to accept if the go-ahead is given.

This impact is inconsequential if compared to the potential impact to the north and towards the Khamkirri River, which at this stage is still undeveloped, with near-pristine drainage lines. It would be in the interest of conservation to direct any return flow containing high levels of nutrients and salts to the south, keep it out of the northern virgin land. It would be in the interest of conservation not to have reedbeds develop on the land between Erf 359 and the Khamkirri River. Redirecting north-flowing return flow to the south would be quite and engineering feat.

Return flow can possibly be diverted. This can possibly be achieved by trenches around the new vineyards. These trenches are not uncommon around vineyards and are prominent on many of the farms. The flow from the northern half of Erf 359 is to the north and it will take a special effort to direct the flow to the south. Lined holding ponds can possible be constructed. This would be new to return flow management in most regions.

It is not foreseen that upgrading an existing pump or placing another pump on the bank of the Orange River next to existing pump would have any measurable impact. The abstracted volume of water will have to be discounted against the Ecological Reserve. This is the premise of the DWA and its decision-makers and is beyond the scope of this WULA.

Impact Assessment

See Section 16 in the attached Freshwater Assessment Report (Appendix 7) as well as Section 15 of this Report.

Numerical Significance

The significance rating for the drainage lines came out as “Insignificant”, mainly because the conservation value is not regarded as high. The rating was insignificant despite of the impacts being of a permanent nature and despite of the impacts that cannot be avoided.

The impact of a single grape farm on the Orange River is small and the rating was perceived to be “Low”. However, the cumulative impacts of large-scale agriculture in the Lower Orange River are the most prominent features of the landscape.

Resource Economics

A large star shape for the drainage lines combined would attract decision-maker’s attention. This shape of the spider diagram is small and apart from the contribution to habitat variability and biodiversity, the drainage lines do not have a significant resource economic footprint. From this perspective, not much would be lost if the drainage lines are impacted.

This is a futile exercise for the Orange River, like most large rivers, scores a perfect circle. The new vineyards are not about to detract from the Orange River’s goods and services.

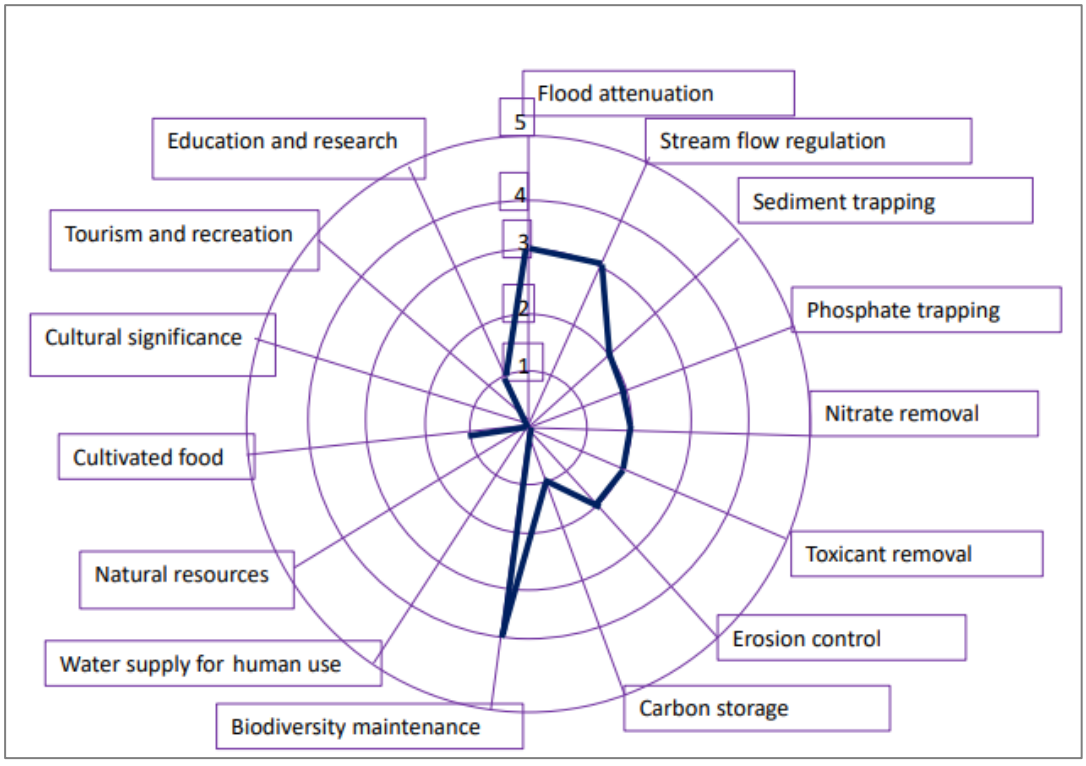

***Figure 30**. Resource Economics Footprint of the Drainage Lines.*

Summary

Table 9 gives an overall and much condensed view of the evaluations and methodologies that have been applied to the drainage lines on Erf 359 and to the Orange River. In short, it explains that the river is much more important than the drainage lines and that the farm is unlikely to have a measurable impact on the river, provided that the mitigating measures are applied.

Table 9 explains that the drainage lines are not important from either a conservation or resource economics point of view, as determined by the prescribed evaluations. The table does not explain the variability in habitat and ecological connectivity that drainage lines provide. This is explained elsewhere in the text.

Aspect	Status
DFFE Screening Tool	Sensitivity Medium, High and Very High
Sonsak Farm	CBA, Conservation Expansion Plan
Drainage lines aquatic habitat	Not NFEPA
Oranje River	NFEPA
Vegetation	Least concern
PES of the drainage lines	Upper sub-catchment near-pristine
PES of the Orange River	Moderately impacted
Ecological Importance Drainage lines	Not important
Ecological importance Orange River	Most important
Ecological Sensitivity Drainage lines	Sensitive
Ecological Sensitivity Orange River	Sensitive
EISC drainage lines	Low
EISC Orange River	High
Impact assessment	Mitigation cannot save drainage lines from impacts but can limit footprint
Risk Matrix	General Authorization
Resource Economics drainage lines	Very small footprint
Resource Economics Orange River	Very large footprint

Table 9. *Summary of evaluations.*

Discussion and Conclusions

The driving force behind the Orange River is the runoff from the Lesotho highlands far away in the upper catchment. Thunderstorms in summer and snow melts during winter. This is where the massive runoff volumes originate that maintain the Orange River system. The low ground of the Lower Orange River does not contribute to the flow in the Orange River. The flow is seasonal, with peak flows and periodic flooding following high summer rainfall events and low flow in winter, when precipitation on the high ground is less. Low flow periods can be extended due to long periods of drought.

The riverine habitat and aquatic organisms are adapted to perennial circumstances, with an adequate flow down the river all year round, even during drought conditions.

Human impact has become a driving force, with large dams and abstraction of water for irrigation. The river's water is used far and wide, piped long distances away for human use in many towns and villages.

Agricultural return flow, with its load of agrichemicals and silt is a significant impact. So is treated sewage effluent from cities and towns, including that of Upington.

Despite of this, the river maintained most of its ecological integrity and ecological functioning. The new vineyard at Erf 359 adds to the agriculture's cumulative impact on the Orange River.

The new vineyard is but a small speck and is not expected to change the dynamics in the river

These drainage lines are driven by the very scant rainfall events, sudden and sometimes severe thunderstorms, spread out over millennia. Rainfall is interspersed by prolonged droughts. This gives rise to a sparse and drought resistant vegetation. The shallow ground water that migrates along these drainage lines provides just enough moist for higher vegetation to take root and to hold on under these very harsh climatic conditions. Drainage lines are ecologically important, as it provides denser and higher vegetation in an otherwise barren landscape, contributing to habitat variation, biodiversity and migration routes.

The upper sub-catchments of these drainage lines are mostly near-pristine, with only grazing. The lower parts are heavily impacted by agriculture and sand winning. This stark contrast is evident all over the region.

The new vineyards will impact on the drainage lines. The impact on the Orange River is cumulative but negligible.

The Risk Matrix indicated that a General Authorization is the indicated level of official approval.

14. Impact Assessment and Ranking Methodology

i.Nature of Impact

The nature of an impact indicates whether the impact would have a negative, positive or zero effect on the affected environment. An impact may therefore be negative, positive or neutral.

ii.Extent / Scale

"Extent" defines the physical extent or spatial scale of the impact. The impact could be:

Rating	Description
SITE SPECIFIC	Limited to the site.
LOCAL	Limited to the site and the immediate surrounding area (1 – 10km)
REGIONAL	Covers an area that includes a certain geographic region and / or extends from one region to another.
PROVINCIAL	Impact considered of provincial importance.
NATIONAL	Across national boundaries and could have implications on a national scale.

iii.Duration

"Duration" gives an indication of how long the impact would occur.

Rating	Description
SHORT TERM	0 - 5 years
MEDIUM TERM	5 - 15 years
LONG TERM	Where the impact extends beyond the operational life of the activity, but not permanently.
PERMANENT - mitigated	Mitigation measures of natural process will reduce impact – impact will remain after operational life of project.
PERMANENT – no	No mitigation measures of natural process will reduce impact after implementation –

mitigation	impact will remain after operational life of project.

iv.Probability of occurrence

"Probability" describes the likelihood of the impact actually occurring.

Rating	Description
IMPROBABLE / UNLIKELY	No impacts expected under normal conditions.
LOW PROBABILITY	Where there is a low likelihood of the impact occurring.
PROBABLE (MEDIUM)	Where there is a distinct possibility that the impact will occur.
HIGH PROBABILITY	Where it is most likely that the impact will occur.
DEFINITE	Where the impact will occur regardless of any prevention measures.

v.Potential for irreplaceable loss of resources

This describes the degree to which resources will be irreplaceably lost as a result of a proposed activity.

