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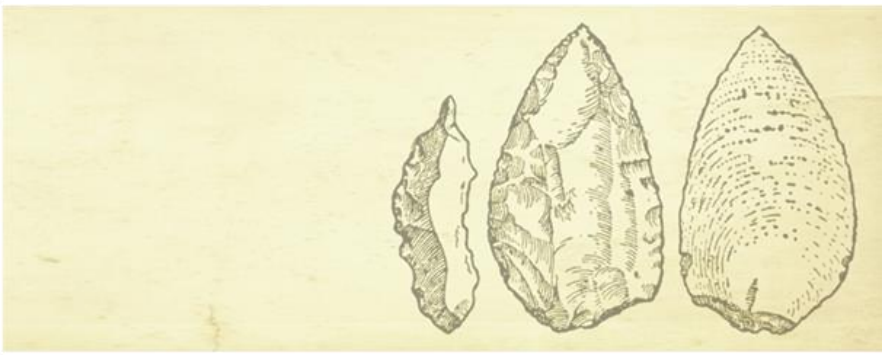

PHASE 1 HIA REPORT PLOT 1178 KAKAMAS SOUTH NORTHERN CAPE

PROPOSED AGRICULTURAL DEVELOPMENT (TRIPLE D FARMS), PLOT 1178, KAKAMAS SOUTH SETTLEMENT, KAI !GARIB MUNICIPALITY, MGCAWU DISTRICT MUNICIPALTY, NORTHERN CAPE.

PREPARED FOR:
ENVIROAFRICA

PREPARED BY:
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27 SEPTEMBER 2018

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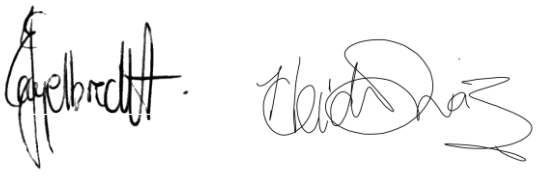
For this project, Mr Engelbrecht was responsible for the field survey of the development footprint, identification of heritage resources, and recommendations. Ms Fivaz was responsible for research and report compilation.

Declaration of independence:

We, Jan Engelbrecht and Heidi Fivaz, partners of UBIQUE Heritage Consultants, hereby confirm our independence as heritage specialists and declare that:

- we are suitably qualified and accredited to act as independent specialists in this application;
- we do not have any vested interests (either business, financial, personal or other) in the proposed development project other than remuneration for the heritage assessment and heritage management services performed;
- the work was conducted in an objective and ethical manner, in accordance with a professional code of conduct and within the framework of South African heritage legislation.



Signed: **Date: 2018-09-27**
J.A.C. Engelbrecht & H. Fivaz
UBIQUE Heritage Consultants

EXECUTIVE SUMMARY

Technical summary

Project description	
Project name	PROPOSED AGRICULTURAL DEVELOPMENT (TRIPLE D FARMS), PLOT 1178, KAKAMAS SOUTH SETTLEMENT, NORTHERN CAPE
Description	Agricultural and irrigation infrastructure development Kakamas, Northern Cape
Developer	
Triple D Farms (Pty) Ltd	
Consultants	
Environmental	EnviroAfrica cc.
Heritage and archaeological	UBIQUE Heritage Consultants
Paleontological	Banzai Environmental
Property details	
Province	Northern Cape
District municipality	Z.F. McCawu District Municipality
Local municipality	Kai !Garib Local Municipality
Topo-cadastral map	2820DC
Farm name	Plot 1178
Closest town	Kakamas
GPS Co-ordinates	28º 45' 50.08" S, 20º 35' 39.35" E. (site access)
Development footprint size	60 ha

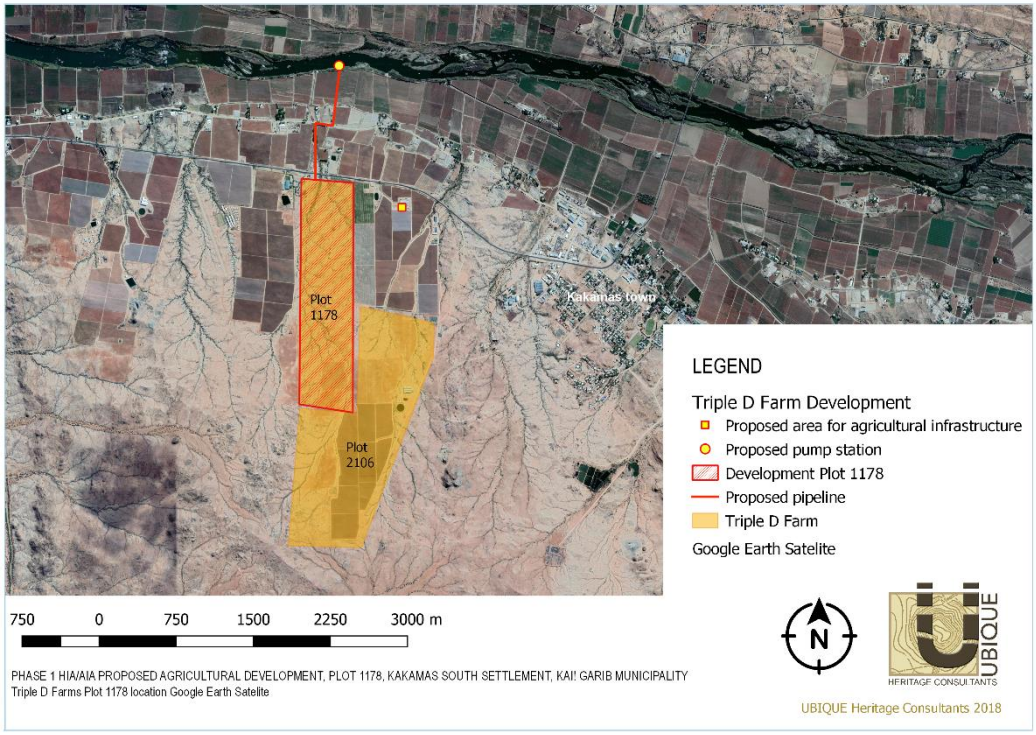


Figure 1 *Proposed agricultural development Triple D Farms (Pty) Ltd on Plot 1178, Kakamas South.*

