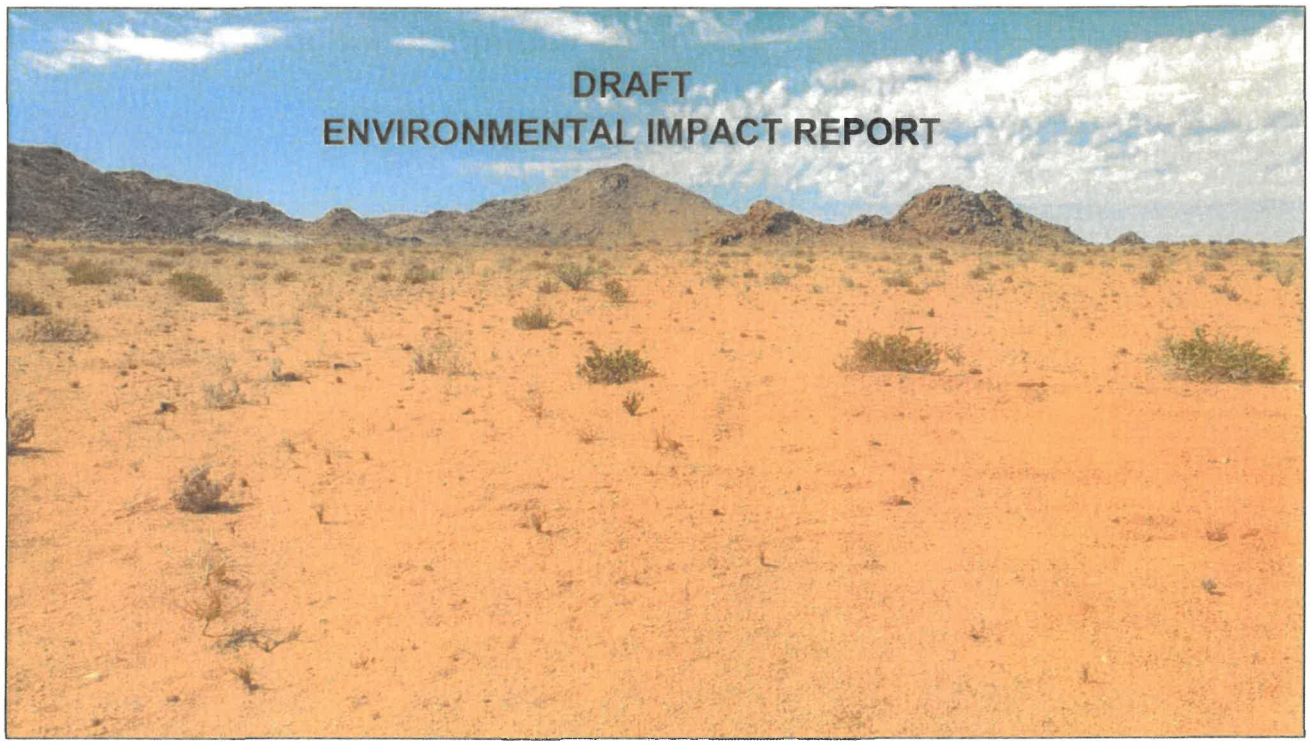
EnviroAfrica

THE PROPOSED STYR-KRAAL AGRICULTURAL DEVELOPMENT ON THE REMAINING EXTENT OF PORTION 0 OF FARM STYR-KRAAL NO. 81, POFADDER



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INDEPENDENCE AND CONDITIONS

EnviroAfrica is an independent consulting firm that has no interest in the proposed development other than fair remuneration for services rendered. Remuneration for services is not dependent on approval by decision-making authorities and EnviroAfrica has no interest in secondary or downstream development as a result of this project. There are no circumstances that compromise the objectivity of this Environmental Impact Report. The findings, results, observations and recommendations given here are based on the author's best scientific and professional knowledge and available information. EnviroAfrica reserves the right to modify aspects of this report, including the recommendations if new information becomes available that may have a significant impact on the findings contained in this report.

RELEVANT QUALIFICATIONS AND EXPERIENCE OF THE EAP

This Draft Environmental Impact Report was compiled by Clinton Geyser who has a MSc. Degree in in Environmental Management. He has been working as an Environmental Assessment Practitioner since 2009 and is currently employed at EnviroAfrica cc.

Qualifications:

- BSc. Earth Sciences, Majors in Geology and Geography and Environmental Management (1998 – 2000) and;
- BSc. (hons): Geography and Environmental Management (2001) and;
- MSc. Geography and Environmental Management (2002), all from the University of Johannesburg.

Expertise:

Clinton Geyser has over twelve years' experience in the environmental management field as an Environmental Assessment Practitioner and as an Environmental Control Officer, having worked on a variety of projects in the Western, Eastern and Northern Cape.

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

Please refer to **Appendix 8** for the CV of the EAP.

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ACRONYMS

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

1. INTRODUCTION

1.1 BACKGROUND

The Schamboua Trust has proposed the establishment of vineyards and date orchards, housing for farm workers, a water storage dam, water delivery pipeline and associated infrastructure on the Remainder of Portion 0 of the Farm Styr-Kraal No. 81, Pofadder, situated within Ward 1 of the Khâi-Ma Local Municipality, Namakwa District Municipality (Figure 1, refers). The proposed site is located adjacent to the Orange River, approximately 51km north of Pofadder at the following coordinates: 28°40'39.90"S; 19°31'2.93"E. This is a BEE initiative with the primary objective of promoting economic growth, job creation and economic empowerment through agriculture.

The complete agricultural development envisaged is made up of existing development (Table 1, refers) together with the proposed development (Table 2, refers). The existing development is described in this application in order to provide a full picture of the entire agricultural development of approximately 230ha contemplated on the subject property. However, the proposed development for which environmental authorisation is sought is detailed in Table 2.

Table 1. Existing development with prior authorisation.

Vineyards	≈83ha
Dates	≈47ha
Drying Beds	≈10.7ha
Housing	≈3.8ha
Existing Dam	≈2ha
Associated Infrastructure - Pipelines (6256m^2) - Dam pumphouse (255m^2) - Abstraction point (136m^2) - Booster pumphouse (301m^2)	≈0.7ha
Total Development:	**≈147.2ha**

Table 2. Proposed agricultural development for which environmental authorisation is sought.

Dates	≈78ha
Pipeline	≈0.35ha
Housing for seasonal workers	≈2ha
New Dam	≈2.8ha
Wastewater management for permanent housing	≈0.58ha
Total Development:	**≈83.38ha**

The applicant is the Schamboua Trust and EnviroAfrica CC is the company that has been appointed to serve as the independent Environmental Assessment Practitioner ("EAP") that will manage the EIA Process required in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA").

The Scoping Report and Plan of Study for EIA were submitted to the competent authority on 22 April 2022 and were accepted by the competent authority in a letter dated 14 June 2022. EnviroAfrica has been advised to proceed with the EIR phase of the EIA process.

This Draft Environmental Impact Report ("EIR") will be submitted to the competent authority and will made available to Interested and Affected Parties ("I&APs") for comment as part of the EIA process. The purpose of this Draft EIR is to describe the proposed development, the process followed to date, present alternatives and identify the potential impacts of the proposed development on the receiving environment as well as provide the recommendations and impact mitigation measures proposed by specialist professionals.

1.2 DESCRIPTION OF THE PROPOSED ACTIVITY

The Schamboua Trust is proposing the Styr-Kraal Agricultural Development with associated structures and infrastructure on the Remainder of Portion 0 of Farm Styr-Kraal No. 81, Pofadder, (Figure 1). The subject property is located approximately 20km east of Onseepkans on the banks of the Orange River (the border between South Africa and Namibia) in the Northern Cape Province and approximately 51km north of Pofadder at the following coordinates: 28°40'39.90"S; 19°31'2.93"E.

The proposed development includes areas for cultivating date palms, areas for cultivating table grapes as well as drying beds, an additional water storage dam and housing for farm workers. The total area to be developed is approximately 230ha.

Approximately 147.2ha of the proposed 230ha is located on areas that have previously been cultivated. The remaining area of approximately 83.4ha has not been cultivated yet and is located on sheet-washed sandy plains between the rocky koppies dominating this part of the Northern Cape. This land is divided into five portions. The rocky areas in between these portions cannot be developed and will be left in their current state.

There will be no pumphouse at the booster station, only a concrete slab with four posts on the corners and a corrugated iron roof. The sides will be covered with mesh.

Abstraction of water will be achieved by means of submersible pumps and underground pipelines. The pipelines will be protected by precast concrete anchors placed approximately 2m upstream of the pipelines.

Electricity will be supplied to the submersible pumps by submersible trailing cables dug in next to the pipelines. The submersible pumps will be of 48kW each. The booster pumps will be of 3.90kW.