Rating	Description
NO LOSS	No irreplaceable resources will be lost or impacted.
MARGINAL LOSS	Marginal loss of irreplaceable resources occurs. Resources can be replaced, with effort.
SIGNIFICANT LOSS	Where a significant loss of resources occurs.
COMPLETE LOSS	Where an activity results in the complete loss of resources. There is no potential for replacing a particular vulnerable resource that will be impacted.

vi.Reversibility of an impact

This refers to the degree to which an impact can be reversed.

Rating	Description
IRREVERSIBLE	Where the impact is permanent.
PARTIALLY REVERSIBLE	Where the impact can be partially reversed.
FULLY REVERSIBLE	Where the impact can be completely reversed.

vii.Cumulative impact

This describes the cumulative effect of the impacts on the environmental parameter. A cumulative effect/impact is an effect which in itself may not be significant but may become significant if added to other existing or potential impacts that may result from other similar or diverse activities within the surrounding area. Cumulative impact may be described as **negligible**, **low**, **medium** or **high** impact.

viii.Degree to which impact can be avoided

Impacts can be **fully avoided** (completely avoidable), **partly avoided** (impact is regarded avoidable with moderate light mitigation and/or management) or the impact is **unavoidable** (it cannot be avoided even with the implementation of significant mitigation measures).

ix.Degree to which impact can be mitigated

This indicates the degree to which an impact can be reduced. It can either be **high** (be fully mitigated), **moderate** (be partly mitigated) or **not be mitigated at all** (no change in impact with mitigation).

x.Degree to which impact can be managed

Impacts can by **fully managed** (completely manageable), **partly managed** (impact is manageable with moderate mitigation and / or management) or it is **unmanageable** (impact cannot be managed even with significant mitigation measures.

xi.Consequence of impact

Indicates how the activity will affect the environment, what will happen if the impact occurs.

xii.Indirect impacts

These comprise secondary impacts that usually occur at a different time or place as a result of the direct impact.

xiii.Residual impact

Residual impacts are impacts that remain following the implementation of mitigation measures.

xiv.Significance

"Significance" attempts to evaluate the importance of a particular impact, and in doing so incorporates the above three scales (i.e. extent, duration and intensity).

Rating	Description
VERY HIGH	Impacts could be EITHER: of *high intensity* at a *regional level* and endure in the *long term*; OR of *high intensity* at a *national level* in the *medium term*; OR of *medium intensity* at a *national level* in the *long term.*
HIGH	Impacts could be EITHER: of *high intensity* at a *regional level* and endure in the *medium term*; OR of *high intensity* at a *national level* in the *short term*; OR of *medium intensity* at a *national level* in the *medium term;* OR of *low intensity* at a *national level* in the *long term*; OR of *high intensity* at a *local level* in the *long term*; OR of *medium intensity* at a *regional level* in the *long term.*
MEDIUM	Impacts could be EITHER: of *high intensity* at a *local level* and endure in the *medium term*; OR of *medium intensity* at a *regional level* in the *medium term*; OR of *high intensity* at a *regional level* in the *short term*; OR of *medium intensity* at a *national level* in the *short term*; OR of *medium intensity* at a *local level* in the *long term*; OR of *low intensity* at a *national level* in the *medium term;* OR of *low intensity* at a *regional level* in the *long term.*
LOW	Impacts could be EITHER of *low intensity* at a *regional level* and endure in the *medium term*; OR of *low intensity* at a *national level* in the *short term*; OR of *high intensity* at a *local level* and endure in the *short term*; OR of *medium intensity* at a *regional level* in the *short term*; OR of *low intensity* at a *local level* in the *long term*; OR of *medium intensity* at a *local level* and endure in the *medium term.*

Rating	Description
VERY LOW	Impacts could be EITHER of *low intensity* at a *local level* and endure in the *medium term*; OR of *low intensity* at a *regional level* and endure in the *short term*; OR of *low to medium intensity* at a *local level* and endure in the *short term.*
INSIGNIFICANT	Impacts with: Zero to very low intensity with any combination of extent and duration.
UNKNOWN	In certain cases it may not be possible to determine the significance of an impact.

15. Assessment of each impact and risk identified for each alternative

Two layout and location alternatives are assessed for the proposed project and are as follows:

- Alternative 1: Development of the entire study area 110ha.
- Preferred Alternative 2: Development of the Low and Very low ecological sensitive areas (excluding the Medium and High sensitivity areas including the recommended buffers) with a combined surface area of 63. 82ha.

15.1 During Planning & Design Phase:

	Alternative 1 (110ha)	Alternative 2 (preferred)(63. 82ha)	No-Go Alternative
Potential impact and risk:	**Economic and Socio-economic impacts**		
Nature of impact:	Positive.	Positive.	Positive.
Extent and duration of impact:	Regional. Short term.	Regional. Short term.	Regional. Short term.
Consequence of impact or risk:	Securing income to households		
Probability of occurrence:	Definite	Definite	Definite
Degree to which the impact may cause irreplaceable loss of resources:	No loss	No loss	No loss
Degree to which the impact can be reversed:	Not required	Not required	Not required
Cumulative impact prior to mitigation:	Medium positive	Medium positive	Medium positive
Significance rating of impact prior to mitigation:	Medium positive	Medium positive	Medium positive
Degree to which the impact can be avoided:	Not required	Not required	Not required
Degree to which the impact can be managed:	Not required	Not required	Not required
Degree to which the impact can be mitigated:	Not required	Not required	Not required
Proposed mitigation:	None	None	None
Residual impacts:	None	None	None
Cumulative impact post mitigation:	Medium positive	Medium positive	Medium positive
Significance rating of impact after mitigation:	Medium positive	Medium positive	Medium positive

15.2 During Construction Phase

	Alternative 1 (110ha)	Alternative 2 (preferred)(63. 82ha)	No-Go Option
Potential impact and risk:	**Loss of vegetation and ecological processes**		
Potential impact and risk (description):	Loss of 110 ha of vegetation and associated ecological functioning	Loss of 63.82 ha and associated ecological functioning	None
Nature of impact:	Negative	Negative	Neutral
Extent and duration of impact:	Local and permanent	Local and permanent	N/A
Consequence of impact or risk:	All vegetation within the development footprint will be lost, including within the drainage lines and rocky areas.	All vegetation within the development footprint will be lost.	None
Probability of occurrence:	Definite	Definite	High
Degree to which the impact may cause irreplaceable loss of resources:	Significant loss	Moderate loss	Very low
Degree to which the impact can be reversed:	Irreversible	Irreversible	N/A
Indirect impacts:	None	None	None
Cumulative impact prior to mitigation:	Low	Low	N/A
Significance rating of impact prior to mitigation	High negative	Medium negative	Neutral
Degree to which the impact can be avoided:	Unavoidable – low	Unavoidable – low	N/A
Degree to which the impact can be managed:	Unmanageable - low	Unmanageable - low	N/A
Degree to which the impact can be mitigated:	Moderate (the impact can be partly mitigated)	Not mitigated at all	N/A
Proposed mitigation:	Avoid all High and Medium sensitivity areas including buffers (i.e. Alternative 2)	None proposed	N/A
Residual impacts:	Low	Low	N/A
Cumulative impact post mitigation:	Medium negative	Low negative	N/A
Significance rating of impact after mitigation	Medium negative	Low negative	Neutral

	Alternative 1 (110ha)	Alternative 2 (preferred)(63. 82ha)	No-Go Option
Potential impact and risk:	**Loss of Species of Conservation Concern**		
Potential impact and risk (description):	No SCC would be impacted	No SCC would be impacted	None
Nature of impact:	Neutral	Neutral	Neutral
Extent and duration of impact:	None	None	N/A
Consequence of impact or risk:	Not significant	Not significant	None

Probability of occurrence:	Probable	Probable	Highly probable
Degree to which the impact may cause irreplaceable loss of resources:	Very low	Very low	Very low
Degree to which the impact can be reversed:	N/A	N/A	N/A
Indirect impacts:	None	None	None
Cumulative impact prior to mitigation:	Low	Low	N/A
Significance rating of impact prior to mitigation	Not significant	Not significant	Neutral
Degree to which the impact can be avoided:	N/A	N/A	N/A
Degree to which the impact can be managed:	N/A	N/A	N/A
Degree to which the impact can be mitigated:	N/A	N/A	N/A
Proposed mitigation:	None proposed	None proposed	N/A
Residual impacts:	Low	Low	N/A
Cumulative impact post mitigation:	Low	Low	N/A
Significance rating of impact after mitigation	Not significant	Not significant	Neutral

	Alternative 1 (110ha)	**Alternative 2 (preferred)(63. 82ha)**	**No-Go Alternative**
Potential impact and risk:	**Impacts of soil preparation on freshwater features within proposed development footprint(s)**		
Nature of impact:	Negative.	Negative.	No impact
Extent and duration of impact:	Local to Regional. Permanent.	Local to Regional. Permanent.	
Consequence of impact or risk:	Deterioration of local and regional freshwater features.	Deterioration of local and regional freshwater features.	
Probability of occurrence:	Definite	Highly Probable	
Degree to which the impact may cause irreplaceable loss of resources:	Medium	Medium	
Degree to which the impact can be reversed:	Irreversible	Partially Reversible	
Cumulative impact prior to mitigation:	Very High negative	Medium negative	
Significance rating of impact prior to mitigation:	Very High negative	Medium negative	
Degree to which the impact can be avoided:	Unavoidable	Moderate - Low	
Degree to which the impact can be managed:	Unmanageable	Moderate	
Degree to which the impact can be mitigated:	None	Low	
Proposed mitigation:			
Residual impacts:	None	• Preserve drainage lines as much as possible. • Preserve buffer zones as much as possible.	