Project description

UBIQUE Heritage Consultants were appointed by EnviroAfrica cc. as independent heritage specialists in accordance with Section 38 of the NHRA, to conduct a cultural heritage assessment to determine the impact of the proposed agricultural development on Plot 1178 Kakamas South, on any sites, features, or objects of cultural heritage significance. The site is located south of the N14, approximately 2.4 km West of Kakamas South Settlement in the Kai !Garib Local Municipality, Northern Cape. The proposed project will entail the utilisation of approximately 60 ha of land for the development of vineyards for table grape and raisin production by Triple D Farms (Pty) Ltd. The development will also include fixed infrastructure such as: a new pump station on the bank of the Orange River, pipelines, off-stream storage dam (reservoir), filtering system, fuel-depot and generator, a packing shed and labour housing. The proposed pump station and pipelines to the development area will be located within registered servitudes on Lot 387, 1248 and 2106 Kakamas South Settlement. Co-ordinates to Plot 1178 are 28º 45' 50.08" S, 20º 35' 39.35" E, and for the proposed pump station are 28º 45' 07.89" S, 20º 35' 15.73" E.

Findings and Impact on Heritage Resources

Description	Period	Location	Field rating/ Significance
Stone Age			
1. Two possible retouched flakes. Two lithics in 0.5 m² area, found in dry riverine. (Figure 9(a),9(b))	LSA/MSA	**28º 46' 02.4" S 20º 35' 12.4" E**	Field Rating IV C Low significance
2. Banded ironstone core. One lithic in 0.5 m² area, found in dry riverine. (Figure 9(c))	LSA/MSA	**28º 45' 59.7" S 20º 35' 15.4" E**	Field Rating IV C Low significance
3. Possible retouched flake. One lithic in 0.5 m² area, found in dry riverine close to northern border of study area. (Figure 9(d))	LSA/MSA	**28º 45' 47.4" S 20º 35' 13.0" E**	Field Rating IV C Low significance
4. Lithics with scraper. Three lithics in 0.5 m² area, found in dry riverine close to dolerite outcrop. (Figure 9(e))	LSA/MSA	**28º 45' 58.9" S 20º 35' 15.1" E**	Field Rating IV C Low significance
5. Flake. One lithic in 0.5 m² area, found in dry riverine. (Figure 9(f))	LSA/MSA	**28º 46' 00.5" S 20º 35' 14.1" E**	Field Rating IV C Low significance
6. Possible banded ironstone concave side scraper. One lithic in 0.5 m² area, found in dry riverine. (Figure 9(g))	LSA/MSA	**28º 46' 00.9" S 20º 35' 14.7" E**	Field Rating IV C Low significance
7. Collection of lithics collected in an area of approximately 100 m² area in close proximity to dolerite outcrop. (Figure 9(h))	LSA/MSA	**28º 45' 58.7" S 20º 35' 14.8" E**	Field Rating IV C Low significance

8. Possible retouched banded ironstone flake. One lithic in 0.5 m² area in close proximity to dolerite outcrop. (Figure 9(i))	LSA/MSA	**28° 45' 58.1" S 20° 35' 14.7" E**	Field Rating IV C Low significance
Historical			
9. No historical features were identified.			N/A
Graves			
10. No formal or informal graves were identified.			N/A