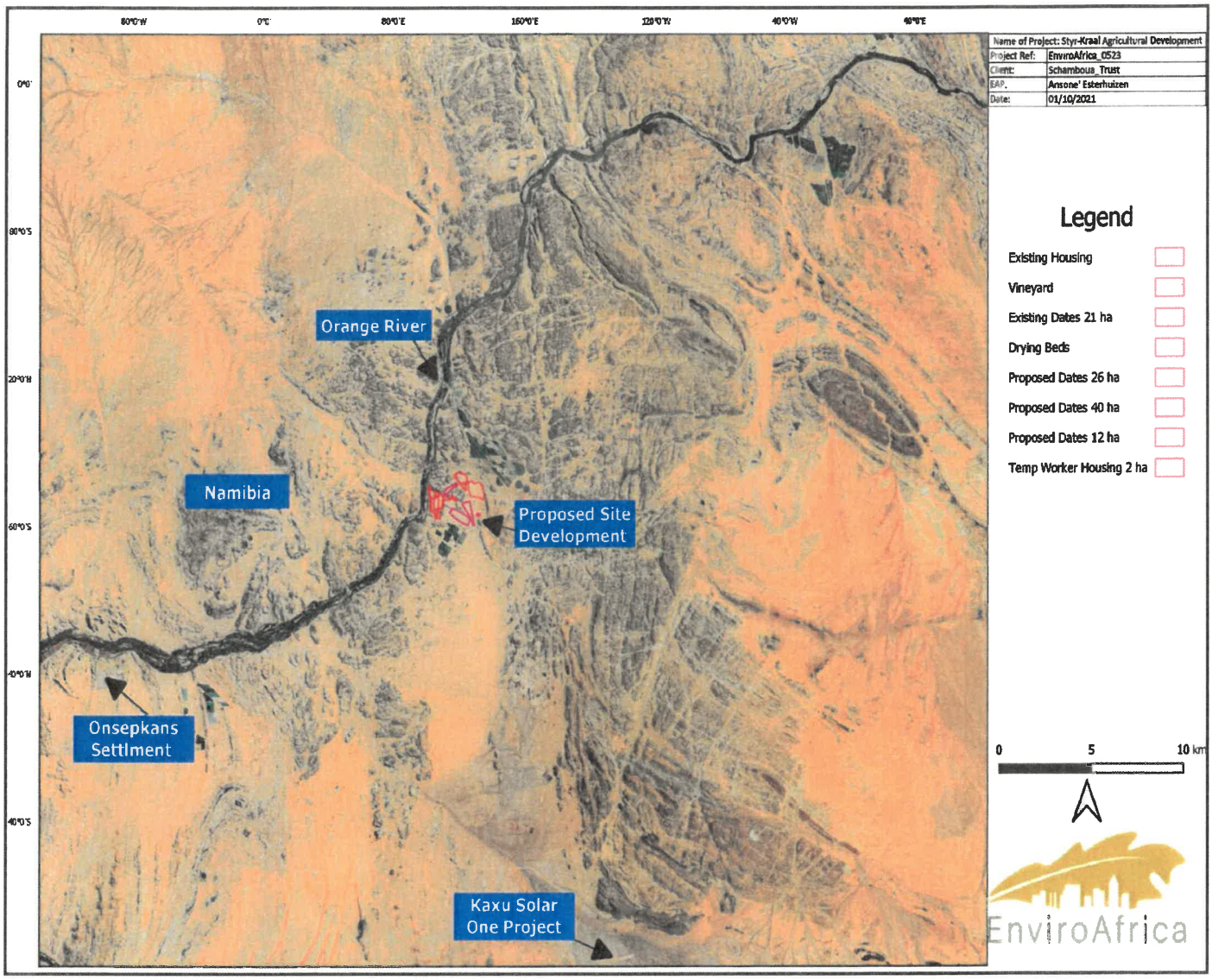

Figure 1: *Locality map (1: 250 000) of the proposed site*

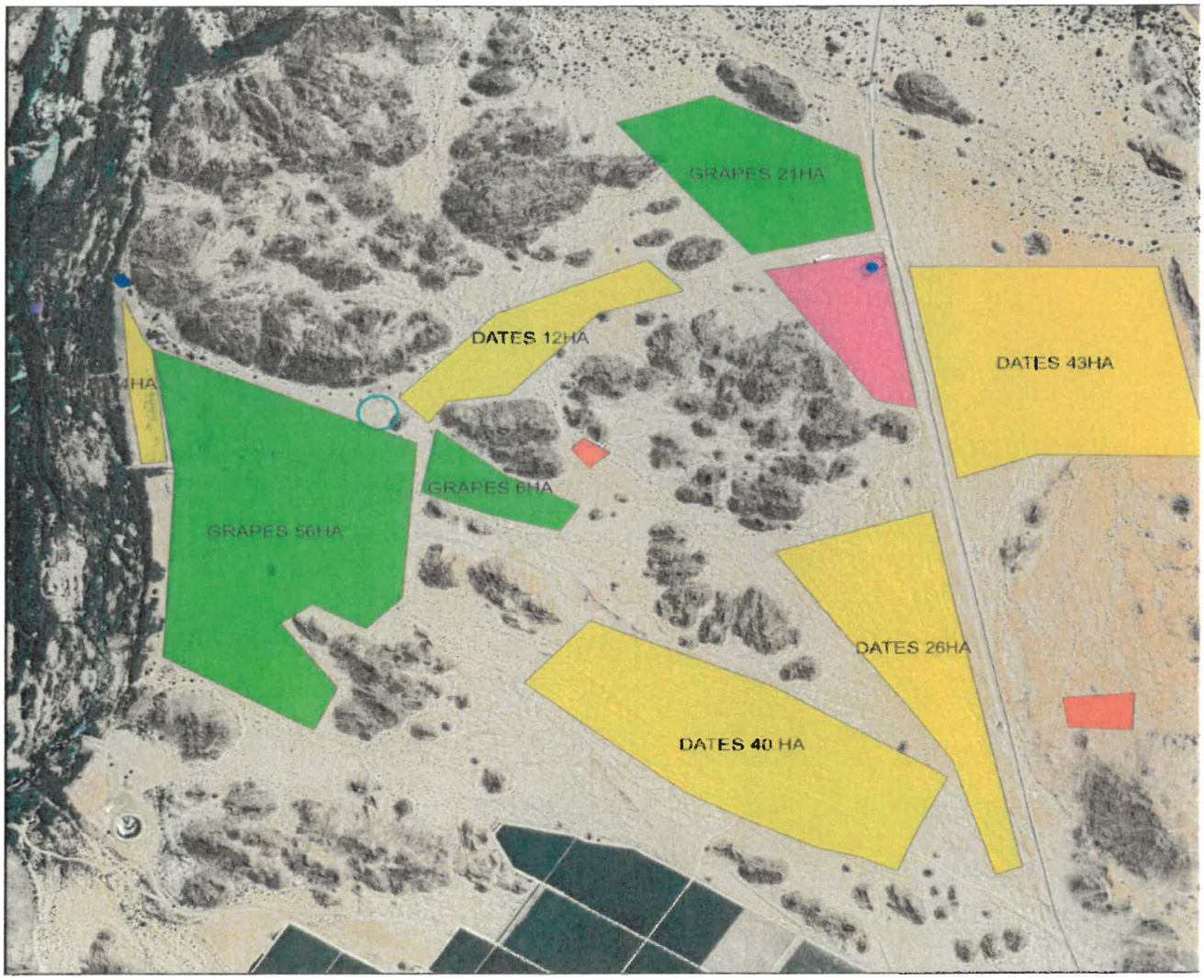

Figure 2: Proposed development layout

2. NEED AND DESIRABILITY

In terms of the NEMA and EIA Regulations of 2014 (as amended), the EI Report must provide a description of the need and desirability of the proposed activity. The consideration of "need and desirability" in EIA decision-making requires the consideration of the strategic context of the development proposal along with the broader societal needs and the public interest.

While the concept of need and desirability relates to the *type* of development being proposed, essentially, the concept of need and desirability can be explained in terms of the general meaning of its two components in which *need* refers to *time* and *desirability* to *place – i.e.* is this the right time and is it the right place for locating the type of land-use/activity being proposed? Need and desirability therefore relate to the question of whether the proposed land use is the most sustainable manner in which to use the land.

2.1 NEED

The most important fruit commodity produced in the Northern Cape is grapes, namely table grapes and raisins – contributing approximately 95% of the total fruit value share[1]. This highlights the contribution of agriculture and more specifically grape agriculture, to the socio-economic development of the Northern Cape province.

Objectives stipulated in the Khâi-Ma Local Municipality's IDP[2] with regards to the agricultural sector include:

(i) Creating an additional 643 000 direct jobs and 326 000 indirect jobs within the agriculture, agro-processing and related sectors by 2030, and

(ii) Maintaining a positive trade balance for primary and processed agricultural products.

There is thus a need to grow the grape industry within the Khâi-Ma Local Municipality and the proposed development is desirable, as the proposed development will help towards the achievement of the socio-economic development targets that the Khâi-Ma Local Municipality is aiming for.

The water storage dam of approximately 28 000m^3 capacity that forms part of the proposed development will help in securing a more reliable water supply for the additional workers to be housed on the proposed site, for irrigation of the proposed vineyards and dates plantations and for meeting the other water needs of the farm.

[1]E.g., Taljaard, P.R., 2007. The macro economy and irrigation agriculture in the Northern Cape Province of South Africa (Doctoral dissertation, University of the Free State). Accessible at the following link: https://scholar.ufs.ac.za/bitstream/handle/11660/4637/TaljaardPR.pdf?sequence=1&isAllowed=y

[2]https://khaima.gov.za/wp-content/uploads/2020/05/KH%C3%A2I-Ma-Revised-IDP-2020-21.docx

2.2 DESIRABILITY

The following factors determine the desirability of the area for the proposed development.

2.2.1 Location and Accessibility

The proposed agricultural development will be located adjacent to the Orange River, between two existing agricultural developments that are located on farm portions approximately 700m north (Portion 20 of Farm No. 81, Styr-Kraal), and approximately 470m southeast (Portion 30 of Farm No. 81, Styr-Kraal) of the proposed site of development. The proposed site is accessible via existing roads that connect to the N14 National Road.

2.2.2 Compatibility with the Surrounding Area

The proposed Styr-kraal agricultural development will be located adjacent to the Orange River, next to two existing agricultural developments that are located on farm portions approximately 700m north (Portion 20 of Farm No. 81, Styr-Kraal), and approximately 470m south-east (Portion 30 of Farm No. 81, Styr-Kraal) of the proposed site.

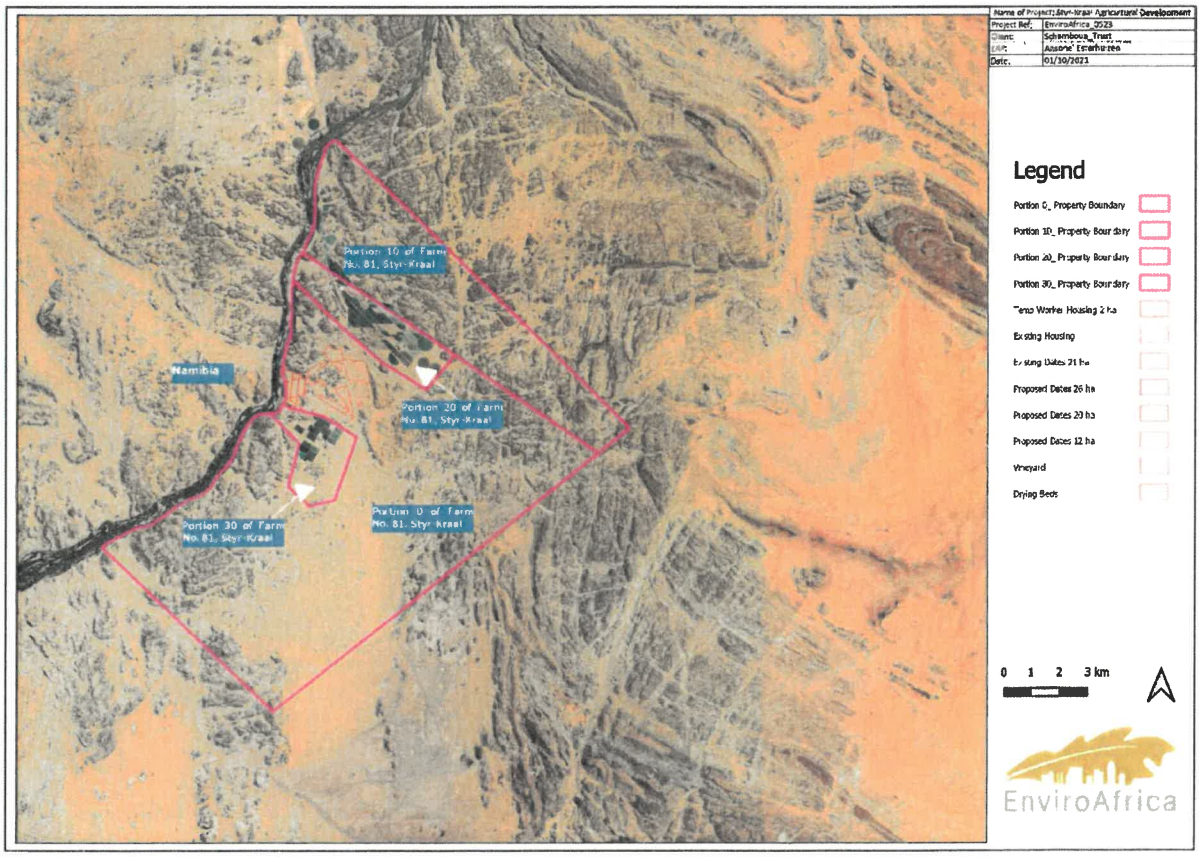

Figure 3: View of the location of the proposed agricultural development next to existing agricultural developments

The proposed development is expected to have a low impact on the surrounding area's visual character and "sense of place", as the proposed development is an agricultural development located next to other agricultural developments in an agricultural area.