		• Prevent loose soil and sediments from moving down the drainage line along with storm water	
Cumulative impact post mitigation:	Very High negative	Low – Medium negative	
Significance rating of impact after mitigation:	Very High negative	Low – Medium negative	

	Alternative 1 (110ha)	**Alternative 2 (preferred)(63. 82ha)**	**No-Go Alternative**
Potential impact and risk:	**Impacts of laying irrigation pipeline on freshwater features**		
Nature of impact:	Negative.	Negative.	No impact
Extent and duration of impact:	Local to Regional. Permanent.	Local to Regional. Permanent.	
Consequence of impact or risk:	Deterioration of local and regional freshwater features.	Deterioration of local and regional freshwater features.	
Probability of occurrence:	Definite	Highly Probable	
Degree to which the impact may cause irreplaceable loss of resources:	Low	Low	
Degree to which the impact can be reversed:	Partially reversible	Partially reversible	
Cumulative impact prior to mitigation:	High negative	High negative	
Significance rating of impact prior to mitigation:	High negative	High negative	
Degree to which the impact can be avoided:	Moderate	Moderate	
Degree to which the impact can be managed:	Moderate	Moderate	
Degree to which the impact can be mitigated:	Low	Low	
Proposed mitigation:	• Level and landscape the ground immediately after trenching. • Prevent loose soil washing down the sub-catchment along with stormwater. • Prevent erosion on the riverbank at the pump • Allow at least 1m of overburden where the pipe crosses drainage lines.		
Residual impacts:	None	None	
Cumulative impact post mitigation:	Medium negative	Medium negative	
Significance rating of impact after mitigation:	Low negative	Low negative	

	Alternative 1 (110ha)	**Alternative 2 (preferred)(63. 82ha)**	**No-Go Alternative**
Potential impact and risk:	**Proliferation of alien vegetation**		
Nature of impact:	Negative.	Negative.	Negative.
Extent and duration of impact:	Local to Regional. Short term to Long term.	Local to Regional. Short term to Long term.	Local to Regional. Short term to Long term.

Consequence of impact or risk:	Low negative	Low negative	Low negative
Probability of occurrence:	Highly Probable	Highly Probable	Highly Probable
Degree to which the impact may cause irreplaceable loss of resources:	Medium	Medium	Medium
Degree to which the impact can be reversed:	Fully Reversible	Fully Reversible	Fully Reversible
Cumulative impact prior to mitigation:	Very High negative	Very High negative	Very High negative
Significance rating of impact prior to mitigation:	High negative	High negative	High negative
Degree to which the impact can be avoided:	High	High	High
Degree to which the impact can be managed:	High	High	High
Degree to which the impact can be mitigated:	High	High	High
Proposed mitigation:	An Alien Vegetation Control programme should be implemented.	An Alien Vegetation Control programme should be implemented.	An Alien Vegetation Control programme should be implemented.
Residual impacts:	None	None	None
Cumulative impact post mitigation:	Very Low negative to insignificant	Very Low negative to insignificant	Medium Low negative
Significance rating of impact after mitigation:	Very Low negative to insignificant	Very Low negative to insignificant	Medium negative

	Alternative 1 (110ha)	**Alternative 2 (preferred)(63. 82ha)**	**No-Go Alternative**
Potential impact and risk:	**Impact on terrestrial fauna**		
Nature of impact:	Negative.	Negative.	No impact during construction phase
Extent and duration of impact:	Local. Permanent.	Local. Permanent.	-
Consequence of impact or risk:	Development footprint will lost to faunal elements.	Development footprint will lost to faunal elements.	-
Probability of occurrence:	Definite	Definite	-
Degree to which the impact may cause irreplaceable loss of resources:	Medium	Medium	-
Degree to which the impact can be reversed:	Partially Reversible	Partially Reversible	
Cumulative impact prior to mitigation:	Medium negative	Low – Medium negative	-
Significance rating of impact prior to mitigation:	High negative	Low – Medium negative	-
Degree to which the impact can be avoided:	Low	Low	-
Degree to which the impact can be managed:	Low	Low	
Degree to which the impact can be mitigated:	Low	Low	-
Proposed mitigation:	No mitigation measure is relevant other than complete avoidance.	No mitigation measure is relevant other than complete avoidance.	

Residual impacts:	None	None	-
Cumulative impact post mitigation:	High negative	Low – Medium negative	-
Significance rating of impact after mitigation:	High negative	Low – Medium negative	-

	Alternative 1 (110ha)	**Alternative 2 (preferred)(63. 82ha)**	**No-Go Alternative**
Potential impact and risk:	**Potential noise impact**		
Nature of impact:	Negative.	Negative.	No impact during construction phase
Extent and duration of impact:	Local. Short term	Local. Short term	-
Consequence of impact or risk:	None	None	-
Probability of occurrence:	Probable	Probable	-
Degree to which the impact may cause irreplaceable loss of resources:	No loss	No loss	-
Degree to which the impact can be reversed:	Irreversible	Irreversible	-
Cumulative impact prior to mitigation:	Negligible	Negligible	-
Significance rating of impact prior to mitigation:	Very Low negative	Very Low negative	-
Degree to which the impact can be avoided:	Low	Low	-
Degree to which the impact can be managed:	Low	Low	-
Degree to which the impact can be mitigated:	Low	Low	-
Proposed mitigation:	• Construction activities should be restricted to working hours. • Construction vehicles should have noise restricting mechanism on them.	• Construction activities should be restricted to working hours. Construction vehicles should have noise restricting mechanism on them.	
Residual impacts:	None	None	-
Cumulative impact post mitigation:	Very Low negative to insignificant	Very Low negative to insignificant	-
Significance rating of impact after mitigation:	Very Low negative to insignificant	Very Low negative to insignificant	-

	Alternative 1 (110ha)	**Alternative 2 (preferred)(63. 82ha)**	**No-Go Alternative**
Potential impact and risk:	**Potential visual impact**		
Nature of impact:	Negative.	Negative.	No impact during construction phase
Extent and duration of impact:	Local. Short term	Local. Short term	-
Consequence of impact or risk:	None	None	-

Probability of occurrence:	Probable	Probable	-
Degree to which the impact may cause irreplaceable loss of resources:	No loss	No loss	-
Degree to which the impact can be reversed:	Irreversible	Irreversible	-
Cumulative impact prior to mitigation:	Medium negative	Medium negative	-
Significance rating of impact prior to mitigation:	Low negative	Low negative	-
Degree to which the impact can be avoided:	Low	Low	-
Degree to which the impact can be managed:	Low	Low	-
Degree to which the impact can be mitigated:	Low	Low	-
Proposed mitigation:	Construction activities should be restricted to the authorised development footprint(s).	Construction activities should be restricted to the authorised development footprint(s).	
Residual impacts:	None	None	-
Cumulative impact post mitigation:	Low negative	Low negative	-
Significance rating of impact after mitigation:	Low negative	Low negative	-

	Alternative 1 (110ha)	**Alternative 2 (preferred)(63. 82ha)**	**No-Go Alternative**
Potential impact and risk:	**Dust nuisance due to construction activities**		
Nature of impact:	Negative.	Negative.	No impact during construction phase
Extent and duration of impact:	Local. Short term	Local. Short term	-
Consequence of impact or risk:	None	None	-
Probability of occurrence:	Probable	Probable	-
Degree to which the impact may cause irreplaceable loss of resources:	No loss	No loss	-
Degree to which the impact can be reversed:	Irreversible	Irreversible	-
Cumulative impact prior to mitigation:	Negligible	Negligible	-
Significance rating of impact prior to mitigation:	Very Low negative	Very Low negative	-
Degree to which the impact can be avoided:	Low	Low	-
Degree to which the impact can be managed:	Low	Low	-
Degree to which the impact can be mitigated:	Low	Low	-
Proposed mitigation:	All exposed soils must be protected for the duration of the construction phase with a suitable geotextile (e.g. Geojute or hessian sheeting) in order to prevent dust generation resulting in vegetation smothering and sedimentation of the watercourses. This is especially important since the		

	surrounding landscape is utilised for harvestable fruits/crops that may be sensitive to excessive dust.		
Residual impacts:	None	None	-
Cumulative impact post mitigation:	Very Low negative to insignificant	Very Low negative to insignificant	-
Significance rating of impact after mitigation:	Very Low negative to insignificant	Very Low negative to insignificant	-

	Alternative 1 (110ha)	**Alternative 2 (preferred)(63. 82ha)**	**No-Go Alternative**
Potential impact and risk:	**Economic and Socio-economic impacts**		
Nature of impact:	Positive.	Positive.	Negative from an economic and socio-economic perspective
Extent and duration of impact:	Local. Short Term	Local. Short Term	-
Consequence of impact or risk:	Contribute to economic vitality	Contribute to economic vitality	-
Probability of occurrence:	Definite	Definite	-
Degree to which the impact may cause irreplaceable loss of resources:	No loss	No loss	-
Degree to which the impact can be reversed:	Not required	Not required	-
Cumulative impact prior to mitigation:	Very High positive	Very High positive	-
Significance rating of impact prior to mitigation:	Very High positive	Very High positive	-
Degree to which the impact can be avoided:	Not needed	Not needed	-
Degree to which the impact can be managed:	Not needed	Not needed	-
Degree to which the impact can be mitigated:	Not needed	Not needed	-
Proposed mitigation:	-	-	
Residual impacts:	None	None	-
Cumulative impact post mitigation:	Very High positive	Very High positive	-
Significance rating of impact after mitigation:	Very High positive	Very High positive	