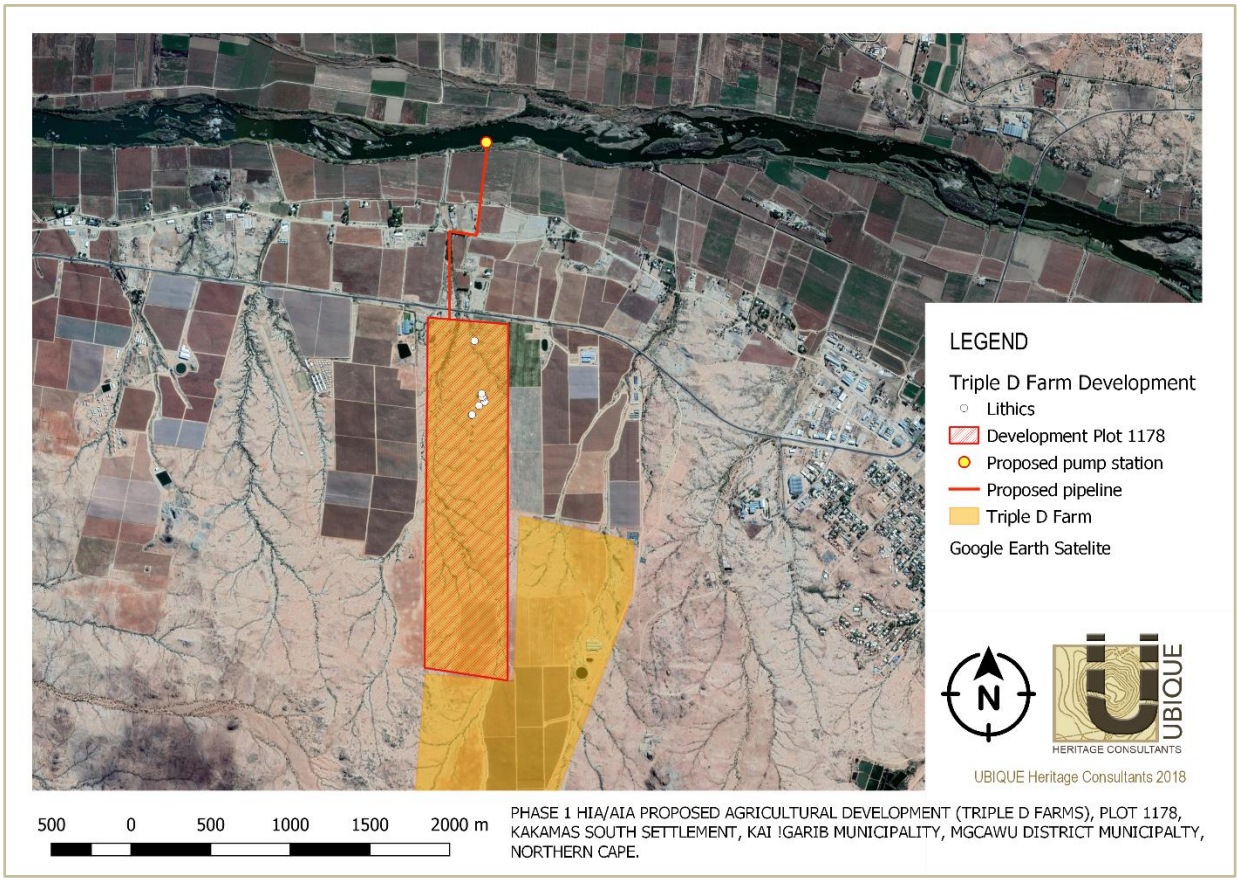


Figure 2 *Isolated occurrences of lithics across the study area, indicated on Google Earth Satellite image.*

Recommendations

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

1. The lithic traces on the landscape of the study area are of low significance and the impact of the development on these resources are inconsequential. No further

mitigation is required. Therefore, from a heritage point of view we recommend that the proposed development can continue.

2. Due to the low palaeontological significance of the area, no further palaeontological heritage studies, ground truthing and/or specialist mitigation are required pending the discovery of newly discovered fossils. It is considered that the development of the proposed development is deemed appropriate and feasible and will not lead to detrimental impacts on the palaeontological resources of the area. If fossil remains are discovered during any phase of construction, either on the surface or unearthed by fresh excavations, the ECO in charge of these developments ought to be alerted immediately. These discoveries ought to be protected (preferably in situ) and the ECO must report to SAHRA so that appropriate mitigation (e.g. recording, collection) can be carry out by a professional palaeontologist (Butler 2018).

3. Although all possible care has been taken to identify sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the assessment. If during construction, any possible discovery of finds such as stone tool scatters, artefacts, human remains, or fossils are made, the operations must be stopped, and a qualified archaeologist must be contacted for an assessment of the find. UBIQUE Heritage Consultants and its personnel will not be held liable for such oversights or for costs incurred as a result of such oversights.

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ABBREVIATIONS

AIA:	Archaeological Impact Assessment
ASAPA:	Association of South African Professional Archaeologists
BIA:	Basic Impact Assessment
CRM:	Cultural Resource Management
ECO:	Environmental Control Officer
EIA:	Environmental Impact Assessment*
EIA:	Early Iron Age*

EMP:	Environmental Management Plan
ESA:	Earlier Stone Age
GPS:	Global Positioning System
HIA:	Heritage Impact Assessment
LIA:	Late Iron Age
LSA:	Later Stone Age
MEC:	Member of the Executive Council
MIA:	Middle Iron Age
MPRDA:	Mineral and Petroleum Resources Development Act
MSA:	Middle Stone Age
NEMA:	National Environmental Management Act
NHRA:	National Heritage Resources Act
OWC:	Orange River Wine Cellars
PRHA:	Provincial Heritage Resource Agency
SADC:	Southern African Development Community
SAHRA:	South African Heritage Resources Agency

**Although EIA refers to both Environmental Impact Assessment and the Early Iron Age both are internationally accepted abbreviations it must be read and interpreted in the context it is used.*

GLOSSARY

Archaeological: material remains resulting from human activity which are in a state of disuse and are in or on land and are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;

- rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and is older than 100 years (as defined and protected by the National Heritage Resources Act (NHRA) (Act No. 25 of 1999) including any area within 10 m of such representation;
- wrecks, being any vessel or aircraft, or any part thereof, which were wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the culture zone of the Republic, as defined respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;
- features, structures and artefacts associated with military history, which are older than 75 years and the sites on which they are found.

Stone Age: The first and longest part of human history is the Stone Age, which began with the appearance of early humans between 3-2 million years ago. Stone Age people were hunters, gatherers and scavengers who did not live in permanently settled communities. Their stone tools preserve well and are found in most places in South Africa and elsewhere.