3. LEGAL REQUIREMENTS

The current assessment is being undertaken in terms of the National Environmental Management Act (Act 107 of 1998, NEMA), read together with the EIA Regulations, 2014 (as amended). However, the provisions of various other Acts must also be considered in this EIA.

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

3.1 THE CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA

The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996) states that everyone has a right to a non-threatening environment and that reasonable measures be applied to protect the environment. This includes preventing pollution and promoting conservation and environmentally sustainable development, while promoting justifiable social and economic development.

3.2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT 107 OF 1998)

The National Environmental Management Act (Act 107 of 1998) (NEMA), as amended, 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 in the Northern Cape Province by the Department of Agriculture, Environmental Affairs, Rural Development and Land Reform.

On 04 December 2014 the Minister of Environmental Affairs promulgated regulations in terms of environmental impact assessments, under sections 24(5) and 44 of NEMA, namely the EIA Regulations 2014 (GN No. R 326) these regulations were amended in April 2017, and include:

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

Listing Notice 1 and 3 are for Basic Assessment and Listing Notice 2 is for Environmental Impact Reporting.

In terms of the EIA Regulations of 2014 (as amended), the following listed activities are triggered:

Table 3: Listed activities triggered by the proposed development in terms of the EIA Regulations, 2014 (as amended)

GN R. 327	Short description of relevant Listed Activity in terms of Listing Notice 1	Description of specific portion of the development that might trigger the 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*".	
10	. "*The development and related operation of infrastructure exceeding 1 000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes* *– (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 the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes inside a road reserve or railway line reserve; or* *(b) where such development will occur within an urban area*".	A pipeline exceeding 1000m in length is to be constructed for delivering water to a booster pump station and further on into a proposed water storage dam.
11	"*The development of facilities or infrastructure for the transmission and distribution of electricity—* *(i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or* *(ii) inside urban areas or industrial complexes with a capacity of 275 kilovolts or more; excluding the development of bypass infrastructure for the transmission and distribution of electricity where such bypass infrastructure is —* *(a) temporarily required to allow for*	Th proposed development requires upgrades of the existing electrical infrastructure that will exceed the threshold specified in the listed activity

	maintenance of existing infrastructure; *(b) 2 kilometres or shorter in length;* *(c) within an existing transmission line servitude; and* *(d) will be removed within 18 months of the commencement of development*".	
12	The **development** of; (iv) dams, where the dam, including infrastructure and water surface area, exceeds 100 square metres in size; (xii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs; (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; *— excluding—* *(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;* *(bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;* *(cc) activities listed in Activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;* *(dd) where such development occurs within an urban area;* *(ee) where such development occurs within existing roads, road reserves or railway line reserves; or* *(ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared*".	

13	*"The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014".*	
14	*"The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres".*	
19	The infilling or depositing of any material of more than 10 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10cubic meters from a watercourse:	The development of the in-stream dam will involve the infilling, depositing, excavation, moving and removal of material from within the watercourse.
19A	*"The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from—* *(i) the seashore;* *(ii) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater; or* *(iii) the sea; — but excluding where such infilling, depositing, dredging, excavation, removal or moving— (f) will occur behind a development setback;* *(g) is for maintenance purposes undertaken following a maintenance management plan;* *(h) falls within the ambit of activity 21 in this Notice, in which case that activity applies;* *(i) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies".*	
24	*"The development of a road—* *(i) for which an environmental authorisation*	

	was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or *(ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres; but excluding a road—* *(a) which is identified and included in activity 27 in Listing Notice 2 of 2014;* *(b) where the entire road falls within an urban area; or* *(c) which is 1 kilometre or shorter".*	
26	*"Residential, retail, recreational, tourism, commercial or institutional developments of 1 000 square metres or more, on land previously used for mining or heavy industrial purposes; — excluding —* *(i) where such land has been remediated in terms of part 8 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies; or* *(ii) where an environmental authorisation has been obtained for the decommissioning of such a mine or industry in terms of this Notice or any previous NEMA notice; or* (i) *where a closure certificate has been issued in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) for such land".*	
31	*"The decommissioning of existing facilities, structures or infrastructure for—* *(i) any development and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014;* *(ii) any expansion and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014;* *(iii) .....* *(iv) any phased activity or activities for*	

	development and related operation activity or expansion or related operation activities listed in this Notice or Listing Notice 3 of 2014; or *(v) any activity regardless of the time the activity was commenced with, where such activity:* *(a) is similarly listed to activity in (i) or (ii) above; and* *(b) is still in operation or development is still in progress; excluding where —* *(aa) activity 22 of this notice applies; or* *(bb) the decommissioning is covered by part 8 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies*".	
45	"*The expansion of infrastructure for the bulk transportation of water or storm water where the existing infrastructure—* *(i) has an internal diameter of 0,36 metres or more; or* *(ii) has a peak throughput of 120 litres per second or more; and* *(a) where the facility or infrastructure is expanded by more than 1 000 metres in length; or* *(b) where the throughput capacity of the facility or infrastructure will be increased by 10% or more;* *excluding where such expansion—* *(aa) relates to the transportation of water or storm water within a road reserve or railway line reserve; or* *(bb) will occur within an urban area*".	
56	"*The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre—* *(i) where the existing reserve is wider than 13,5 meters; or* *(ii) where no reserve exists, where the existing road is wider than 8 metres; excluding where widening or lengthening*	

	occurs inside urban areas".	
GN R. 325	**Short description of relevant Activity(ies) in terms of Listing Notice 2**	**Description of specific portion of the development that might trigger the listed activity.**
13	"*The physical alteration of virgin soil to agriculture, or afforestation for commercial tree, timber or wood production of 100 hectares or more*".	
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 linear activity; or* *(ii) maintenance purposes undertaken following a maintenance management plan*".	The proposed development requires that more than 20ha of indigenous vegetation be cleared
16	Development of a dam where the highest part of the dam wall, as measured from the outside toe of the wall to the highest part of the wall, is 5 meters or higher or where the high-water mark of the dam covers an area of 10ha or more.	The wall of the proposed dam that forms part of the proposed development will higher than 5m
GN R324	**Short description of relevant Activity(ies) in terms of Listing Notice 3**	**Description of specific portion of the development that might trigger the listed activity.**
4	"*The development of a road wider than 4 metres with a reserve of fewer than 13,5 metres.* ***g. Northern Cape*** *i. In an estuary;* *ii. Outside urban areas:* *(aa) A protected area identified in terms of NEMPAA, excluding disturbed areas;* *(bb) National Protected Area Expansion Strategy Focus areas;* *(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;* *(dd) Sites or areas identified in terms of an international convention;* *(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *(ff) Core areas in biosphere reserves;* *(gg) Areas within 10 kilometres from national parks or world heritage sites or 5*	

	kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas; or *(hh) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined;* *or iii. Inside urban areas:* *(aa) Areas zoned for use as public open space;* *(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose; or* *(cc) Seawards of the development setback line or within urban protected areas*".	
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 following 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 before 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 even 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 equivalent zoning*".	The proposed development requires that more than 300m2 of Endangered Lower Gariep Alluvial vegetation be cleared.

14	*"The development of—* *(i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 10 square metres; or* *(ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs—* *(a) within a watercourse;* *(b) in front of a development setback; or* *(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;* *excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.* ***g. Northern Cape*** *i. In an estuary;* *ii. Outside urban areas:* *(aa) A protected area identified in terms of NEMPAA, excluding conservancies;* *(bb) National Protected Area Expansion Strategy Focus areas;* *(cc) World Heritage Sites;* *(dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;* *(ee) Sites or areas identified in terms of an international convention;* *(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *(gg) Core areas in biosphere reserves;* *(hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve;* *(ii) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such*	

	development setback line is determined; *or iii. Inside urban areas:* *(aa) Areas zoned for use as public open space;* *(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority zoned for a conservation purpose; or* *(cc) Areas seawards of the development setback line".*	
18	*"The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre.* ***g. Northern Cape*** *i. In an estuary;* *ii. Outside urban areas:* *(aa) A protected area identified in terms of NEMPAA, excluding conservancies;* *(bb) National Protected Area Expansion Strategy Focus areas;* *(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;* *(dd) Sites or areas identified in terms of an international convention;* *(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *(ff) Core areas in biosphere reserves;* *(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve;* *(hh) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined; or* *(ii) Areas within a watercourse or wetland; or 100 metres from the edge of a watercourse or wetland;*	

	or iii. Inside urban areas: *(aa) Areas zoned for use as public open space; or* *(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose".*	
23	*"The expansion of—* *(i) dams or weirs where the dam or weir is expanded by 10 square metres or more; or* *(ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; where such expansion occurs—* *(a) within a watercourse;* *(b) in front of a development setback adopted in a prescribed manner; or* *(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;* *excluding the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.* ***g. Northern Cape*** *i. In an estuary;* *ii. Outside urban areas:* *(aa) A protected area identified in terms of NEMPAA, excluding conservancies;* *(bb) National Protected Area Expansion Strategy Focus areas;* *(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;* *(dd) Sites or areas identified in terms of an international convention;* *(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *(ff) Core areas in biosphere reserves;*	

	(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve; or *(hh) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined; or* *iii. Inside urban areas:* *(aa) Areas zoned for use as public open space; or* *(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose".*	

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

- People and their needs will be placed at the forefront while serving their physical, psychological, developmental, cultural and social interests. The activity seeks to provide employment and economic development opportunities, which are a local and national need – *the proposed activity is expected to have a beneficial impact on people, especially developmental and social benefits, as well providing employment and economic development opportunities.*
- Development will be socially, environmentally and economically sustainable. Where disturbance of ecosystems, loss of biodiversity, pollution and degradation, and landscapes and sites that constitute the nation's cultural heritage cannot be avoided, are minimised and remedied. The impact that the activity will potentially have on these will be considered, and mitigation measures will be put in place - *potential impacts have been identified and considered, and any further potential impacts will be identified during the public participation process. Mitigation measures will be included in the EMP.*
- Where waste cannot be avoided, it will be minimised and remedied through the implementation of the Environmental Management Programme ("EMPr") that forms part of this *EIR*.
- The use of non-renewable natural resources will be responsible and equitable.
- The negative impacts on the environment and on people's rights will be anticipated, investigated and prevented, and where they cannot be prevented, will be minimised and remedied.
- The interests, needs and values of all interested and affected parties will be taken into account in any decisions through the Public Participation Process.
- The social, economic and environmental impacts of the activity will be considered, assessed and evaluated, including the disadvantages and benefits.
- The effects of decisions on all aspects of the environment and all people in the environment will be taken into account, by pursuing what is considered the best practicable environmental option.