15.3 During Operational Phase

	Alternative 1 (110ha)	**Alternative 2 (preferred)(63. 82ha)**	**No-Go Option**
Impact	**Spread of exotic species into surrounding vegetation**		
Potential impact and risk (description):	Potential degradation and loss of species diversity of CBA 1 and CBA 2 areas.		None
Nature of impact:	Negative	Negative	Neutral
Extent and duration of impact:	Local and Long-term	Local and Long-term	N/A

Consequence of impact or risk:	Medium	Medium	None
Probability of occurrence:	Probable	Probable	High
Degree to which the impact may cause irreplaceable loss of resources:	Low	Low	Very low
Degree to which the impact can be reversed:	Reversible	Reversible	N/A
Indirect impacts:	None	None	None
Cumulative impact prior to mitigation:	Low	Low	N/A
Significance rating of impact prior to mitigation	Medium negative	Medium negative	Neutral
Degree to which the impact can be avoided:	Avoidable	Avoidable	N/A
Degree to which the impact can be managed:	Manageable	Manageable	N/A
Degree to which the impact can be mitigated:	Moderate (the impact can be partly mitigated)	Moderate (the impact can be partly mitigated)	N/A
Proposed mitigation:	Monitor surrounding areas for spread of exotic species and remove where necessary.	Monitor surrounding areas for spread of exotic species and remove where necessary.	N/A
Residual impacts:	Low	Low	N/A
Cumulative impact post mitigation:	Low negative	Low negative	N/A
Significance rating of impact after mitigation	Low negative	Low negative	Neutral

	Alternative 1 (110ha)	**Alternative 2 (preferred)(63. 82ha)**	**No-Go Option**
Impact	**Loss of Species of Conservation Concern (SCC)**		
Potential impact and risk (description):	No SCC would be impacted	No SCC would be impacted	None
Nature of impact:	Neutral	Neutral	Neutral
Extent and duration of impact:	None	None	N/A
Intensity	None	None	Neutral
Consequence of impact or risk:	Not significant	Not significant	None
Probability of occurrence:	Probable	Probable	Highly probable
Degree to which the impact may cause irreplaceable loss of resources:	Very low	Very low	Very low
Degree to which the impact can be reversed:	N/A	N/A	N/A
Indirect impacts:	None	None	None
Cumulative impact prior to mitigation:	Low	Low	N/A
Significance rating of impact prior to mitigation	Not significant	Not significant	Neutral

Degree to which the impact can be avoided:	N/A	N/A	N/A
Degree to which the impact can be managed:	N/A	N/A	N/A
Degree to which the impact can be mitigated:	N/A	N/A	N/A
Proposed mitigation:	None proposed	None proposed	N/A
Residual impacts:	Low	Low	N/A
Cumulative impact post mitigation:	Low	Low	N/A
Significance rating of impact after mitigation	Not significant	Not significant	Neutral

	Alternative 1 (110ha)	**Alternative 2 (preferred)(63. 82ha)**	**No-Go Alternative**
Potential impact and risk:	**Impact of irrigation on freshwater features**		
Nature of impact:	Negative.	Negative.	No impact
Extent and duration of impact:	Local to Regional. Permanent.	Local to Regional. Permanent.	
Consequence of impact or risk:	Deterioration of local and regional freshwater features.	Deterioration of local and regional freshwater features.	
Probability of occurrence:	Definite	Highly Probable	
Degree to which the impact may cause irreplaceable loss of resources:	Medium	Medium	
Degree to which the impact can be reversed:	Irreversible	Partially Reversible	
Cumulative impact prior to mitigation:	Very High negative	Medium negative	
Significance rating of impact prior to mitigation:	Very High negative	Medium negative	
Degree to which the impact can be avoided:	Unavoidable	Moderate - Low	
Degree to which the impact can be managed:	Unmanageable	Moderate	
Degree to which the impact can be mitigated:	None	Low	
Proposed mitigation:	No mitigation as drainage lines within the development footprint will be removed.	• Do not over-irrigate. • Monitor soil moisture levels and irrigate accordingly. • Monitor and record agricultural return flow. • Prevent erosion of road and agricultural areas. • Repair eroded areas.	
Residual impacts:	None	None	
Cumulative impact post mitigation:	Very High negative	Low negative	
Significance rating of impact after mitigation:	Very High negative	Low negative	

	Alternative 1 (110ha)	Alternative 2 (preferred)(63. 82ha)	No-Go Option
Potential impact and risk:	**Proliferation of alien vegetation**		
Nature of impact:	Negative.	Negative.	No impact
Extent and duration of impact:	Local to Regional. Short term to Long term.	Local to Regional. Short term to Long term.	
Consequence of impact or risk:	Loss of natural habitat	Loss of natural habitat	
Probability of occurrence:	Highly Probable	Highly Probable	
Degree to which the impact may cause irreplaceable loss of resources:	Medium	Medium	
Degree to which the impact can be reversed:	Fully Reversible	Fully Reversible	
Cumulative impact prior to mitigation:	Very High negative	Very High negative	
Significance rating of impact prior to mitigation:	High negative	High negative	
Degree to which the impact can be avoided:	High	High	
Degree to which the impact can be managed:	High	High	
Degree to which the impact can be mitigated:	High	High	
Residual impacts:	None	None	
Cumulative impact post mitigation:	Very Low negative to insignificant	Very Low negative to insignificant	
Significance rating of impact after mitigation:	Very Low negative to insignificant	Very Low negative to insignificant	

	Alternative 1 (110ha)	Alternative 2 (preferred)(63. 82ha)	No-Go Alternative
Potential impact and risk:	**Potential noise impact**		
Nature of impact:	Negative.	Negative.	No impact during construction phase
Extent and duration of impact:	Local. Short term	Local. Short term	-
Consequence of impact or risk:	None	None	-
Probability of occurrence:	Probable	Probable	-
Degree to which the impact may cause irreplaceable loss of resources:	No loss	No loss	-
Degree to which the impact can be reversed:	Irreversible	Irreversible	-
Cumulative impact prior to mitigation:	Negligible	Negligible	-
Significance rating of impact prior to mitigation:	Very Low negative	Very Low negative	-
Degree to which the impact can be	Low	Low	-

avoided:			
Degree to which the impact can be managed:	Low	Low	-
Degree to which the impact can be mitigated:	Low	Low	-
Proposed mitigation:	• Construction activities should be restricted to working hours. • Construction vehicles should have noise restricting mecha-nism on them.	• Construction activities should be restricted to working hours. Construction vehicles should have noise restricting mechanism on them.	
Residual impacts:	None	None	-
Cumulative impact post mitigation:	Very Low negative to insignificant	Very Low negative to insignificant	-
Significance rating of impact after mitigation:	Very Low negative to insignificant	Very Low negative to insignificant	-

	Alternative 1 (110ha)	**Alternative 2 (preferred)(63. 82ha)**	**No-Go Alternative**
Potential impact and risk:	**Potential visual impact**		
Nature of impact:	Negative.	Negative.	No impact during construction phase
Extent and duration of impact:	Local. Short term	Local. Short term	-
Consequence of impact or risk:	None	None	-
Probability of occurrence:	Probable	Probable	-
Degree to which the impact may cause irreplaceable loss of resources:	No loss	No loss	-
Degree to which the impact can be reversed:	Irreversible	Irreversible	-
Cumulative impact prior to mitigation:	Medium negative	Medium negative	-
Significance rating of impact prior to mitigation:	Low negative	Low negative	-
Degree to which the impact can be avoided:	Low	Low	-
Degree to which the impact can be managed:	Low	Low	-
Degree to which the impact can be mitigated:	Low	Low	-
Proposed mitigation:	Construction activities should be restricted to the authorised development footprint(s).	Construction activities should be restricted to the authorised development footprint(s).	
Residual impacts:	None	None	-
Cumulative impact post mitigation:	Low negative	Low negative	-
Significance rating of impact after mitigation:	Low negative	Low negative	-

	Alternative 1 (110ha)	Alternative 2 (preferred)(63. 82ha)	No-Go Option
Potential impact and risk:	**Economic benefits & Increased farming capacity**		
Nature of impact:	Positive.	Positive.	Negative from economic perspective
Extent and duration of impact:	Region. Long Term	Region. Long Term	Local. Long term.
Probability of occurrence:	Definite	Definite	Definite
Degree to which the impact may cause irreplaceable loss of resources:	No loss	No loss	-
Degree to which the impact can be reversed:	Not required	Not required	-
Cumulative impact prior to mitigation:	Very High positive	Very High positive	-
Significance rating of impact prior to mitigation:	Very High positive	Very High positive	-
Degree to which the impact can be avoided:	Not needed	Not needed	-
Degree to which the impact can be managed:	Medium	Medium	-
Degree to which the impact can be mitigated:	Not needed	Not needed	-
Proposed mitigation:	Purchase goods from local businesses	Purchase goods from local businesses	-
Residual impacts:	None	None	-
Cumulative impact post mitigation:	Very High positive	Very High positive	Very High negative from an economic perspective
Significance rating of impact after mitigation:	Very High positive	Very High positive	Very High negative from an economic perspective

	Alternative 1 (110ha)	Alternative 2 (preferred)(63. 82ha)	No-Go Option
Potential impact and risk:	**Socio-economic benefits (e.g. job creation)**		
Nature of impact:	Positive.	Positive.	Negative from economic perspective
Extent and duration of impact:	Region. Long Term	Region. Long Term	Local. Long term.
Probability of occurrence:	Definite	Definite	Definite
Degree to which the impact may cause irreplaceable loss of resources:	No loss	No loss	-
Degree to which the impact can be reversed:	Not required	Not required	-
Cumulative impact prior to mitigation:	Very High positive	Very High positive	-
Significance rating of impact prior to mitigation:	Very High positive	Very High positive	-
Degree to which the impact can be avoided:	Not needed	Not needed	-

Degree to which the impact can be managed:	Medium	Medium	-
Degree to which the impact can be mitigated:	Not needed	Not needed	-
Proposed mitigation:	Purchase goods from local businesses	Purchase goods from local businesses	-
Residual impacts:	None	None	-
Cumulative impact post mitigation:	Very High positive	Very High positive	Very High negative from a socio-economic perspective
Significance rating of impact after mitigation:	Very High positive	Very High positive	Very High negative from a socio-economic perspective

16. Assumptions, Uncertainties & Gaps in Knowledge

16.1 EAP Assumptions, Uncertainties & Gaps in Knowledge

- It is assumed that no construction and operational activities will take place outside the proposed development foot-prints.
- It is assumed that all the relevant mitigation measures specified in this report will be implemented on a long term basis, in order to ensure that the impact on the receiving environment is minimized to an acceptable level.
- It is assumed that all information on which this report is based is both correct and truthful and without omission.