Earlier Stone Age:	>2 000 000 - >200 000 years ago
Middle Stone Age:	<300 000 - >20 000 years ago
Later Stone Age:	<40 000 - until the historical period

Iron Age:	(Early Farming Communities). Period covering the last 1800 years, when immigrant African farmer groups brought a new way of life to southern Africa. They established settled villages, cultivated domestic crops such as sorghum, millet and beans, and herded cattle as well as sheep and goats. As they produced their own iron tools, archaeologists call this the Iron Age. Early Iron Age: AD 200 - AD 900 Middle Iron Age: AD 900 - AD 1300 Later Iron Age: AD 1300 - AD 1850
Historic:	Period of arrival of white settlers and colonial contact. AD 1500 to 1950
Historic building:	Structures 60 years and older.
Fossil:	Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.
Heritage:	That which is inherited and forms part of the National Estate (historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999).
Heritage resources:	These mean any place or object of cultural significance, tangible or intangible.
Holocene:	The most recent geological period that commenced 10 000 years ago.
Palaeontology:	Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site that contains such fossilised remains or traces
Cumulative impacts:	"Cumulative Impact", in relation to an 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 may not be significant, but may become significant when added to existing and reasonably foreseeable impacts eventuating from similar or diverse activities.
Mitigation:	Anticipating and preventing negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.
A 'place':	a site, area or region; – a building or other structure which may include equipment, furniture, fittings and articles associated with or connected with such building or other structure; – a group of buildings or other structures which may include equipment, furniture, fittings and articles associated with or connected with such group of buildings or other structures; – an open space, including a public square, street or park; and – in relation to the management of a place, includes the immediate surroundings of a place.

'Public monuments and memorials': mean all monuments and memorials—

- erected on land belonging to any branch of central, provincial or local government, or on land belonging to any organisation funded by or established in terms of the legislation of such a branch of government; or
- which were paid for by public subscription, government funds, or a public-spirited or military organisation, and are on land belonging to any private individual;

'Structures': any building, works, device or other facility made by people and which are fixed to land, and include any fixtures, fittings and equipment associated therewith.

1. INTRODUCTION

1.1 Scope of study

The project involves the proposed agricultural development of vineyards and infrastructure on Plot 1178 near Kakamas South Settlement, in the Kai !Garib Local Municipality, Northern Cape. UBIQUE Heritage Consultants were appointed by EnviroAfrica cc as independent heritage specialists in accordance with the National Environmental Management Act 107 of 1998 (NEMA), and in compliance with Section 38 of the National Heritage Resources Act 25 of 1999 (NHRA), to conduct a cultural heritage assessment (AIA/HIA) of the development area.

The aim of the assessment is to identify and report any heritage resources that may fall within the development footprint; to determine the impact of the proposed development on any sites, features, or objects of cultural heritage significance; to assess the significance of any identified resources; and to assist the developer in managing the documented heritage resources in an accountable manner, within the framework provided by the National Heritage Resources Act (Act 25 of 1999) (NHRA).

South Africa's heritage resources are both rich and widely diverse, encompassing sites from all periods of human history. Resources may be tangible, such as buildings and archaeological artefacts, or intangible, such as landscapes and living heritage. Their significance is based upon their aesthetic, architectural, historical, scientific, social, spiritual, linguistic, economic or technological values; their representation of a time or group; their rarity; and their sphere of influence.

The integrity and significance of heritage resources can be jeopardized by natural (e.g. erosion) and human (e.g. development) activities. In the case of human activities, a range of legislation exists to ensure the timeous and accurate identification and effective management of heritage resources for present and future generations.

The result of this investigation is presented within this heritage impact assessment report. It comprises the recording of heritage resources present/ absent and offers recommendations for the management of these resources within the context of the proposed development.

Depending on SAHRA's acceptance of this report, the developer will receive permission to proceed with the proposed development, taking in account any proposed mitigation measures.

1.2 Assumptions and limitations

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

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

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

2. TERMS OF REFERENCE

An HIA/ AIA must address the following key aspects:

- the identification and mapping of all heritage resources in the area affected;
- an assessment of the significance of such resources in terms of heritage assessment criteria set out in regulations;
- an assessment of the impact of the development on heritage resources;
- an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
- if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
- plans for mitigation of any adverse effects during and after completion of the proposed development.

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

2.1. Statutory Requirements

2.1.1 General

The Constitution of the Republic of South Africa Act 108 of 1996 is the source of all legislation. Within the Constitution the Bill of Rights is fundamental, with the principle that the environment should be protected for present and future generations by preventing pollution, promoting conservation and practising ecologically sustainable development. With regard to spatial planning and related legislation at national and provincial levels the following legislation may be relevant:

- Physical Planning Act 125 of 1991
- Municipal Structures Act 117 of 1998
- Municipal Systems Act 32 of 2000
- Development Facilitation Act 67 of 1995 (DFA)

The identification, evaluation and management of heritage resources in South Africa are required and governed by the following legislation:

- National Environmental Management Act 107 of 1998 (NEMA)
- KwaZulu-Natal Heritage Act 4 of 2008 (KZNHA)
- National Heritage Resources Act 25 of 1999 (NHRA)
- Minerals and Petroleum Resources Development Act 28 of 2002 (MPRDA)

2.1.2 National Heritage Resources Act 25 of 1999

The NHRA established the South African Heritage Resources Agency (SAHRA) together with its Council to fulfil the following functions:

- co-ordinate and promote the management of heritage resources at national level;
- set norms and maintain essential national standards for the management of heritage resources in the Republic and to protect heritage resources of national significance;
- control the export of nationally significant heritage objects and the import into the Republic of cultural property illegally exported from foreign countries;
- enable the provinces to establish heritage authorities which must adopt powers to protect and manage certain categories of heritage resources; and
- provide for the protection and management of conservation-worthy places and areas by local authorities.