3.3 NATIONAL HERITAGE RESOURCES ACT

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

In terms of Section 38 of the National Heritage Resources Act, SAHRA requires a Heritage Impact Assessment ("HIA") to be submitted to SAHRA where the following is applicable to a proposed development:

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

Furthermore, in terms of Section 34(1), no person may alter or demolish any structure or part of a structure, which is older than 60 years without a permit issued by the SAHRA, or the responsible heritage resources authority. Nor may anyone destroy, damage, alter, exhume or remove from its original position, or otherwise disturb, any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority, without a permit issued by the SAHRA, or a provincial heritage authority, in terms of Section 36 (3). In terms of Section 35 (4), no person may destroy, damage, excavate, alter or remove from its original position, or collect, any archaeological material or object, without a permit issued by the SAHRA, or the responsible resources authority.

The proposed development will cause more than 5000m² of indigenous vegetation on the proposed site to become vineyards, date orchards, housing for farm workers, a water delivery pipeline, drying beds and associated structures and infrastructure.

3.4 EIA GUIDELINE AND INFORMATION DOCUMENT SERIES

The following are the latest guidelines that form part of the DEA&DP's *Environmental Impact Assessment Guideline and Information Document Series (Dated: October 2011) and important advice from these has been used to inform the compilation of this Draft EIR*:

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

3.5 NATIONAL WATER ACT

The National Water Act, 1998 (Act No 36 of 1998) provides the legal framework for the effective and sustainable management of our water resources. The Act was published in 1998 with the aim of fundamentally reforming the past laws relating to water resources which were discriminatory and not appropriate to South African conditions. Central to the National Water Act is a recognition that water is a scarce and precious resource that belongs to all of the people of South Africa. It also recognises that the ultimate goal of water resource management is to achieve the sustainable use of water for the

benefit of all South Africans. The Act aims to protect, use, develop, conserve, manage and control water resources as a whole, promoting the integrated management of water resources with the participation of all stakeholders.

In addition to the provisions of the NEMA for this EIA process, the proposed development requires approval in terms of the National Water Act, 1998 (Act No. 36 of 1998). The National Department of Water and Sanitation (DWS), who administer the National Water Act, 1998 (Act No. 36 of 1998) Act, will be a commenting authority in the EIA.

The Water Use Licence Application (WULA), in terms of Section 21 (b)(c) and (i), has been submitted to the DWS, as the proposed development entails ploughing over three small non-perennial drainage lines on the proposed site and in addition, the proposed site is bordered to the west by the Orange River and is bordered to the north-east by a large drainage line. The WULA is being processed by the DWS at the same as the EIA application is being processed by the competent authority. See **Appendix 8.2** for proof of WULA submission.

3.6 NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT

The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) ("NEMBA") is a Specific Environmental Management Act under the NEMA, together with the Protected Areas Act, Chapter 4 of the NEMBA deals with threatened and protected ecosystems and species and related threatened processes and restricted activities. The need to protect listed ecosystems is addressed (*Section 54*). The Act is applicable to this application, as the Lower Gariep Alluvial Vegetation exists on the parts of the proposed site that are located closer to the Orange River and this vegetation type is categorised as Endangered. .

3.7 NATIONAL FORESTS ACT

The National Forests Act, 1998 (Act No. 84 of 1998) (NFA) makes provisions for the management and conservation of public forests.

In terms of section 15(1) of the National Forests Act, 1998, no person may

(a) cut, disturb. damage or destroy any protected tree; or

(b) posses, 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

  (i) under a license granted by the Minister; or

  (Ii) in terms of an exemption from the provisions of this subsection published by the Minister in the Gazette.

The plant species encountered on the proposed site include trees that are protected in terms of the National Forests Act.

3.8 NORTHERN CAPE CONSERVATION ACT, 2009 (ACT NO. 9 OF 2009)

On 12 December 2011, the Northern Cape Nature Conservation Act, (Act No. 9 of 2009 ("NCNCA") came into effect. The Act provides for the sustainable utilization of wild animals, aquatic biota and plants. Schedule 1 and 2 of the Act give extensive lists of specially protected and protected fauna

and flora species following this act. The NCNCA is a very important Act in that it puts a whole new emphasis on several species that were not previously protected by legislation.

The Act also puts a new emphasis on the importance of species, even within vegetation classified as "Least Threatened" (following GN 1002 of 9 December 2011, promulgated in terms of the NEMBA. Thus, even when a development proposal is located within a vegetation type or habitat previously not considered under immediate threat, special care must still be taken to ensure that listed species (fauna & flora) are managed correctly.

The plant species that exist on the proposed site include some trees that are protected in terms of the Northern Cape Nature Conservation Act of 2009.

3.9 THE SPATIAL PLANNING AND LAND USE MANAGEMENT ACT (ACT 16 OF 2013)

The subject area falls under the jurisdiction of the local municipality and the appropriate zoning and subdivision needs to be allocated to permit the development of the proposed site for the intended purpose.

4. ALTERNATIVES

Alternatives were considered during the Scoping phase and these are described below.

4.1 SITE ALTERNATIVES

The Remainder of Portion 0 of the Farm Styrkraal No. 81 is the only site alternative that the applicant owns on which the proposed development of approximately 230ha can be undertaken and so the subject property is the only site alternative that has been investigated for the proposed development. The proposed site is located on land owned by the applicant, unlike is the case with any other possible site alternatives.

4.2 ACTIVITY ALTERNATIVES

Activity alternatives are highly limited, with no alternatives deemed feasible in the subject area other than the proposed agricultural development with a water storage dam, farm workers' housing, water abstraction and delivery pipelines and associated infrastructure. The very high need for socio-economic upliftment in the area and the very high contribution of the agricultural sector (and more specifically grape production) to the economy of the area has caused the proposed agricultural development on the subject property to be deemed the most feasible activity alternative.

4.3 NO-GO ALTERNATIVE

This is the option of not proceeding with the proposed agricultural development.

Although the "no-go" alternative will not directly cause any negative environmental impacts, adopting the "no-go" alternative will cause the envisaged socio-economic benefits of the proposed development to never materialise. The expected contribution of the proposed development to the GDP of the Khâi-Ma Local Municipality as well as to the creation of employment opportunities and to skills development will not materialise. The 'no-go' alternative is therefore deemed undesirable.

The impacts associated with adopting the "no-go" alternative will be assessed during the EIR phase.

5. SITE DESCRIPTION

5.1 LOCATION

The proposed site is located adjacent to the Orange River on the Remaining Extent of Portion 0 of the Farm Styr-Kraal No. 81, Pofadder, between two existing agricultural developments that are located on farm portions approximately 700m to the north (Portion 20 of the Farm No. 81, Styr-Kraal) and approximately 470m to the south-east (Portion 30 of the Farm No. 81, Styr-Kraal). The proposed site is located approximately 51km north of Pofadder and is depicted in Figure 1 and Figure 3.

5.2 VEGETATION

The proposed site is located within the Nama-Karoo Biome and the vegetation type covering most of the proposed site is identified as Lower Gariep Broken Veld. According to Mucina and Rutherford (2006), the *Lower Gariep Broken Veld* vegetation type comprises sparse vegetation dominated by shrubs and dwarf shrubs, along with perennial grasses and herbs and this vegetation type is categorised as Least Threatened.

The other vegetation type that exists on the proposed site is identified as Bushmanland Arid Grassland. However, the botanist during a site visit encountered very little grass on the proposed site and this is probably as a result of the drought that prevailed in the area at the time. This Bushmanland Arid Grassland is also a vegetation type that is categorised as Least Threatened.

The areas of the proposed site that are located closer to the banks of the Orange River are dominated by Lower Gariep Alluvial Vegetation. This vegetation type is categorised as Endangered.

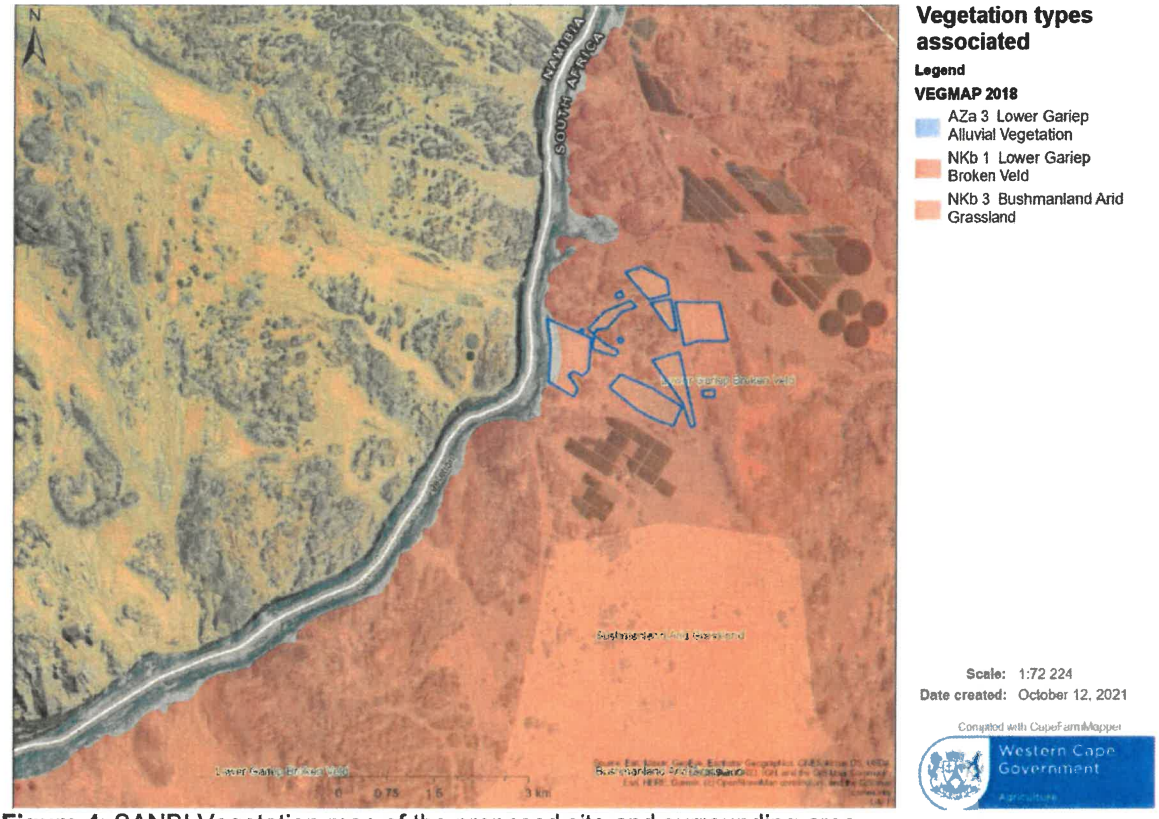

Figure 4: SANBI Vegetation map of the proposed site and surrounding area

The whole of the proposed site falls within a Critical Biodiversity Area as seen in Figure 5 below.