The recommendations regarding the construction and management of the proposed development will be followed.

In undertaking the EIA application the EAP utilized information available at the time of the study. Consequently, this EIAR has assessed the potential environmental impacts associated with the proposed development as presently understood. Should the nature and significance of the impacts presented change, or new information comes to light through means of the public participation process, the necessary changes will be made to the information that is presented in order for the Competent Authority to make an accountable environmental decision on the basis of this Report.

No uncertainties exist.

16.2 Freshwater Ecologist's Assumptions, Uncertainties & Gaps in Knowledge

Drafted by the Freshwater Specialist:

"The landscape around the Lower Orange River is covered with a succession of drainage lines, each with a sub-catchment. Vegetation often referred to as tree lines are higher and denser than that of the surrounding otherwise arid and often barren landscape mark these drainage lines. Shallow groundwater migrating subterraneous down drainage lines maintains tree lines. It is maintained that these tree lines add to habitat variability and to biodiversity. Species that occur in the area would have been absent, were it not for the drainage lines and the associated tree lines. Tree lines offer habitat, ecological connectivity and migration routes. The drainage lines and their sub-catchments in the Lower Orange River region constitute a unique habitat that sets it apart from any other region. This is not a mere assumption.

However, research is required to understand to what extent drainage lines and sub-catchments contribute to biodiversity.

Large-scale agriculture changed the landscape. These changes are concentrated around the Orange River but are now penetrating deeper into the landscape away from the river as water is pumped further away for the establishment of new vineyards. As land becomes scarce and expensive next to the river and as the demand for product escalates it becomes economically viable to pump water for irrigation over longer distances. The taxation system as applied to agriculture favours perpetual expansion of agricultural land.

It now has become necessary to understand how this expansion impacts on biodiversity and what exactly stands to be lost, for which in-depth ecological research is required. Sub-catchments must be classified among other according to size, aridity, scale of current impacts ecological significance and importance. Research would indicate which of these sub-catchments or parts of sub-catchments should be selected and conserved. Policy and legislation must be based on research. Not many sub-catchments are left untouched. All would be lost if curbs are not administered. At this stage science is unable to explain what would be lost because of gaps in current knowledge."

16.3 Botanist Assumptions, Uncertainties & Gaps in Knowledge

Copied from the Botanical Impact Assessment Report:

The site visit was carried out in autumn, at the peak flowering period (this is near the end of the summer rains when most species are in flower). The timing of the study is therefore regarded as fair, however, many species were not flower making species level identification challenging. The overall condition of the site can be still be determined and the confidence in the findings is high.

16.4 Heritage Specialist Assumptions, Uncertainties & Gaps in Knowledge

Heritage Specialist:

It is assumed that the description of the proposed project, as provided by the client, is accurate. Furthermore, it is assumed that the public consultation process undertaken as part of the Environmental Impact Assessment (EIA) is comprehensive and does not have to be repeated as part of the heritage impact assessment.

The significance of the sites, structures and artefacts is determined by means of their historical, social, aesthetic, technological and scientific value in relation to their uniqueness, condition of preservation and research potential. The various aspects are not mutually exclusive, and the evaluation of any site is done with reference to any number of these aspects. Cultural significance is site-specific and relates to the content and context of the site.

All possible care has been taken during the comprehensive field survey and intensive desktop study to identify sites of cultural importance within the development areas. However, it is essential to note that some heritage sites may have been missed due to their subterranean nature or due to dense vegetation cover. No subsurface investigation (i.e. excavations or sampling) were undertaken since a permit from SAHRA is required for such activities. Therefore, should any heritage features and/or objects such as architectural features, stone tool scatters, artefacts, human remains, or fossils be uncovered or observed during construction, operations must be stopped, and a qualified archaeologist contacted for an assessment of the find. Observed or located heritage features and/or objects may not be disturbed or removed in any way until such time that the heritage specialist has been able to assess the significance of the site (or material) in question.

Palaeontological Specialist:

The focal point of geological maps is the geology of the area and the sheet explanations were not meant to focus on palaeontological heritage. Many inaccessible regions of South Africa have never been reviewed by palaeontologists and data is generally based on aerial photographs alone. Locality and geological information of museums and universities databases have not been kept up to date or data collected in the past have not always been accurately documented.

Comparable Assemblage Zones in other areas is sourced to provide information on the existence of fossils in an area which was not documented in the past. When using similar Assemblage Zones and geological formations for Desktop studies it is generally assumed that exposed fossil heritage is present within the footprint. A field-assessment will thus improve the accuracy of the desktop assessment.

17. Recommendations & Mitigation measures

The following mitigation measures must be enforced should the Preferred Alternative be approved:

17.1 Construction phase mitigation measures

- The Medium and High sensitivity areas including their buffers and the areas between the buffers that are too small to develop must be excluded from the development footprint.
- If fossil remains are discovered during any phase of construction, either on the surface or below, the ECO in charge of these developments must be alerted immediately. These discoveries should be protected (if possible, in situ), and the ECO must report to SAHRA so that appropriate mitigation can be carried out by a professional palaeontologist**.**

17.2 Operational phase mitigation measures

- Alien vegetation control measures should be carried out according to the guidelines as laid out on the Working for Water website (https://www.dwaf.gov.za/wfw/Control/). Follow-up alien vegetation control measures will need to be ongoing and for several years at least, depending on the site conditions, and rate and success of regeneration or revegetation.
- Monitoring and remediation of soil erosion is also required.
- Prevent over-irrigation: monitor soil moisture levels and irrigate accordingly.
- Monitor and record agricultural return flow.
- Prevent erosion of road and agricultural areas.

18. Environmental Impact Statement

Bakenrant Boerdery Pty. Ltd. (the Applicant) appointed The Eco Balance Planning Co. as the independent environmental assessment practitioner (EAP) to coordinate and facilitate the Scoping and Environmental Impact Assessment process for an application for Environmental Authorisation (EA) for the proposed agricultural development on Erf 359, Kakamas-North Settlement, Kai !Garib Local Municipality, ZF Mgcawu District Municipality, Northern Cape.

The property falls within the Kai !Garib Local Municipality approximately 82km south-west of Upington and 17 km north-west of Kakamas. The study area lies adjacent to the east of the road to Riemvasmaak and to the north of the Orange River. The other major roads in the area are N14 and the R 359. The study area is located to the north of existing agricultural developments on currently undeveloped land. The site can be accessed via the Kakamas - Riemvasmaak access road.

The proposed development entails the removal of natural vegetation for the commercial cultivation of table grapes.

The Application Form was submitted to the Department of Agriculture, Environmental Affairs, Rural Development & Land Reform on 15 November 2022 and acknowledged by the Department on 17 February 2022.

The Final Scoping Report was submitted to the Department on 14 July 2022 was accepted by the Department on 10 August 2022.

The final EIAR was submitted to the decision making authority on 09 November 2022.

Legislative requirements:

National Environmental Management Act (107 of 1998)

The National Environmental Management Act (107 of 1998) as amended, and the Environmental Impact Assessment Regulations (2014) as amended, govern the process of applying for environmental authorisation for certain developments.

Lists of activities which require environmental authorisation are published in three listing notices (GNR 324, 325, and 327 of April 2017). Provision in the EIA Regulations is made for two forms of assessment: Basic Assessment and Scoping and EIA. The EIA regulations specify that:

- Activities identified in Listing Notice 1 (GNR 327 of 2017I requires Basic Assessment;
- Activities identified in Listing Notice 2 (GNR 325 of 2017) are subject to a Scoping and EIA;
- Activities identified in Listing Notice 3 (GNR 324 of 2017) requires Basic Assessment.

Where activities have been identified in Listing Notice 2, Scoping and EIA must be undertaken. This application is in the process of following a Scoping/EIA Process.