2.1.3 Heritage Impact Assessments/Archaeological Impact Assessments

Section 38(1) of the NHRA of 1999 requires **the responsible heritage resources authority to notify the person who intends to undertake a development that fulfils the following criteria to submit an impact assessment report if there is reason to believe that heritage resources will be affected by such development:**

- the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- the construction of a bridge or similar structure exceeding 50m in length;
- any development or other activity that will change the character of a site—
    - exceeding 5000m² in extent; or
    - involving three or more existing erven or subdivisions thereof; or
    - involving three or more erven or divisions thereof which have been consolidated within the past five years; or
    - the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

- the re-zoning of a site exceeding 10 000m² in extent; or
- any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority.

2.1.4 Definitions of heritage resources

The NHRA defines a heritage resource as any place or object of cultural significance, i.e. of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. These include, but are not limited to, the following wide range of places and objects:

- living heritage as defined in the National Heritage Council Act No 11 of 1999 (cultural tradition; oral history; performance; ritual; popular memory; skills and techniques; indigenous knowledge systems; and the holistic approach to nature, society and social relationships);
- Ecofacts (non-artefactual organic or environmental remains that may reveal aspects of past human activity; definition used in KwaZulu-Natal Heritage Act 2008);
- places, buildings, structures and equipment;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds;
- public monuments and memorials;
- sites of significance relating to the history of slavery in South Africa;
- movable objects, but excluding any object made by a living person; and
- battlefields.

Furthermore, a place or object is to be considered part of the national estate if it has cultural significance or other special value because of—

- its importance in the community, or pattern of South Africa's history;
- its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons; and
- its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.

2.1.5 Management of Graves and Burial Grounds

- **Graves younger than 60 years** are protected in terms of Section 2(1) of the Removal of Graves and Dead Bodies Ordinance 7 of 1925 as well as the Human Tissues Act 65 of 1983.

- **Graves older than 60 years, situated outside a formal cemetery administered by a local Authority are** protected in terms of Section 36 of the NHRA as well as the Human Tissues Act of 1983. Accordingly, such graves are the jurisdiction of SAHRA. The procedure for Consultation Regarding Burial Grounds and Graves (Section 36(5) of NHRA) is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in the category located inside a formal cemetery administrated by a local authority will also require the same authorisation as set out for graves younger than 60 years over and above SAHRA authorisation.

The **protocol for the management of graves older than 60 years situated outside a formal cemetery administered by a local authority** is detailed in Section 36 of the NHRA:

(3) *(a)* No person may, without a permit issued by SAHRA or a provincial heritage resources authority—

(a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;

(b) destroy, damage, alter, exhume, 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; or

(c) bring onto or use at a burial ground or grave referred to in paragraph *(a)* or *(b)* any excavation equipment, or any equipment which assists in the detection or recovery of metals.

(4) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction or damage of any burial ground or grave referred to in subsection (3)*(a)* unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources authority.

(5) SAHRA or a provincial heritage resources authority may not issue a permit for any activity under subsection (3)*(b)* unless it is satisfied that the applicant has, in accordance with regulations made by the responsible heritage resources authority—

(a) made a concerted effort to contact and consult communities and individuals who by tradition have an interest in such grave or burial ground; and

(b) reached agreements with such communities and individuals regarding the future of such grave or burial ground.

(6) Subject to the provision of any other law, any person who in the course of development or any other activity discovers the location of a grave, the existence of which was previously unknown, must immediately cease such activity and report the discovery to the responsible heritage resources authority which must, in co-operation with the South African Police Service and in accordance with regulations of the responsible heritage resources authority—

(a) carry out an investigation for the purpose of obtaining information on whether or not such grave is protected in terms of this Act or is of significance to any community; and

(b) if such grave is protected or is of significance, assist any person who or community which is a direct descendant to make arrangements for the exhumation and re-interment of the contents of such grave or, in the absence of such person or community, make any such arrangements as it deems fit.

3. STUDY APPROACH AND METHODOLOGY

3.1 Desktop study

The first step in the methodology was to conduct a desktop study of the heritage background of the area and the site of the proposed development. This entailed the scoping and scanning of historical texts/records as well as previous heritage studies and research around the study area.

By incorporating data from previous CRM reports done in the area and an archival search, the study area is contextualised. The objective of this is to extract data and information on the area in question, looking at archaeological sites, historical sites and graves of the area.

No archaeological site data was available for the project area. A concise account of the archaeology and history of the broader study area was compiled from sources including those listed in the bibliography.

3.1.1 Literature review

A survey of literature was undertaken to obtain background information regarding the area. Researching the SAHRA APM Report Mapping Project records and the SAHRIS online database (http://www.sahra.org.za/sahris), it was determined that several other archaeological or historical studies have been performed within the wider vicinity of the study area. Sources consulted in this regard are indicated in the bibliography.

3.2 Field study

The Phase 1 (AIA/HIA) requires the completion of a field study to establish and ensure the following:

3.2.1 Systematic survey

A systematic survey of the proposed project area to locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest, was completed.