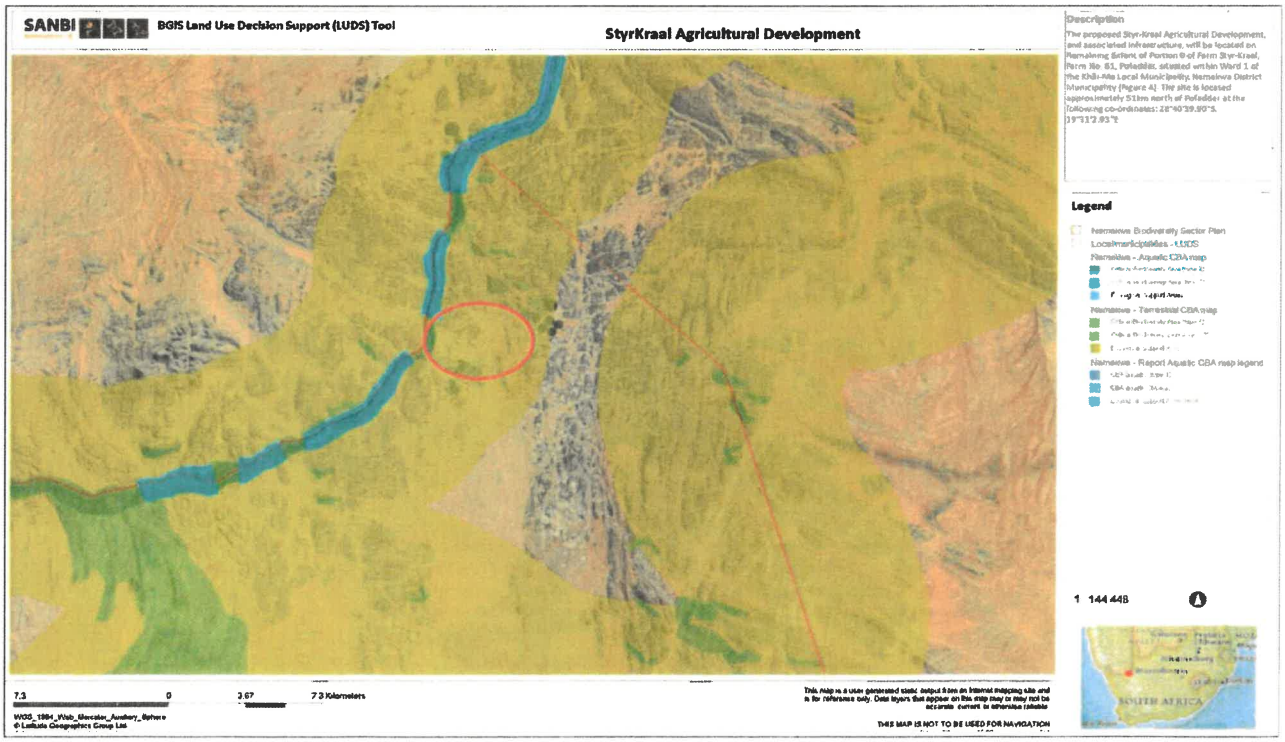

Figure 5: Depiction of entire proposed site located within a Critical Biodiversity Area (CBA)

CBAs are areas in a more natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure. The objective is to maintain these areas in a natural or near natural state, with no further loss of natural habitat. Degraded areas should be rehabilitated.

A Botanical Impact Assessment was compiled (**Appendix 5.1,** refers) and the findings contained therein are discussed in Section 10 of the EIR.

5.3 FRESHWATER

The proposed site is bordered in the west by the Orange River and is bordered in the north-east by a large non-perennial drainage line. These two watercourses have been categorised as National Freshwater Priority Areas ("NFEPA") by the National Department of Water and Sanitation, together with the banks of the Orange River in the area that are regarded as wetland.

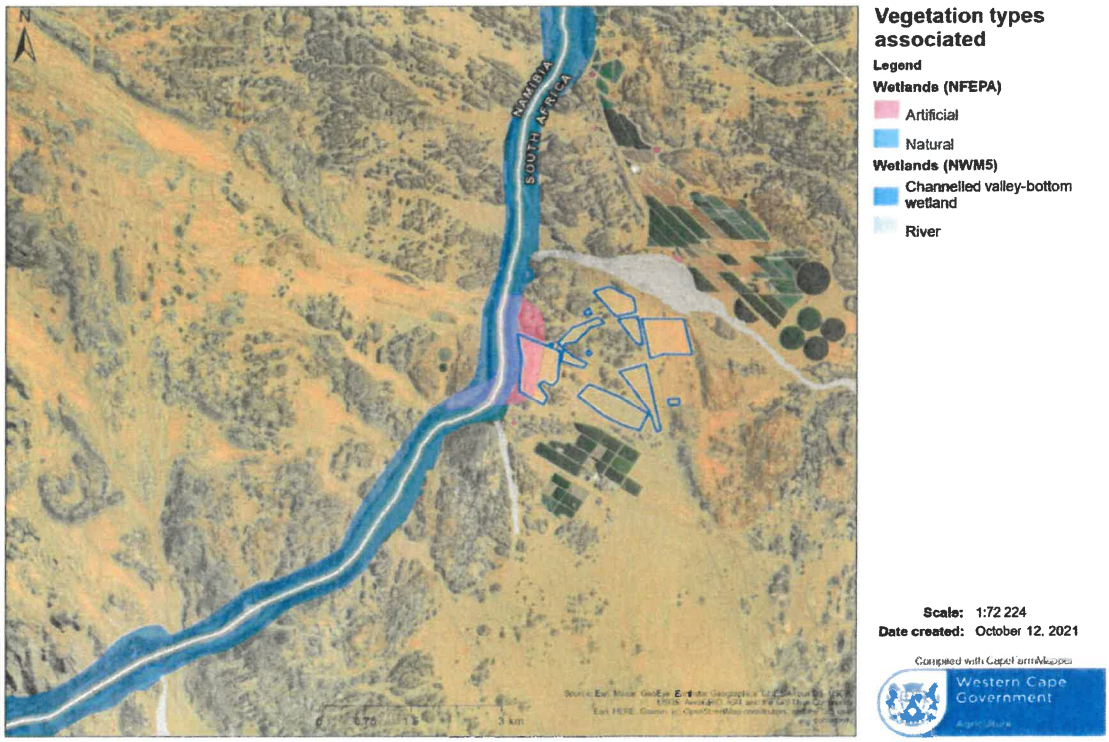

Figure 6: View of the proposed site and the watercourses in the area

The proposed site also encloses three small non-perennial drainage lines that are not categorised as NFEPA.

A freshwater specialist study report has been compiled (**Appendix 5.2, refers**) and the findings contained therein are discussed in Section 10 of the EIR.

5.4 CLIMATE

Climate data for Onseepkans was used. Average temperatures within the District Municipality range from 45°C (summer) to -2°C (winter). The area also receives erratic precipitation with an average of 90mm annual precipitation, typically in late summer. The area is therefore considered arid (< 400mm). Limited frost events enable crops to be cultivated under irrigation.

5.5 SOCIO-ECONOMIC CONTEXT

An estimated 11% of the population of the Northern Cape resides in the Khâi-Ma Local Municipality area of jurisdiction. The objectives as stipulated in the Khâi-Ma Local Municipality's IDP[3] objectives with regards to the agriculture sector include *inter alia,* the following,

(i) creating an additional 643 000 direct jobs and 326 000 indirect jobs within the agriculture, agro-processing, and related sectors by 2030, and

(ii) maintaining a positive trade balance for primary and processed agricultural products.

Irrigated agriculture remains a key sector in the Northern Cape province, relative to the sector's contribution to the GDP and to the socio-economic benefits of such agriculture to the surrounding communities. The most important fruit commodity produced in the Northern Cape is grapes, namely table grapes and raisins – contributing up to approximately 95% of the total fruit value share[4]. This highlights the contribution of agriculture, and more specifically grape agriculture to the socio-economic development of the Northern Cape province. Thus, there is a need to grow the grape industry within the Khâi-Ma Local Municipality's area of jurisdiction to reinforce socio-economic development within the surrounding communities. The dam that forms part of the proposed development will help to ensure an adequate supply of water for the irrigation of the proposed croplands.

The proposed site was acquired through a land restitution process for the benefit of 53 people from eight households in the area. The families of the beneficiaries were removed from their homes by force in 1962 and the proposed development is intended to *inter alia*, include the socio-economic empowerment of the said 53 beneficiaries.

5.6 HERITAGE FEATURES

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

[3] https://khaima.gov.za/wp-content/uploads/2020/05/KH%C3%A2I-Ma-Revised-IDP-2020-21.docx
[4] E.g., Taljaard, P.R., 2007. The macro economy and irrigation agriculture in the Northern Cape Province of South Africa (Doctoral dissertation, University of the Free State). Accessible at the following link: https://scholar.ufs.ac.za/bitstream/handle/11660/4637/TaljaardPR.pdf?sequence=1&isAllowed=y

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

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

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

Ubuque Heritage Consultants conducted a HIA on the proposed site and the report is attached hereto as Appendix 5.3. The findings contained in the report are discussed in Section 10 of the EIR and The interim comment received from SAHRA is attached hereto as Appendix 4.5.

6. SERVICES

The proposed development will be provided with the necessary services and the details on this are provided in the letter attached hereto as forming Appendix 4.4.

6.1 WATER

Water is to be abstracted from the Orange River. As per Section 21(a) of the NWA, an authorisation is required for the abstraction of water from a watercourse. Therefore, an application for a Water Use Licence has been lodged with the National Department of Water and Sanitation. Abstracted water will be stored in the proposed dam. An application in terms of Section 21(b) of the National Water Act will also be lodged. The water stored in the dam will be used to irrigate the vineyards and date orchards. Currently, the property has been granted 28ha of water rights against the property. A water use licence application is being processed for the approximately 230ha proposed development.

6.2 WASTEWATER DISPOSAL

The proposed development will be provided with the necessary wastewater disposal services and the details on this are provided in the letter forming Appendix 4.4 of this EIR

6.3 ROADS

Existing roads will be used to access the proposed development.

6.4 SOLID WASTE DISPOSAL

The proposed development will be provided with the necessary solid waste disposal service and the details of this are provided in the letter forming Appendix 4.4 of this EIR.

6.5 ELECTRICITY

The proposed development will be provided with the necessary electricity supply and the details on this are provided in the letter forming Appendix 4.4 of this EIR

7. PROCESS TO DATE

The section below outlines the various tasks undertaken to date, the members of the team involved in the project, as well as the Public Participation Process.