The listed activities associated with the proposed development are listed below:

Government Notice R. 327 Activity No(s):	**Describe the relevant Basic Assessment Activity(ies) in writing as per Listing Notice 1 (GN No. R. 327)**	**Describe the portion of the development as per the project description that relates to the applicable listed activity.**
9	The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water— (iii) with an internal diameter of 0,36 metres or more; or (iv) with a peak throughput of 120 litres per second or more; excluding where— (c) such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve or railway line reserve; or (d) where such development will occur within an urban area.	An irrigation pipeline with a diameter of 500mm is included in the development.
Government Notice R. 325 Activity No(s):	**Describe the relevant Scoping and EIA Activity(ies) in writing as per Listing Notice 2 (GN No. R. 325)**	**Describe the portion of the development as per the project description that relates to the applicable listed activity.**
15	The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for— (iii) the undertaking of a linear activity; or (iv) maintenance purposes undertaken in accordance with a maintenance management plan.	More than 20 hectares of indigenous vegetation will be cleared for agricultural purposes. The vegetation within the study area is fairly homogenous and a good representation of intact Kalahari Karroid Shrubland.
Government Notice R. 324 Activity No(s):	**Describe the relevant Basic Assessment Activity(ies) in writing as per Listing Notice 3 (GN No. R. 324)**	**Describe the portion of the development as per the project description that relates to the applicable listed activity.**
12	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. g. Northern Cape ii. Within critical biodiversity areas identified in bioregional plans.	More than 300 square metres of indigenous vegetation will be removed for agricultural purposes. The study area is mapped as followed: Critical Biodiversity Area 1: 14.5ha or 13.2%; Critical Biodiversity Area 2: 95.5ha or 86.8%. (**See Figure 11**.)

National Water Act (No. 36 of 1998) is to protect South Africa's water resources and aquatic ecosystems. Provisions are included in the Act requiring that a Water Use Licence be issued by the National Department of Water and Sanitation (DWS) prior to commencing or participating in activities defined as a water use in terms of Section 21 of the NWA. The Water Use License Application associated with the proposed development includes the following: 21(a) Taking of water. The Applicant has decided to commence with the Water Use Licence Application on reception of the Environmental Authorization.

National Heritage Resources Act (Act 25 of 1999)

The protection and management of South Africa's heritage resources are controlled by the National Heritage Resources Act (Act No. 25 of 1999). Heritage Western Cape (HWC) is the enforcing authority in the Western Cape, and is registered as a Stakeholder for this environmental process.

The following triggers in terms of the NHRA are applicable to the proposed development: Section 38 of the NHRA states the following:

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

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

(b) the construction of a bridge or similar structure exceeding 50m in length;

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

(i) exceeding 5 000 m^2 in extent.

The proposed pipeline will be over 300m in length and the total footprint of the proposed development exceeds the threshold of 5 000m^2 (Section 38(1)(c)(i)).

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

The Department of Agriculture, Fisheries and Forestry (DAFF) Directorate: Land Use and Soil Management administers and implement the Conservation of Agricultural Resources Act, (CARA) 43 of 1983. The Act is regarded as one of the principle Acts governing the protection of agricultural natural resources. The main aim of the Act is to control the utilization of natural agricultural resources to ensure the conservation of soil, water and vegetation, as well as the combating of alien and invasive plants. According to Section 1 of the Act, conservation of natural agricultural resources includes the protection, recovery as well as the reclamation thereof.

The objectives of CARA are provided for the conservation of the natural agricultural resources by the maintenance of the production potential of the land, by combating and prevention of erosion and weakening or destruction of the water resources, and by protecting the vegetation and combating weeds and invader plants.

The CARA–Application form was already completed and the Department of Agriculture, Land Reform & Rural Development will assess the Application form on reception of the Environmental Authorization.

According to the Vegetation Map of South Africa, Lesotho and Swaziland (SANBI, 2018) (VEGMAP), the vegetation types occurring in the study area are Kalahari Karroid Shrubland and Lower Gariep Broken Veld.

Kalahari Karroid Shrubland and Lower Gariep Broken Veld are listed as **Least Threatened** in The National List of Ecosystems that are Threatened and in Need of Protection. The ecosystems are listed as **Least Concern** in the NBA both with 99.3% still intact.

The following specialist studies were undertook as part of the process:

- Botanical Impact Assessment (Appendix 5);
- Phase 1 Heritage Impact Assessment (Archaeology and Palaeontology)(Appendix 6);
- Freshwater / Aquatic Impact Assessment (Appendix 7).

The conservation importance of all areas within the Northern Cape has been mapped in the Northern Cape Critical Biodiversity Area (CBA) Map (Northern Cape Department of Environment and Nature Conservation, 2016). The CBA map units are selected for conserving important habitats and biodiversity processes. The habitat categories are selected for various reasons and may include degraded or low quality vegetation, since they may serve as important biodiversity corridors between ecologically intact habitats. It is therefore important to ground-truth these areas and interpret the findings in relation to the objectives of the CBA Map:

- The greater part of this habitat has been classified as CBA 2 in the Northern Cape CBA map. This suggests that it is not considered as a conservation priority.
- The south and eastern parts of the site are mapped as CBA 1 sites. There are no obvious reasons for the distinction between CBA 2 to CBA 1. (It is likely that the change is due to the proximity to the Orange River. The reasons for the classification given in the CBA map that differ from the CBA 2 areas are as follows: "*Lower Gariep Alluvial Vegetation; Threatened species; Namakwa CBA2 and associated; and All natural wetlands.")*

The region is characterised by a dense system of mostly dry drainage lines. These drainage lines are driven by the very scant rainfall events, sudden and sometimes severe thunderstorms, spread out over millennia. Rainfall is interspersed by prolonged droughts. The shallow ground water that migrates along these drainage lines provides just enough moist for higher vegetation to take root and to hold on under these very harsh climatic conditions. Drainage lines are ecologically important, as it provides denser and higher vegetation in an otherwise barren landscape, contributing to habitat variation, biodiversity and migration routes. The upper sub-catchments of these drainage lines are mostly near-pristine, with only grazing.

Clearly, with the suggestion of Alternative 2, there is a conscious attempt to place the blocks away from the drainage lines, for which credit is due, to let the drainage lines pass between the blocks, wherever possible.

The impact of the new vineyard at Erf 359 is has a cumulative impact on the Orange River but is still negligible. The new vineyard is but a small speck and is not expected to change the dynamics in the river.

The Heritage Impact Assessment identified no significant heritage resources that may be impacted negatively by the proposed development:

- No significant heritage sites or features were identified within the surveyed sections of the areas earmarked for agricultural developments. Therefore the proposed development can continue.
- The cultural material recorded to the south of the proposed development footprints is of low significance and will not be affected by the development.
- Due to the low palaeontological significance of the area, no further palaeontological heritage studies, ground-truthing and/or specialist mitigation are required. It is considered that the development of the proposed development is deemed appropriate and feasible and will not lead to detrimental impacts on the palaeontological resources of the area.

The following alternatives are assessed:

- Alternative 1: The development of four parcels of land (approximately 110 hectares) for agricultural purposes (table grapes). Area 1 consists of 25.5ha, Area 2 of 31.7ha, Area 3 of 15ha, and Area 4 of 35ha.

- Preferred Alternative 2: The development of the same four parcels of land but only within the Low and Very low ecological sensitivee areas (i.e. excluding the Medium and High sensitivity areas including the recommended buffers) Preferred Alternative 2 amount to 63. 82hectares.
- An irrigation pipeline (diameter 500mm and length of approximately 3400m) is included in the proposal in order to supply water to the proposed table grapes. The pipeline will abstract water from an existing abstraction point at the Orange River with coordinates 28º38'35.80'S 20º26' 07.90"E .

Summary of the impacts:

	Alternative 1 (110ha)		**Alternative 2 (preferred)(63. 82ha)**		
	Prior to mitigation	**Post mitigation**	**Prior to mitigation**	**Post mitigation**	**No-Go Alternative**
During Planning & Design phase					
Economic and Socio-economic impact	Medium positive	Medium positive	Medium positive	Medium positive	Medium positive
During Construction phase					
Loss of vegetation and ecological processes	High negative	Medium negative	Medium negative	Low negative	Neutral
Loss of Species of Conservation Concern	Not significant	Not significant	Not significant	Not significant	Neutral
Impacts of soil preparation on freshwater features within proposed development footprint(s)	Very High negative	Very High negative	Medium negative	Low – Medium negative	No impact
Impacts of laying irrigation pipeline on freshwater features	High negative	Low negative	High negative	Low negative	No impact
Proliferation of alien vegetation	High negative	Very Low negative to insignificant	High negative	Very Low negative to insignificant	Medium negative
Impact on terrestrial fauna	High negative	High negative	Low – Medium negative	Low – Medium negative	No impact
Potential noise impact	Very Low negative	Very Low negative to insignificant	Very Low negative	Very Low negative to insignificant	No impact
Potential visual impact	Low negative	Low negative	Low negative	Low negative	No impact
Dust nuisance due to construction activities	Very Low negative	Very Low negative to insignificant	Very Low negative	Very Low negative to insignificant	No impact
Economic and Socio-economic impacts	Very High Positive	Very High Positive	Very High Positive	Very High Positive	High negative from an Economic and Socio-economic perspective
During operational phase					
Spread of exotic species into surrounding vegetation	Medium negative	Low negative	Medium negative	Low negative	Neutral
Loss of Species of Conservation Concern	Not significant	Not significant	Not significant	Not significant	Neutral

Impact of irrigation on freshwater features	Very High negative	Very High negative	Medium negative	Low negative	No impact
Proliferation of alien vegetation	Very High negative	Very Low negative to insignificant	Very High negative	Very Low negative to insignificant	No impact
Potential noise impact	Very Low negative	Very Low negative to insignificant	Very Low negative	Very Low negative to insignificant	No impact
Potential visual impact	Low negative	Low negative	Low negative	Low negative	No impact
Economic benefits & Increased farming capacity	Very High positive	Very High positive	Very High positive	Very High positive	High negative from an Economic perspective
Socio-economic benefits (e.g. job creation)	Very High positive	Very High positive	Very High positive	Very High positive	High negative from an Economic perspective

Public participation processes:

Tasks undertook in the Scoping Phase

Two public participation processes ("PPP") were implemented during the Scoping Phase, a 30day PPP on Pre- Application Draft Scoping Report and a 30 day PPP on the Draft Scoping Report.