UBIQUE Heritage Consultants inspected the proposed development and surrounding areas on 22nd and 23rd of August 2018 and completed a controlled-exclusive, pre-planned, pedestrian survey. We conducted an inspection of the surface of the ground, wherever the surface was visible. This was done with no substantial attempt to clear brush, sand, deadfall, leaves or other material that may cover the surface and with no attempt to look beneath the surface beyond the inspection of rodent burrows, cut banks and other exposures fortuitously observed.

The survey was tracked with a handheld Garmin global positioning unit (Garmin eTrex 10).

3.2.2 Recording significant areas

GPS points of identified significant areas were recorded with a handheld Garmin global positioning unit (Garmin eTrex 10). Photographs were taken with a Sony Coolpix 10-megapixel camera. Detailed fieldnotes were taken to describe observations. The layout of the area and plotted by GPS points, tracks and coordinates, were transferred to Google Earth and QGIS, and maps were created.

3.2.3 Determining significance

Levels of significance of the various types of heritage resources observed and recorded in the project area will be determined to the following criteria:

Cultural significance:

- Low	A cultural object being found out of context, not being part of a site or without any related feature/structure in its surroundings.
- Medium	Any site, structure or feature being regarded less important due to several factors, such as date and frequency. Likewise, any important object found out of context.
- High	Any site, structure or feature regarded as important because of its age or uniqueness. Graves are always categorized as of a high importance. Likewise, any important object found within a specific context.

Heritage significance:

- Grade I	Heritage resources with exceptional qualities to the extent that they are of national significance
- Grade II	Heritage resources with qualities giving it provincial or regional importance although it may form part of the national estate
- Grade III	Other heritage resources of local importance and therefore worthy of Conservation

Field ratings:

i.	National Grade I	significance should be managed as part of the national estate
ii.	Provincial Grade II	significance should be managed as part of the provincial estate
iii.	Local Grade IIIA	should be included in the heritage register and not be mitigated (high significance)
iv.	Local Grade IIIB	should be included in the heritage register and may be

		mitigated (high/ medium significance)
v.	General protection A (IV A)	site should be mitigated before destruction (high/ medium significance)
vi.	General protection B (IV B)	site should be recorded before destruction (medium significance)
vii.	General protection C (IV C)	phase 1 is seen as sufficient recording and it may be demolished (low significance)

Heritage value, statement of significance:

a. its importance in the community, or pattern of South Africa's history;

b. its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;

c. its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;

d. its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;

e. its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;

f. its importance in demonstrating a high degree of creative or technical achievement at a particular period;

g. its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;

h. its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and

i. sites of significance relating to the history of slavery in South Africa.

3.3 Oral history

Where possible, people from local communities were interviewed to obtain information relating to the surveyed area.

3.4 Report

The results of the desktop research and field survey are compiled in this report. The identified heritage resources and anticipated and cumulative impacts that the development of the proposed project may have on the identified heritage resources will be presented objectively. Alternatives, should any significant sites be impacted adversely by the proposed project, are offered. All effort

will be made to ensure that all studies, assessments and results comply with the relevant legislation and the code of ethics and guidelines of the Association of South African Professional Archaeologists (ASAPA). The report aims to assist the developer in managing the documented heritage resources in a responsible manner, and to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act 25 of 1999).

4. PROJECT OVERVIEW

UBIQUE Heritage Consultants were appointed by EnviroAfrica cc. as independent heritage specialists in accordance with Section 38 of the NHRA and the National Environmental Management Act 107 of 1998 (NEMA), to conduct a cultural heritage assessment to determine the impact of the proposed agricultural development on Plot 1178 Kakamas South, on any sites, features, or objects of cultural heritage significance. The site is located south of the N14, approximately 2.4 km west of Kakamas South Settlement in the Kai !Garib Local Municipality, Northern Cape.

The proposed project will entail the utilisation of approximately 60 ha of land for the development of vineyards for table grape and raisin production by Triple D Farms (Pty) Ltd. The area will be divided into two sections of 30 ha, each section with its own irrigation scheme that will include a pump, filtration system and mainline to the irrigation blocks. A new pump station on the bank of the Orange River, pipelines, and an off-stream storage dam (reservoir) will be built to feed the irrigation system. The development will also include fixed infrastructure such as a fuel-depot and generator, a packing shed and labour housing. The proposed pump station and pipelines to the development area will be located within registered servitudes on Lot 387, 1248 and 2106 Kakamas South Settlement. Co-ordinates to Plot 1178 are 28° 45' 50.08" S, 20° 35' 39.35" E, and for the proposed pump station are 28° 45' 07.89" S, 20° 35' 15.73" E.

4.1 Technical information

Project description	
Project name	PROPOSED AGRICULTURAL DEVELOPMENT (TRIPLE D FARMS), PLOT 1178, KAKAMAS SOUTH SETTLEMENT, NORTHERN CAPE
Description	Agricultural and irrigation infrastructure development Kakamas, Northern Cape
Developer	
Triple D Farms (Pty) Ltd	
Contact information	piet@dddfarms.net www.ddd-farms.com
Development type	Agricultural
Land owner	
Triple D Farms (Pty) Ltd	
Contact information	piet@dddfarms.net www.ddd-farms.com