7.1TASKS UNDERTAKEN TO DATE

Table 4: Tasks undertaken in the EIA to date.

DATE	TASK
SCOPING PHASE	
03 December 2021	Submitted application form to competent authority
07 December 2021	Competent authority acknowledged receipt of application form
22 April 2022	Submitted Scoping Report and Plan of Study for EIR to competent authority
14 June 2022	Acceptance of Scoping Report and Plan of Study for EIR by competent authority
ENVIRONMENTAL IMPACT ASSESSMENT REPORTING PHASE (THIS PHASE)	
14 June 2022 – 19 August 2022	Compile Draft Environmental Impact Report
19 August 2022 – 19 September 2022	Submit Draft EIR to competent authority and make the report available for public comment.
20 September 2022- 03 October 2022	Submit EIR to competent authority for decision-making

7.2 TASKS TO BE UNDERTAKEN DURING THE EIA PHASE

The following tasks must still be undertaken for the EIR phase:

- Compile Draft Environmental Impact Report (EIR) (THIS DOCUMENT) for public consultation.
- Make Draft EIR available for public comment
- Respond to all comments received on the Draft EIR and incorporate the comments in the EIR
- Submit EIR to competent authority for decision-making.

7.3 PROFESSIONAL TEAM

The following professionals are part of the project team.

Table 5: Members of the professional team

DISCIPLINE	SPECIALIST	ORGANISATION
Environmental Assessment Practitioner	Bernard de Witt	**EnviroAfrica CC**
Freshwater specialist	Dr Dirk von Driel	**WATSAN Africa**
Botanist	Mr. Peet. Botes	**PB Consult**
Heritage specialist	Mr. Jan Engelbrecht	**Ubuque Heritage Consultants**

7.4 PUBLIC PARTICIPATION

A Public Participation Process was conducted in accordance with the requirements of the NEMA Environmental Impact Assessment Regulations: Guideline and Information Document Series. *Guidelines on Public Participation 2013* and the EIA Regulations 2014 (amended). Issues and concerns raised during the Scoping phase are dealt within this report.

Interested and Affected Parties (I&APs) were identified throughout the process. Landowners adjacent to the proposed site, relevant organs of state, organizations, ward councillor and the Local and District Municipality were added to the database. A complete list of organisations and individual groups identified to date is shown in **Appendix 3.**

Public Participation was conducted for this proposed development in accordance with the requirements outlined in Regulation 41, 42, 43 and 44 of the EIA Regulations 2014 as amended. The issues and concerns raised during the Scoping Phase are being dealt with in the EIR phase.

Table 6: Summary of the public participation process

R41	Posters, Advertisement & Notification letters
(2) (a) (i)	The site notices (A2 and A3 sizes) were placed at different locations around the project site as well as at the municipal office in town. The posters contained all details as is prescribed in R41(3) (a) and (b) and the size of the on-site poster was at least 60cm by 42cm as is prescribed in R41 (4) (a). Refer to **Appendix 3A** for proof of placing posters.
(ii)	N/A No alternative site
R41 (2) (b) (i):	N/A. The Applicant is the landowner
R41 (2) (b) (ii):	Notifications in writing were given, inviting comment from residents adjacent to/within proximity of the proposed site and this will continue throughout the EIA process. **Appendix 3B**
R41 (2) (b) (iii):	Notifications in writing were given, inviting comment from the relevant municipal ward councillor of the Khâi-Ma Local Municipality. **Appendix 3B**
(iv)	Notifications in writing were given, inviting comment from the Khâi-Ma Local Municipality and the Namakwa District Municipality. **Appendix 3B**
(v)	Notifications in writing were given, inviting comment from organs of state that include *inter alia*, the following organs of state: • National of Department of Water and Sanitation • South African Heritage Resources Agency • Eskom Refer to **Appendix 3B** for proof. Please see the post office stamp on the I&AP register for proof of notification letters sent
(2) (c) (i)	An advertisement was placed in a local newspaper called the Gemsbok on 13 November 2020.
R41 (6) (a)	All relevant facts in respect of the application were made available to potential I&APs and this will continue to be done throughout the EIA process
R41 (6) (b)	I&APs will be given at least 30 days to comment on the Draft EIR.
R42 & 34	**Register of I&AP**
(a), (b), (c), (d)	A register of interested and affected parties has been opened and is being maintained and is available to any person requesting access to the register in writing Please refer to **Appendix 3D** for the Register of I&APs

R43	Registered I&AP entitled to comment
3	I&APs were given at least 30 days to provide comment during the initial public participation phase
R44	**I&AP to be recorded**
	A summary of issues raised by I&APs is addressed in the Comments and Responses Report Refer to **Appendix 3E** for the Comments and Responses Report.

7.4.1 PUBLIC PARTICIPATION PROCESS UNDERTAKEN DURING THE EIR PHASE:

A number of groups and individuals were identified as Interested and Affected Parties during the initial Public Participation Process. A complete list of organisations and individual groups identified to date, as well as those I&APs that have registered is shown in **Appendix 3.**

A copy of the Draft EIR has been sent to all Registered I&APs and the I&APs have been invited in writing to comment on the report. The Draft EIR has been made available for public commenting for a period of at least 30 days.

At the end of the commenting period, the Draft EIR will be revised in response to feedback received from I&APs. All comments received and the responses made to the comments will be incorporated in the EIR to be submitted to the competent authority for decision-making.

7.4.2 INTERESTED AND AFFECTED PARTIES

I&APs have been notified and invited to participate in the EIA process by means of an advertisement in a local newspaper, site notices and letters and/or electronic mail correspondences.

A list of I&APs is included as **Appendix 3.**

8. ENVIRONMENTAL ISSUES AND POTENTIAL IMPACTS

8.1 BIODIVERSITY

The proposed site is located within the Nama-Karoo Biome and the vegetation type covering most of the proposed site is identified as Lower Gariep Broken Veld. According to Mucina and Rutherford (2006), the *Lower Gariep Broken Veld* vegetation type comprises sparse vegetation dominated by shrubs and dwarf shrubs, along with perennial grasses and herbs and this vegetation type is categorised as Least Threatened. The vegetation growing closer to the drainage lines tends to be taller and more dense than the vegetation growing further from the drainage lines.

The other vegetation type that exists on the proposed site is identified as Bushmanland Arid Grassland. However, the botanist encountered very little grass on the proposed site and this is most likely a result of the drought that prevailed in the area at the time. The Bushmanland Arid Grassland is a vegetation type that is categorised as Least Threatened.

The areas of the proposed site that are located closer to the banks of the Orange River are dominated by Lower Gariep Alluvial Vegetation. It is noteworthy that this vegetation type is categorised as Endangered.

In addition, the proposed site is located on the fringes of the Gariep Centre of Endemism and falls within a Critical Biodiversity Area ("CBA").

CBAs are areas that are in a more natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure. The objective is to maintain these areas in a natural or near natural state, with no further loss of natural habitat. Degraded areas should be rehabilitated.

A number of plant species that are protected in terms of various provincial and national laws also exist on the proposed site.

The above issues were raised in the botanical specialist assessment compiled by PB Consult dated 24 May 2021 and also in the letter dated 10 June 2022, wherein the Department of Agriculture, Environmental Affairs, Rural and Land Reform commented on the Scoping Report.

8.2 FRESHWATER

The proposed site is bordered in the west by the Orange River and is bordered in the north-east by a large non-perennial drainage line. These two watercourses have been categorised as National Freshwater Priority Areas ("NFEPA") by the National Department of Water and Sanitation, together with the banks of the Orange River in the area that are designated as wetland.

The proposed site also encloses three small non-perennial drainage lines that are not categorised as NFEPA and these drainage lines.

The proposed development has the potential to impact on the aforesaid watercourses and this has been raised in the freshwater specialist assessment compiled by WATSAN Africa dated 05 October

2020 and in the letter dated 10 June 2022, wherein the Department of Agriculture, Environmental Affairs, Rural and Land Reform commented on the Scoping Report.

8.3 HERITAGE

The impact on heritage resources has been identified amongst the possible environmental impacts of the proposed agricultural development.

Ubuque Heritage Consultants has compiled a Heritage Impact Assessment dated 13 December 2020 that is attached hereto as Appendix 5.3 for the proposed development and written comment on the report has been received from the South African Heritage Resources Agency.

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8.4 VISUAL IMPACT/ SENSE OF PLACE

The potential visual impact of the proposed agricultural development and associated potential impact on the sense have been considered. The proposed agricultural development is located between two existing similar agricultural developments and so the proposed development is unlikely to cause any significant negative visual impact in the surrounding area. In fact, the proposed development will most likely blend well into the surrounding area.

8.5 SOCIO-ECONOMIC IMPACT

The proposed agricultural development is likely to provide employment opportunities during the construction phase of the activity. In addition, the proposed development is likely to provide employment opportunities during the operational phase and as is indicated in *Section 2.1*, the proposed development is dam is of critical importance to ensure the existing water use for permanent cultivars by creating winter storage.

8.6 OTHER ISSUES IDENTIFIED

No other issues were identified in the Scoping Phase.

9. SPECIALIST STUDIES

As a result of the environmental issues and potential impacts identified during the scoping phase and in Section 6, the need for the following specialist studies has been identified and the following specialists were appointed:

- Botanical Assessment
- Freshwater Assessment
- Heritage Impact Assessment

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

9.1 CRITERIA FOR SPECIALIST ASSESSMENT OF IMPACTS

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

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

9.2 BRIEFS FOR SPECIALIST STUDIES

9.2.1 Botanical Assessment

The Botanical Assessment was compiled by Mr. P Botes of PB Consult and the report attached hereto as **Appendix 5.1.**

The terms of reference for the botanical assessment are as follows:

- Evaluate the proposed site(s) in order to determine whether any significant botanical features will be impacted as a result of the
- Determine and record the position of any plant species of special significance (eg protected tree species or rare or endangered plant species) that require a "search and rescue" intervention.
- Locate and record sensitive areas from a botanical perspective within the proposed development footprint that may be interpreted as obstacles to the proposed development.
- Make recommendations on impact minimisation should it be required.
- Consider short to long term implications of impacts on biodiversity and highlight irreversible loss of species.

9.2.2 Freshwater Assessment

The Freshwater Assessment was conducted by WATSAN Africa and the report is attached hereto as **Appendix 5.2**.

The terms of reference for the Freshwater Ecological Assessment include the following:

- identify all watercourses that may potentially be impacted by the proposed agricultural development
- to define the ecology of the watercourses associated with the study area in terms of the watercourse characteristics, including mapping of the watercourse, defining areas of increased Ecological Importance and Sensitivity (EIS), and defining the Present Ecological State (PES) of the watercourses associated with the study area.
- determine the significance of the impacts associated with the proposed agricultural development and
- identify mitigation measures for minimising the potential impacts.
- provide detailed information to guide the establishment of the proposed agricultural development in the vicinity of the watercourses in a way that takes into account the importance of maintaining the ongoing functioning of the ecosystems while also considering the need for sustainable economic development.