PPP on Pre-Application Draft Scoping Report (03 May 2022 – 03 June 2022):

One notice board was fixed at the entrance to the property. This notice board contained all the required information plus contact details of the EAP should any I&AP require a copy of the Pre-Application Draft Scoping BAR.

Notification letters:

A notification letter as well as an electronic copy of the Pre-Application Scoping Report was send via email and WE TRANSFER to neighbours, municipal councillor as well as officials representing the following Organs of State: Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform, National Department of Agriculture, Forestry and Fisheries, Department of Water and Sanitation, Kakamas Water Users Association, Ngwao-Boswa Jwa Kapa Bokone / SAHRA (South African Heritage Resource Agency), ZF Mgcawu District Municipality & Kai !Garib Local Municipality.

The contact details of the EAP as well as information on how to obtain a copy of the Pre-Application Draft Scoping Report were detailed in the Notification Letters.

Newspaper advertisement:

An advertisement was placed in the Gemsbok newspaper of 28 April 2022 (indicating how and where I&AP's can register as well as information on where a copy of the Pre-Application Draft Scoping Report, including Appendices, can be accessed).

PPP on Draft Scoping Report (13 June 2022 – 13 July 2022):

A notification letter as well as an electronic copy of the Draft Scoping Report was sent via email and WE TRANSFER to registered I&AP's as well as officials representing the following Organs of State: Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform, National Department of Agriculture, Forestry and Fisheries, Department of Water and Sanitation, Kakamas Water Users Association, Ngwao-Boswa Jwa Kapa Bokone / SAHRA (South African Heritage Resource Agency), ZF Mgcawu District Municipality & Kai !Garib Local Municipality.

Comments received during the public participation processes of the Scoping phase were added to the Comment & Response Report.

PPP during EIAR phase

A notification letter as well as an electronic copy of the Draft EIA Report, including the EMP, will be send via email and WE TRANSFER to all registered Interested & Affected Parties.

The comments received from during the PPP will be added to the Comments and Response Report. This would take the form of an issues trail, which will summarise the issues raised and provided responses thereto.

Proof of the PPP conducted during the EIA phase of the application will be included in the Final EIAR.

Since the Applicant has the financial means to implement this proposed project, it is the opinion of the EAP that the application can be authorized provided that the following conditions are included in the EA:

- a suitably experienced Environment Control Officer ("ECO") must be appointed before construction commences;
- Implementation of the mitigation measures and recommendations in the EMP.

The proposed development will contribute to the economic viability of the farming area, agricultural produce will increase, current jobs will be secured and additional employment opportunities will be created for the local community. This will all contribute to the on-going sustainability of the farming operation.

AFFIRMATION BY EAP IN TERMS OF APPENDIX 2(1) OF THE EIA REGULATIONS, 2014 (AS AMENDED)

I, Susan de Kock (representing The ECO Balance Planning Co), as the appointed EAP to implement the required EIA-study for the proposed project, hereby declare that:

- I act/ed as the independent EAP in this application;
- regard the information contained in this report as it relates to our specialist input/study to be true and correct, and
- are fully aware of and meet the responsibilities in terms of NEMA, the Environmental Impact Assessment Regulations, 2017 and any specific environmental management Act, and that failure to comply with these requirements may constitute and result in disqualification;
- have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;

- have ensured that the names of all interested and affected parties that participated in terms of the specialist input/study were recorded in the register of interested and affected parties who participated in the public participation process; and
- have provided the competent authority with access to all information at my disposal regarding the application, whether such information is favorable to the applicant or not.

09 November 2022

Signature of EAP Date:

The ECO Balance Planning Co.

Company

AFFIRMATION BY PROPONENT

I, Frans Hendrik Burger, ID Number: ……., in my personal capacity or duly authorised thereto hereby declare/affirm that:

- the information provided or to be provided as part of this Environmental Impact Assessment Report, is true and correct;
- I am fully aware of my responsibilities in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"), the Environmental Impact Assessment ("EIA") Regulations, as defined in Chapter 5 of NEMA (as amended) and any relevant Specific Environmental Management Acts and that failure to comply with these requirements may constitute an offence in terms of relevant environmental legislation;
- I am aware that is an offence in terms of Section 24F of the NEMA should I commence with a listed activity prior to obtaining an Environmental Authorisation;
- I am aware of my general duty of care in terms of Section 28 of the NEMA;
- I appointed the Environmental Assessment Practitioner ("EAP") which:

- meets all the requirements in terms of Regulation 13 of the NEMA EIA Regulations;
- meets all the requirements other than the requirement to be independent in terms of Regulation 13 of the NEMA EIA Regulations, but a review EAP has been appointed who does meet all the requirements of Regulation 13 of the NEMA EIA Regulations;

- I will provide the EAP and specialists, where applicable, and the Competent Authority with access to all information at my disposal that is relevant to the application;

- I will be responsible for the costs incurred in complying with the NEMA EIA Regulations and other environmental legislation including but not limited to –
  - costs incurred for the appointment of the EAP or any person contracted by the EAP;
  - costs in respect of any fee prescribed by the Minister or MEC in respect of the NEMA EIA Regulations;
  - costs in respect of specialist reviews; and
  - the provision of security to ensure compliance with applicable management and mitigation measures; and

- I am responsible for complying with conditions that may be attached to any decision(s) issued by the Competent Authority; hereby indemnify, the government of the Republic, the Competent Authority and all its officers, agents and employees, from any liability arising out of the content of any report, any procedure or any action for which the Applicant or EAP is responsible in terms of the NEMA EIA Regulations and any Specific Environmental Management Act.

Signature of the Proponent: Date:

Name of company (if applicable):

APPENDIX 1. Copy of Title Deed

APPENDIX 2. EAP CV

APPENDIX 3. Coordinates of the 4 areas included in Layout Alternative 1.

APPENDIX 4. PUBLIC PARTICIPATION

Appendix 4.1 Public Participation on Draft Scoping Report

Appendix 4.1.1 Copy of letter forwarded to identified I&AP's

Appendix 4.1.2 Proof of postage for Appendix 4.1.1

Appendix 4.1.3 List of Identified I&AP's.

Neighbours		
Afdraai	Mr. C. du Plessis	charl@omdraai.co.za
CapeSpan	Geraldine Ekkerd Stefanie Wandrag	omdraai@capespanfarms.co.za Stefanie@capespanfarms.co.za
Tierkop	Rooipad	anel@rooipad.co.za
Organs of State / State Departments		
Department of Agriculture, Environmental Affairs, Rural Development and Land Reform	Mr. O. Seshupo Ms Dineo Moleko Ms Gail Letlemela	olebileseshupo@gmail.com dmoleko@ncpg.gov.za gaildenc@gmail.com
Department of Water & Sanitation	Ms Vhonani Ramugondo Ms Alexia Hlengani Mr Shaun Cloete	ramugondov@dws.gov.za HlenganiA@dws.gov.za CloeteS@dws.gov.za
Department of Agriculture	Mr. Nico Toerien	ntoerien1@gmail.com
SAHRA (electronic submission / upload via Ubique Heritage Consultants)	Mr. Jan Engelbrecht	jan@ubiquecrm.com heidi@ubiquecrm.com
Department: Forestry, Fisheries and the Environment	Ms. Jacoline Mans	jmans@dffe.gov.za
Local & District Municipalities		
Kai !Garib Municipality	Municipal Manager (Mr. Mac Kay)	mm@kaigarib.gov.za j.mackay123456@gmail.com marshallmatthys@gmail.com
	Town Planning (Mr. Mathys)	j.mackay123456@gmail.com
	Roads Department (Mr Minnie)	Via mm@kaigarib.gov.za
	Ward Councillor : Ms. Ethel Vass	Ethelvas97@gmail.com
ZM Mgcawu District Municipality	Municipal Manager (Mr. Gilbert Lategan)	admin@zfm-dm.gov.za gil@zfm-dm.gov.za
Local Water Users Association		
Kakamas Water Users Association	The Chairperson (GJJ van Niekerk)	ceo@kakamaswgv.co.za

Appendix 4.2 Public Participation on Final Scoping Report

Appendix 4.2.1 Copy of letter forwarded to registered I&AP's

Appendix 4.2.2 Proof of postage of Appendix 4.2.1

Appendix 4.2.3 List of Registered I&AP's.

Neighbours – none of the neighbours requested to be registered as an I&AP.		
Organs of State / State Departments		
Department of Agriculture, Environmental Affairs, Rural Development and Land Reform	Mr. O. Seshupo Ms Dineo Moleko Ms Gail Letlemela	olebileseshupo@gmail.com dmoleko@ncpg.gov.za gaildenc@gmail.com
Department of Water & Sanitation	Ms Vhonani Ramugondo Ms Alexia Hlengani Mr Shaun Cloete	ramugondov@dws.gov.za HlenganiA@dws.gov.za CloeteS@dws.gov.za
Department of Agriculture	Mr. Nico Toerien	ntoerien1@gmail.com
SAHRA (electronic submission / upload via Ubique Heritage Consultants)	Mr. Jan Engelbrecht	jan@ubiquecrm.com heidi@ubiquecrm.com
Department: Forestry, Fisheries and the Environment	Ms. Jacoline Mans	jmans@dffe.gov.za
Local & District Municipalities		
Kai !Garib Municipality	Municipal Manager (Mr. Mac Kay)	mm@kaigarib.gov.za j.mackay123456@gmail.com marshallmatthys@gmail.com
	Town Planning (Mr. Mathys)	j.mackay123456@gmail.com
	Roads Department (Mr Minnie)	Via mm@kaigarib.gov.za
	Ward Councillor : Ms. Ethel Vass	Ethelvas97@gmail.com
ZM Mgcawu District Municipality	Municipal Manager (Mr. Gilbert Lategan)	admin@zfm-dm.gov.za gil@zfm-dm.gov.za
Local Water Users Association		
Kakamas Water Users Association	The Chairperson (GJJ van Niekerk)	ceo@kakamaswgv.co.za

Appendix 4.3 Public Participation on Draft EIAR

Appendix 4.3.1 Copy of letter forwarded to registered I&AP's

Appendix 4.3.2 Proof of postage of Appendix 4.3.1

Appendix 4.3.3 List of Registered I&AP's.