Consultants		
Environmental	EnviroAfrica cc	
Heritage and archaeological	UBIQUE Heritage Consultants	
Paleontological	Banzai Environmental	
Property details		
Province	Northern Cape	
District municipality	Z.F. McCawu District Municipality	
Local municipality	Kai !Garib Local Municipality	
Topo-cadastral map	2820DC	
Farm name	Plot 1178	
Closest town	Kakamas South Settlement	
GPS Co-ordinates	28º 45' 50.08" S, 20º 35' 39.35" E (site access)	
Property size	100 ha	
Development footprint size	60 ha	
Land use		
Previous		
Current		
Re- zoning required	No	
Sub-division of land	No	
Development criteria in terms of Section 38(1) NHRA		Yes/No
Construction of a road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length.		Yes
Construction of bridge or similar structure exceeding 50m in length.		No
Construction exceeding 5000m ^{2}.		Yes
Development involving three or more existing erven or subdivisions.		Yes
Development involving three or more erven or divisions that have been consolidated within the past five years.		No
Rezoning of site exceeding 10 000m ^{2}.		No
Any other development category, public open space, squares, parks, recreation grounds.		No

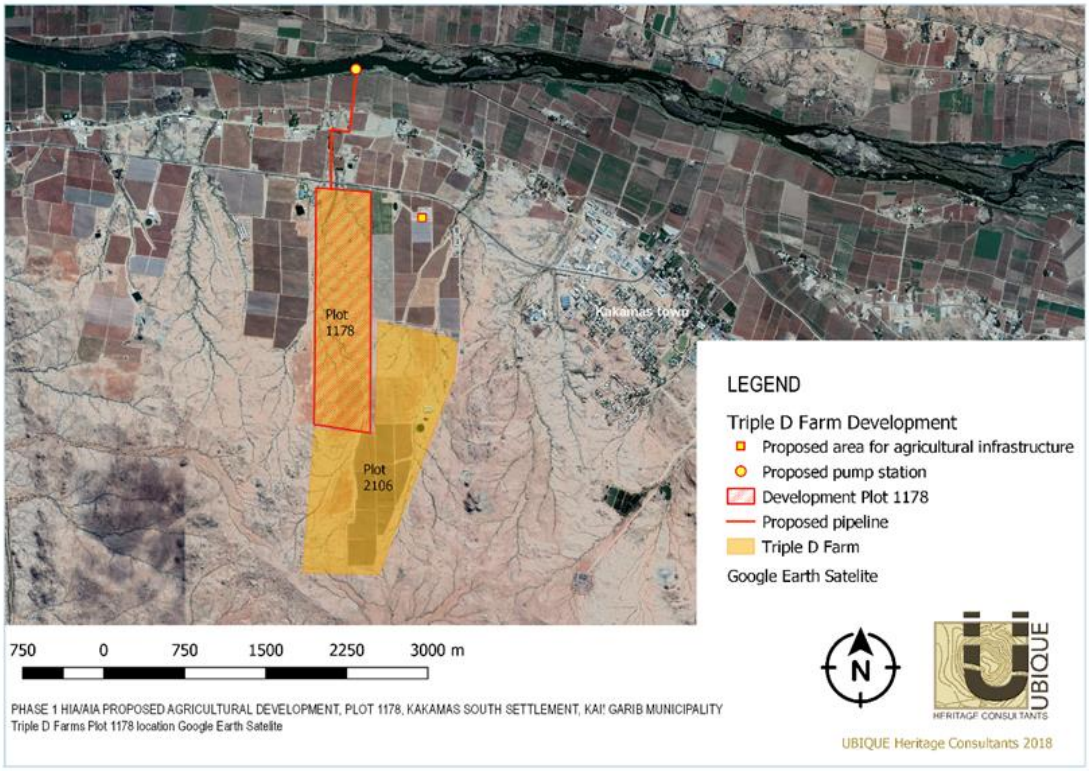


Figure 3 *Proposed agricultural development plot 1178, Kakamas South. Google Earth Satellite.*