9.2.3 Heritage Assessment

Ubuque Heritage Consultants was appointed to compile a Heritage Impact Assessment dated 13 December 2020 that is attached hereto as Appendix 5.3 for the proposed development and written comment on the report has been received from the South African Heritage Resources Agency and is attached hereto as Appendix 4.5.

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10. ENVIRONMENTAL IMPACT ASSESSMENT, SIGNIFICANCE AND MITIGATION METHODOLOGY

The following impact rating approach used by EnviroAfrica CC is a basic exponential rating system to assess the actual and potential negative environmental impacts of feasible alternatives by the EAP.

Positive environmental impacts are not listed. All positive impacts need to be enhanced where possible but positive impacts are not rated nor given a score, as the rating is based on risks.

Environmental aspects are identified based on:

- the phases of the project,
- the nature (or description) of the actual and potential impacts of the activities.

For every project activity or aspect, various environmental impacts are listed. Every negative impact is allocated a value(–) as per each of the following criteria:

- Probability (Likelihood)
- Extent
- Duration (Frequency)
- Consequence (Receiving Environment)
- Magnitude (Intensity/severity)

Once a value is allocated for each of the criterion, the scores are averaged to determine the final impact rating (see Table 5 below).

EnviroAfrica then further assesses significance based on the nature of the impact, as per the score and colour key forming part of the table below. This results in impacts having either a low (indicated in green), medium (indicated in yellow) or high (indicated in orange and red) negative significance.

Note: i. As a baseline, impact rating values/scores are allocated, taking the **worst case** scenario into account *i.e.*, with no impact mitigation. The baseline rating is compared against the rating after mitigation has been taken into *account i.e,* the post-mitigation rating. Post mitigation rating is used for the actual impact assessment.

Table 7: Impact Assessment Methodology

SIGNIFICANCE CRITIERIA	Very High	High	Medium	Low	Negligible (very-low)	Score
Value	**16**	**8**	**4**	**2**	**1**	
Probability (likelihood) **(P)**	Definite. Impact will definitely occur.	Highly probable. Very likely that impact will occur.	Probable. Impact will likely occur.	Improbable. Impact may occur. Distinct Possibility	Improbable. Low likelihood/ unlikely that impact will occur.	
Extent (E)	Impact potentially reaches beyond national boundaries	Impact has definite provincial/potential national consequences	Impact confined to regional area/ town	Impact confined to local region and impact on neighbouring properties	Impact confined to project property / site	
Duration (D)	Permanent The impact is expected to have a permanent impact, with very little to no rehabilitation possible	Long-Term The impact is expected to last for a long time after construction with rehabilitation expected to be 15-50 years. Impact is reversible but only with long-term mitigation	Medium-term The impact is expected to last for some time after construction with rehabilitation expected to be 5 - 15 years. Impact is reversible but only with on-going mitigation	Short-term The impact is expected to last for a relatively short time with rehabilitation expected to be 2-5 years. The impact is reversible through natural process and/or some mitigation.	Very short/ temporary The impact is expected to be temporary and last for a very short time with rehabilitation expected to be less than 2 years. The impact is easily reversible through natural process and/or some mitigation.	
Magnitude (Intensity/ Severity) **(M)**	It is expected that the activity will have a very severe to permanent impact on the surrounding environment. Functioning irreversibly impaired. Rehabilitation often impossible or unfeasible	It is expected that the activity will have a severe impact on the surrounding environment. Functioning may be severely impaired and may be temporarily cease. Rehabilitation will be needed to restore system integrity	It is expected that the activity will have an impact on the surrounding environment, but it will maintain its function, even if moderately modified (overall integrity not compromised). Rehabilitation easily achieved	It is expected that the activity will have a perceptible impact on the surrounding environment, but it will maintain its function, even if slightly modified (overall integrity not compromised). Rehabilitation easily achieved	It is expected that the impact will have little or no effect on the integrity of the surrounding environment	
Receiving environment (Consequence): **(RE)**	Very sensitive, pristine area – protected site or species permanently or seasonally present	Unused area containing only indigenous fauna / flora species	Unused area containing indigenous and alien fauna / flora species	Semi-disturbed area already rehabilitated / recovered from prior impact, or with moderate alien vegetation	Disturbed area/ transformed/ heavy alien vegetation	
FINAL RATING (average score)						

ENVIRONMENTAL RATING SIGNIFICANCE KEY:

Negative Impacts

SIGNIFICANCE	RATING	Final rating score / value range
Very Significant	Very High	-11 to -16
Significant	High	-7 to <-11
Increasing Significance	Medium	-4 to <-7
Insignificant	Low	-2 to <-4
	Very Low	-1 to <-2

ENVIRONMENTAL SIGNIFICANCE RISK RATING

Please refer to **Appendix 6** for the Environmental Impact Risk rating matrix. The matrix aims to identify the potential impacts of the proposed development on the receiving environment, based on a desktop study.

In addition to determining the individual impacts, the element of impact avoidance where possible and mitigation if avoidance is not possible will also be brought into the assessment. In such instances the impact will be assessed with a statement on the mitigation measures that could/should be applied. Specialist recommendations and mitigation measures will be included. A more detailed assessment is included in Section 10, taking specialist findings into consideration.

11. ASSESSMENT OF ENVIRONMENTAL IMPACTS

The specialist studies detailed in **Section 8** were undertaken to determine the significance of the impacts that may arise from the proposed development. The findings of the specialist studies are summarised here. Full copies of the studies are included in **Appendix 5**.

The following studies were undertaken:

10.1 Botanical Impact Assessment

The Botanical Assessment was conducted by Mr P. Botes of PB Consult. Please refer to **Appendix 5.1** for the full report.

10.1.1 Key findings

According to the Botanical Assessment, the proposed site is located within the Nama-Karoo Biome and the dominant vegetation type encountered on the proposed site is identified as Lower Gariep Broken Veld.

This type of vegetation is not rich in plant species and has low levels of local endemism.

The vegetation consists of sparsely distributed low shrubs, with taller shrubs and trees scattered about. In deeper soils, *Vachellia eriolaba* was encountered was *Boscia foetida* was more prominent in shallow soils and in the more rocky areas. The dominant species included *Senegalia Mellifera* together with *Sisyndite spartea*, as well as various *Euphorbia* species and *Tetraena decumbens.*

In the more rocky areas and closer to the drainage lines, *Boscia foetida* was locally dominant, together with *Parkisonia Africana*, *Phaeotilum spinosum.* and The Lower Gariep Broken Veld is a vegetation type that is categorised as Least Threatened in terms of the National List of Ecosystems that are Threatened and Need of Protection.

The other vegetation type that forms part of the proposed site is the Lower Gariep Alluvial vegetation. This vegetation type is dominant on the parts of the proposed site that are located close to banks of the Orange River. However, the parts of the proposed site that are located close to the banks of the Orange River have been transformed by terracing and other agricultural activities of the past and so hardly any Lower Gariep Alluvial Vegetation still exists on the proposed site.

The proposed agricultural development is to take place on sheet-washed plains between the low rocky hills that dominate the Northern Cape in the area of the proposed site. The whole of the proposed site falls with Critical Biodiversity Areas ("CBA"). The Lower Gariep Broken Veld forms part of a CBA2 and the Lower Gariep Alluvial Vegetation forms part of a CBA1. The proposed site is also located on the outskirts of the Gariep Centre of Endemism.

The Botanical Assessment refers to a number of plant species encountered on the proposed site that are protected in terms of provincial and national legislation.

In the botanical Assessment, the proposed site has been divided into eight blocks.

In Blocks 1 and 2, as well as in the area where the proposed pipeline, booster pump station and storage dam will be located, previous agricultural activities have cleared almost all of the natural vegetation and dense stands of the invasive alien Prosopis tree have developed. However, a few indigenous species were encountered such as *Vachelia eriolaba, Euclea pseudebenus, Tamarisk usneoides and Sersia spp.*

Block 3 and 4 are located slightly further from the Orange River than Blocks 1 and 2 and Blocks 3 and 4 have very little natural vegetation too as a result of the natural vegetation having been cleared by agricultural activities in the past.

However, the presence of *Vaschelia eriolaba* trees in Blocks 1 and 2 has largely been taken over in Blocks 3 and 4 by the presence of *Boscia foetida* as a shrub and even as a tree in a few instances.

The vegetation covering Blocks 5, 6, 7 and 8 is more natural and fits the description provided above for the Lower Gariep Alluvial vegetation.

10.1.2 Impact Assessment

According to the Botanical Impact Assessment, the proposed agricultural development will permanently impact an area of approximately 70ha of natural vegetation and the other 135ha of the proposed site area will overlap with previously cultivated land.

The whole of the proposed site is located within a CBA and the proposed development will impact several species of protected plants. It is not possible to prevent the proposed development from impacting the CBA, as the proposed site is the only land available for the applicant to establish the proposed development on.

However, the Botanical Impact Assessment specifies impact mitigation measures that should be implemented in order for the impact of the proposed development to fall from Medium to Low significance.

In the case of the 'no-go' scenario, the opportunity to contribute towards much needed socio-economic upliftment in the area of the proposed site by means of the proposed development would be lost unnecessarily, in spite of the opportunity that exists for the competent authority to authorise the proposed development without any negative impacts that reach unacceptable levels of significance.

10.1.3 Mitigation Measures

The Botanical Impact Assessment includes recommendations to be implemented for each of the eight blocks that the proposed site has been divided into and also some general mitigations measures to be implemented on the proposed site. The general impact mitigation measures include the following:

- All construction must be in accordance with an approved Environmental Management Plan (EMP) which must include the recommendations contained in the Botanical Impact Assessment
- A suitably experienced Environmental Control Officer must be appointed to monitor the construction phase in terms of the EMP and any other conditions pertaining to specialist studies.
- The layout of the development footprint should take the sensitivity map into account.
- Laydown areas or or construction sites must be located on areas already disturbed
- No unnecessary clearing of any area outside of the construction footprint must be allowed
- An integrated waste management approach must be implemented during construction Construction-related general and hazardous waste must only be disposed of at suitably approved waste disposal sites.
-

10.2 Freshwater Ecological Assessment

The Freshwater Impact Assessment was conducted by Dr D. von Driel of WATSAN Africa.

10.2.1 Key findings

According to the Freshwater Ecological Assessment (**Appendix 5.2, refers**), the proposed site is bordered to the west by the Orange River and is bordered to the north-east by a large non-perennial drainage line. The Orange River is a watercourse categorised as a NFEPA and the banks of the river in the area are wide on the outside and are categorised as NFEPA wetland. The larger non-perennial stream bordering the site to the north-east is also a watercourse that is categorised as NFEPA. The proposed site also encloses three notable smaller non-perennial drainage lines that are not watercourses categorised as NFEPA. No aquatic Critical Biodiversity Areas nor aquatic Ecological Support Areas were identified in the area.