Neighbours – none of the neighbours requested to be registered as an I&AP.		
Organs of State / State Departments		
Department of Agriculture, Environmental Affairs, Rural Development and Land Reform	Mr. O. Seshupo Ms Dineo Moleko Ms Gail Letlemela	olebileseshupo@gmail.com dmoleko@ncpg.gov.za gaildenc@gmail.com
Department of Water & Sanitation	Ms Vhonani Ramugondo Ms Alexia Hlengani Mr Shaun Cloete	ramugondov@dws.gov.za HlenganiA@dws.gov.za CloeteS@dws.gov.za
Department of Agriculture	Mr. Nico Toerien	ntoerien1@gmail.com
SAHRA (electronic submission / upload via Ubique Heritage Consultants)	Mr. Jan Engelbrecht	jan@ubiquecrm.com heidi@ubiquecrm.com
Department: Forestry, Fisheries and the Environment	Ms. Jacoline Mans	jmans@dffe.gov.za
Local & District Municipalities		
Kai !Garib Municipality	Municipal Manager (Mr. Mac Kay)	mm@kaigarib.gov.za j.mackay123456@gmail.com marshallmatthys@gmail.com
	Town Planning (Mr. Mathys)	j.mackay123456@gmail.com
	Roads Department (Mr Minnie)	Via mm@kaigarib.gov.za
	Ward Councillor : Ms. Ethel Vass	Ethelvas97@gmail.com
ZM Mgcawu District Municipality	Municipal Manager (Mr. Gilbert Lategan)	admin@zfm-dm.gov.za gil@zfm-dm.gov.za
Local Water Users Association		
Kakamas Water Users Association	The Chairperson (GJJ van Niekerk)	ceokwgv@isat.co.za

Appendix 4.4 Comments & Response Report

Comments & Response Report : the proposed removal of natural vegetation on Erf 359 Kakamas-North Settlement			
PPP on Draft Scoping Report: 03 May 2022 – 03 June 2022			
Organisation / Company	**Company / Individual**	**Comments received:**	**EAP Response:**
DWS	Ms Alexia Hlengani	Sent: 03 May 2022 03:56 PM From: WeTransfer To: susandekock@oranjenet.net Subject: hlengania@dws.gov.za **downloaded** Application for the proposed removal of natural vegetation on Erf 359 Kakamas North Settlement, Gordonia Administrative District. 30 day PPP on Draft Scoping Report & Plan of Study for EIA: 03 May 2022 – 03 June 2022.	See Appendix 4.1.2a
DWS	Ms Vhonani Ramugondo	Sent: 03 May 2022 08:43 AM From: WeTransfer To: susandekock@oranjenet.net Subject: ramugondov@dws.gov.za **downloaded** Application for the proposed removal of natural vegetation on Erf 359 Kakamas North Settlement, Gordonia Administrative District. 30 day PPP on Draft Scoping Report & Plan of Study for EIA: 03 May 2022 – 03 June 2022.	See Appendix 4.1.2b
Kai !Garib Municipality	Mr. J. Mackay	Sent: 03 May 2022 09:04 AM From: WeTransfer To: susandekock@oranjenet.net Subject: j.mackay123456@gmail.com **downloaded** Application for the proposed removal of natural vegetation on Erf 359 Kakamas North Settlement, Gordonia Administrative District. 30 day PPP on Draft Scoping Report & Plan of Study for EIA: 03 May 2022 – 03 June 2022.	See Appendix 4.1.2c
Rooipad (neighbour)	The CEO	Sent: 03 May 2022 08:45 AM From: WeTransfer To: susandekock@oranjenet.net Subject: anel@rooipad.co.za **downloaded** Application for the proposed removal of natural vegetation on Erf 359 Kakamas North Settlement, Gordonia Administrative District. 30 day PPP on Draft Scoping Report & Plan of Study for	See Appendix 4.1.2d

		EIA: 03 May 2022 – 03 June 2022.	
Department of Forestry, Fisheries and the Environment	Ms. Jacoline Mans	Date received: 09 May 2022. Comments: 1. The applicant must assess the site for the presence of protected trees [section 12 of the National Forests Act, Act No. 84 of 1998 (NFA)]. See GN 1935 in Government Gazette No. 46094 of 25 March 2022. Scattered protected tree species such as *Vachellia erioloba* and *Boscia albitrunca* are known to occur in the vicinity of Kakamas. 2. Section 15(1) of the NFA stated that no person may cut, disturb, damage or destroy any protected tree; or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, or any forest product derived from a protected tree, except under a licence granted by the Minister; or in terms of an exemption published by the Minister. 3. The prohibition on protected trees applies to all trees, alive and dead. It also applies to all size classes of the species listed as protected. Draft Scoping Report and Botanical Impact Assessment reports (Comments): 4. The Draft Scoping Report (DSR) refers to the "Department of Agriculture, Fisheries and Forestry". Kindly note Forestry is no longer part of the (former) Department of Agriculture, Forestry and Fisheries (DAFF). Please change and correct the name to the Department of Forestry, Fisheries and the Environment (DFFE) and amend all reference to the Department. 5. The proposed 110 ha (Alternative 1) or 63.82 ha (Preferred Alternative) agricultural development is in a CBA 1 (14.5 ha or 13.2%) and CBA 2 (95.5 ha or 86.8%). The affected vegetation types are Kalahari Karroid Shrubland and Lower Gariep Broken Veld. The report stated repeatedly that "no species of conservation concern were found at the site." The DFFE is concerned about the statement, because protected plants are mentioned in the report, but their protected status	The appointed Botanist confirmed that "*No protected trees were found within the study area*". See page 31 of the attached Botanical Assessment Report (Appendix 7). Corrected. A reputable Botanist was appointed to assess the vegetation within the proposed development footprint. The DFFE is welcome to do a terrain inspection to evaluate the findings of the Botanist.

		was not mentioned. 6. It is important to assess the site for the presence of nationally and provincially protected and specially protected plant species, which may not be damaged or disturbed without licenses and/or permits from the relevant regulating authority. The report refers to protected species, for example, the Grassland and Shrubland plant community is said to have *Boscia foetida.* The exposed calcrete and quartz site contains *Euphorbia braunsii* and the Lower Gariep Broken Veld mentioned the presence of Jamesbrittenia spp., and scattered individuals of *Aloe dichotoma var. dichotoma* (now *Aloidendron dichotomum*). This is seen as a gross oversight that needs to be addressed in the Environmental Impact Assessment (EIA) Report. 7. Under applicable legislation, no reference was made to the legislation governing protected trees and plants. Besides the NFA, the Northern Cape Nature Conservation Act, Act 9 of 2009 (NCNCA) must be consulted. Clearing of 63 ha (or 110 ha) in a CBA 1 and CBA 2, would most likely require a Flora Permit from the Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform (Environmental Research and Development). Additional information 8. The DFFE is kindly requesting for a checklist of all plant species recorded on site during the site visit that was done by the specialist who compiled the biodiversity assessment. • NOTE: The Department may request to do a site inspection to confirm the findings in the specialist biodiversity impact assessment report and/or request a virtual meeting to discuss the planned development and potential impacts on the Environment. See Appendix 4.4.1	The report has been updated to include a species list which shows the conservation status and protection level of the plants found on the site. Some provincially protected species are noted within the site and these will require a permit before being removed. The mention of *Aloidendron dichotomum* was made in the description of the vegetation type overall, however, these trees were not found within the study area. The National Forest Act (NFA) and the Northern Cape Nature Conservation Act (NCNCA) have been consulted. No nationally protected trees according to the NFA have been found on the site. The provincially protected species are listed in the report. These acts have been referenced in the report as well. Appendix 5 was added to the Botanical Assessment Report (attached as Appendix 7) which contains a list of plant species recorded within the study area and surrounds.
Department of	Mr. Olebile Seshupo	Date received: 09 June 2022 Comments:	

Agriculture, Environmental Affairs, Rural Development and Land Reform		• The Department confirm receipt of the Draft Scoping Report. • In terms of comments, due to the close proximity of the Orange river and the several significant waterways / drainage lines crossing through the proposed site you are therefore requested to extensively investigate and look into the potential impacts and mitigations of these waterways. • Otherwise you may continue with the Final Scoping Report for the proposed project. See Appendix 4.4.2	Noted. A Freshwater Specialist was appointed to assess this concern.
PPP on Draft Scoping Report: 13 June 2022 – 13 July 2022			
No comments were received during this round of PPP.			
PPP on Draft EIAR: 06 October 2022 – 07 November 2022			
No comments were received during this round of PPP.			

Appendix 4.4.1 Copy of Comments received from Department of Forestry, Fisheries and the Environment.

Appendix 4.4.2 Copy of Comments received from Department of Agriculture, Environmental Affairs, Rural Development & Land Reform.

APPENDIX 5. Botanical Assessment Report.

APPENDIX 6. Heritage Impact Assessment Report

APPENDIX 7. Freshwater Assessment Report