The larger drainage line as well as the smaller three drainage lines all connect to the Orange River and are dry for most of the year. When the rare thundershower events of the area take place, water flows in the drainage lines. The drainage lines are located on mostly flat sandy ground and this causes their interconnections to change with different thundershower events, giving rise to the areas

being named sheetwash plains.

A sample of water was taken from the Orange River. The riverbed was muddy and there was emerging vegetation and submerged vegetation. The oxygen concentration was high enough to support macrobenthos, however, no macrobenthos were encountered. The ecological state of the river in the area of the proposed site has been lowered as elsewhere by major dams, large scale water abstractions, influx of agrochemicals, translocated and alien fish species, encroachment of reeds and alien macrophytes, bridges etc. However, the river near the proposed site is more impacted than in the upper reaches of the river. The river still exhibits appreciable ecological functioning despite this, but will deteriorate if further riverside development takes place without adequate impact mitigation measures being put in place.

The Orange River has 13 known indigenous fish species, some of which are Threatened and endemic, Endangered or near Threatened. The river therefore is therefore regarded as being of high ecological importance.

The three smaller on-site drainage lines have been ploughed over in the past. However, the time that has passed since the ploughing took place seems to have been long enough to allow the drainage lines to recover, as it is only in a few places that faint furrows left behind by ploughing are still visible.

The large drainage line has a catchment that is largely in a near pristine state, with the mild impact noticed being mainly a result of the limited animal husbandry allowed by the arid climate of the area. The large drainage line as well as the smaller drainage lines have no fish as a result of having no permanent flow of water and this causes the drainage lines to be deemed as being of low ecological importance.

10.2.2 Impact Assessment

The Freshwater Ecological Assessment identified *inter alia*, the following potential activities of the proposed development and associated impacts:

- Establishment of vineyards and orchards, with the identified impact being the washing of sediment down drainage lines and into the Orange River during storms.
- Trampling of riparian zones by vehicles and farm workers, with the identified impact being the loss of riparian habitat
- Usage of agrochemicals during operation of the new vineyards and orchards, with the identified impact being pollution and eutrophication

The impacts identified are each rated Low after mitigation, as the impacts will mostly be limited to the proposed site rather than extending far downstream. However, altogether the existing impact of agricultural activities in the Lower Orange River is significant and the proposed development will add to the situation. The cumulative impact is therefore significant.

10.2.3 Mitigation Measures

The following mitigation measures suggested in the Freshwater Impact Assessment include *inter alia*, limiting construction work to the dry season, limit the disturbance footprint and re-plant vegetation on disturbed areas.

10.3 Heritage Impact Assessment

The Heritage Impact Assessment was conducted by H. Fivaz and J. Engelbrecht of Ubuque Heritage Consultants.

10.3.1 Key findings

It was noted on the proposed site that two graves exist in the area on which grapes are to be cultivated and this area has been graded High Local Significance.

According to the Heritage Impact Assessment, the Quaternary to recent sediments of the Gordonia Formation (Kalahari Group) as well as the Daberas Granodiorite and Schuitdrift Gneiss of the Namaqua Natal Metamorphic Province underly the development footprint. According to the PalaeoMap of South African Heritage Resources Information, the palaeontological sensitivity of the the Kalahari Group is moderate while that of the of the Daberas Granodiorite and Schuitdrift Gneiss is zero, as these rocks are of igneous origin.

10.3.2 Impact Assessment

According to the Heritage Impact Assessment, the only noted potential impact of significance that relates to heritage is the damage that may be suffered by the two graves that are located where table grapes are to be cultivated on the proposed site.

In order to deal with this potential impact, it is recommended in the Heritage Impact Assessment that the two graves be fenced off and a 50m buffer area be maintained between the graves and the grape cultivation activities. Furthermore, it is recommended that the graves be relocated if it is not possible to exclude the graves from the area that will be cultivated.

In addition, it is recommended in the Heritage Impact Assessment that if heritage material of significance is encountered during construction, the construction work should be halted and SAHRA alerted and the guidance from SAHRA followed.

10.3.3 Conclusion

The proposed site is deemed to have no significant heritage resources other than the aforementioned two graves. It is concluded in the Heritage Impact Assessment that the proposed project can continue from a heritage perspective.

11. SUMMARY OF IMPACTS AND CUMMULATIVE EFFECT

11.1 Summary of Impacts

Please refer to **Appendix 6** for the impact and significance rating tables for the different phases of the proposed development as well as mitigation measures. The following table is a summary of all the impacts assessed, taking in consideration the risk assessment of the EAP (**Appendix 6, refers**) as well as the risk assessments conducted by the various specialists.

Table 8: Impact Summary (Preferred Alternative)

Aspect	Impact	Significance No Mitigation	Significance With Mitigation
Phase: Construction			
Heritage	Loss and/or damage to graves, archaeological and historical sites within the construction footprint	High Impact	Low
Palaeontology	Loss and/or damage to potential fossils within the construction footprint	Low	Low
Botanical	-Loss of indigenous terrestrial vegetation communities and/ or riparian vegetation communities, - Loss of CBA, - Loss of ecological connectivity, - Loss of protected plant species	Medium (Negative)	Low (Negative)
Freshwater	-Loosening of soil during construction phase and washing of soil down drainage line and into the Orange River during high intensity storms	Medium (Negative)	Low (Negative)
	- Impact of trampling on the lower reach of the large drainage line as well as on the riparian zone of the Orange River	Medium (Negative)	Low (Negative)
	- Agrochemicals pollution in Orange River and large drainage line and eutrophication resulting from operations on new vineyards and date plantations	Medium (Negative)	Low (Negative)
Socio-economic	Employment opportunities will be created during the construction phase	Medium to High (Positive)	
Dust	Dust may be generated during the establishment of the proposed development.	Medium (Negative)	Low (Negative)
Visual	Visual impact of construction activities	Low (Negative)	Low (Negative)

	and plant on site		
Traffic	Increase in trucks and construction plant	Medium (Negative)	Low (Negative)
Noise	Noise will be generated during the construction phase.	Low (Negative)	Very Low (Negative)

Aspect	Impact	Significance No Mitigation	Significance With Mitigation
Phase: Operational and Maintenance			
Freshwater	- Impact of trampling on the lower reach of the large drainage line as well as on the riparian zone of the Orange River.	Medium (Negative)	Low (Negative)
Visual	Visual impact of the dam	Low (Negative)	Low (Negative)
Socio-economic	Creation of long-term employment opportunities.	Medium to High (Positive)	

11.2 Cumulative effect

Cumulative effect in relation to the activity means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that itself may not be significant but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities.

According to the Botanical Impact Assessment, the cumulative impact on terrestrial ecosystems and protected plant species will remain Low, if the relevant mitigation measures are implemented.

According to the Freshwater Impact Assessment, the existing impact of developments adjacent to the Lower Orange River is significant and the proposed development will add to the impact. However, the proposed development will introduce impacts of Low significance in the area if the relevant mitigation measures are implemented and the existing issue of the lowered ecological state of the Lower Orange River cannot be solved by refusing authorisation to the proposed development that is intended to provide much needed socio-economic upliftment in the area of the proposed site.

12. CONCLUSION AND RECOMMENDATIONS

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

- Botanical Assessment
- Freshwater Ecological Assessment
- Heritage Impact Assessment

The specialist studies and information provided in the EIA Report, indicate that the proposed development is unlikely to cause significant negative impacts to the environment and that the proposed development can be implemented with strict adherence to the recommended impact mitigation measures.

Mitigation measures as recommended by the specialists must be enforced if the proposed development were to be approved. These mitigation measures and recommendations are discussed in Section 10 of this report and have been included in the Environmental Impact Report (EMPr) attached as **Appendix 7**.

In terms of the need and desirability of the proposed development, the need exists for the proposed pipeline, water storage dam, housing for workers, vineyards, dated orchards and associated infrastructure as has been explained in Section 2 of this Draft EIR.

The surrounding area is also generally agricultural in nature, with the proposed development located between two existing similar agricultural developments. The proposed dam will therefore not be out of place in the area and instead will blend well into its surroundings.

The proposed site is considered the best option, as the majority of the proposed development will be located on previously cultivated fields, thereby limiting the loss of indigenous vegetation.

The preferred alternative was compared and contrasted against the 'no-go' alternative. The preferred alternative will bring about much needed socio-economic upliftment in the area without causing unacceptably significant negative impacts. The "no-go" alternative is the option of not going ahead with the proposed development. The 'no-go' alternative will not result in any negative ecological impacts. However, adopting the 'no-go' alternative means the envisaged socio-economic benefits of the preferred alternative will not materialise, even though the preferred alternative can be implemented in a manner that keeps the negative impacts low. The preferred alternative is therefore deemed much more desirable than the 'no-go' alternative.

The two graves noted on the portion of the proposed site where table grapes are to be cultivated will be fenced off and a buffer area maintained around the graves. No heritage resources are likely to be impacted by the proposed dam.

According to the Botanical Assessment, the proposed development will cause botanical impacts of Medium significance that will become impacts of Low significance if relevant impact mitigation measures are implemented.

According to the Freshwater Ecological Assessment, the proposed development will cause impacts of Medium significance that will become impacts of Low significance if relevant impact mitigation measures are implemented.

In light of the above information, the proposed development is unlikely to cause significant negative impact on the environment, if mitigation and monitoring measures as advised by *inter alia*, the specialist professionals are strictly adhered to.

It is therefore suggested that the proposed agricultural development be authorised, subject to the necessary conditions of approval and subject to the implementation of the mitigation measures contained in Section 10 of this report, the EMPr **(Appendix 7, refers)**.

13. DETAILS AND EXPERTISE OF THE EAP

This Draft Environmental Impact Report was prepared by MSc degree in Environmental Management. He has been working as an Environmental Assessment Practitioner since 2009 and is currently employed at EnviroAfrica CC.

Report compiled by Clinton Geyser -
Qualifications:

- BSc. Earth Sciences, Majors in Geology and Geography and Environmental Management (1998 – 2000) and;
- BSc. (hons): Geography and Environmental Management (2001) and;
- MSc. Geography and Environmental Management (2002), all from the University of Johannesburg.

Expertise:
Clinton Geyser has over eleven years' experience in the environmental management field as an Environmental Assessment Practitioner and as an Environmental Control Officer, having worked on a variety of projects in the Western, Eastern and Northern Cape. Previous completed applications include, but not limited to:

- Civil engineering infrastructure including pipelines, Wastewater Treatment Works, and roads in the Western and Northern Cape.
- Agricultural developments, including reservoirs and dams, in the Western and Northern Cape.
- Telecommunications masts in the Western and Eastern Cape
- Housing Developments in the Western and Northern Cape.
- Resort developments in the Western and Northern Cape.
- Cemeteries in the Western Cape
- Waste Management Licences in the Western Cape

Employment:
Previous employment as an EAP: Doug Jeffery Environmental Consultants (2009 – 2012)
Current employment: EnviroAfrica cc (2012 – present).

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

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