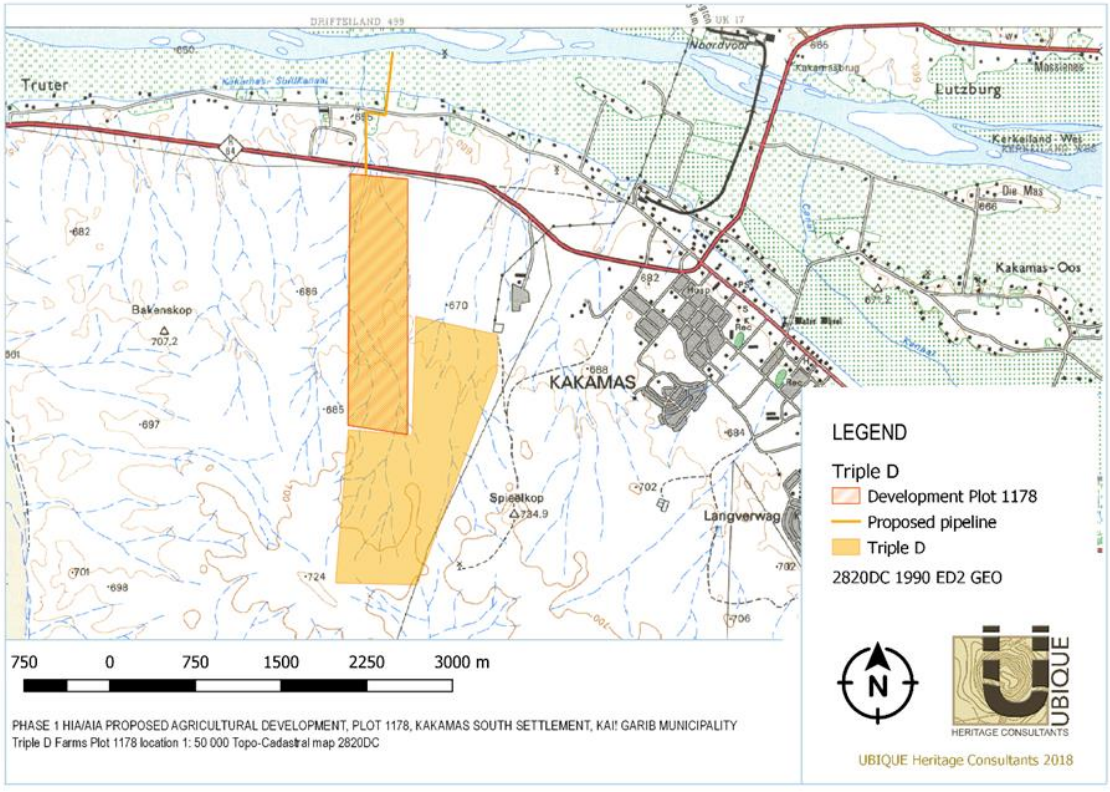


Figure 4 *Proposed agricultural development Plot 1178, Kakamas South.1:50 000 Topo-cadastral map WGS2820DC, Surveyor General.*

4.2 Description of affected environment

The Kai !Garib Local Municipality falls predominantly within the Nama-Karoo biome (Mucina & Rutherford 2006), and the majority of the vegetation type in the study area is typical Kalahari Karroid Shrubland interspersed with Arid Bushmanland Grassland. The landscape is characterised by flat plains with dwarf shrubs (*Salsola* sp.) and white grasses (*Stipagrostis* spp.). Karoo-related elements (shrubs) meet with northern floristic elements, indicating a transition to the Kalahari region and sandy soils (Mucina & Rutherford 2006). Vegetation observed in the study area include Driedoring (*Rhigozum trichotomum*), Swarthaak (*Senegalia mellifera*), Namaqua-bossie (*Searsia undulata)*, Melkbos (*Gomphocarpus fruticosus)*, Boesmangras *(Stipagrostis* spp.), Wildelusern *(Monechma divaricatum)*, Quiver trees (*Aloe dichotoma),* and Lemoendoring (*Parkinsonia Africana).* The area consists of flat open quartzite and Dwyka tillite gravel plains with sandy loam and calcrete soils, and several dolerite outcrops. The site slopes from the south towards the N14 and the Gariep/Orange River in the north. Dry riverine and drainage lines traverse the property, running from south to north towards the Gariep/Orange River.

The town of Kakamas is situated in the midst of an intensive Irrigation Farming Community stretching from Groblershoop in the east up to Blouputs in the west. The Gariep/Orange River, the economic life vain of the community, is characterised by Lower Gariep Alluvial vegetation. Unpredictable flooding events cause high disturbance and soil movement. The river cuts through a great variety of Precambrian metamorphic rocks and is subjected to floods, especially in summer, as a result of high precipitation on the highveld. The soil of these areas is very fertile resulting in various grapes and other crops such as pecan nut- and citrus plantations being planted along the Gariep/Orange River (Mucina & Rutherford 2006). The study area is surrounded by established agricultural developments.

Due to previous developments adjacent to the site, there are several access roads to the site. Roads vary from two-track field paths, to graded roads constructed to provide access for construction vehicles. The N14 forms the northern boundary of Plot 1178. A recently erected Eskom line runs through the site, from east to west. Several disturbed areas are present on site which could be related to development and road construction. There is a soccer field and houses in the north-western corner of the site, close to the N14. The proposed pipeline trajectory from the planned pump station on the Gariep/Orange River shore will run through existing vineyards.

Figure 5 Views of the affected development area.

5. HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

5.1 Region

The Northern Cape is rich in archaeological sites and landscapes that reflect the complex South African heritage from the Stone Age to Colonial history.

5.1.1 Stone Age

The Stone Age is the period in human history when lithic material was mainly used to produce tools (Coertze & Coertze 1996). In South Africa the Stone Age can be divided in three periods. It is, however, important to note that dates are relative and only provide a broad framework for interpretation. The division of the Stone Age according to Lombard et al. (2012) is as follows:

Earlier Stone Age: >2 000 000 - >200 000 years ago
Middle Stone Age: <300 000 - >20 000 years ago
Later Stone Age: <40 000 - until the historical period.

Each of the sub-divisions is formed by a group of industries where the assemblages share attributes or common traditions (Lombard et al. 2012). Prominent sites that exemplify these periods in the Nama-Karoo Biome are Rooidam and Bundu Farm (Earlier Stone Age and Middle Stone Age), and Biesje Poort 2, Bokvasmaak 3, Melkboom 1, Vlermuisgat, and Jagtpan 7 (Later Stone Age) (Lombard et al. 2012).

Within the region, Stone Age sites and complexes have been, and are still being investigated in some detail. This includes, but are not limited to, the landscape near Kathu, where numerous Stone Age sites have been documented and excavated, representing the longest preserved lithostratigraphic and archaeological sequence of human occupation at the pan through the ESA, MSA, and LSA and with evidence for 500 000-year-old hafted stone points; ancient specularite working (and mining) on the eastern side of Postmasburg, Doornfontein; and associated Ceramic Later Stone Age material, and also the older transitional ESA/MSA Fauresmith sites at Lyly Feld, Demaneng, Mashwening, King, Rust & Vrede, Paling, Gloucester and Mount Huxley (Beaumont 2004; Beaumont 2013; Beaumont & Morris 1990; Beaumont & Vogel 2006; Morris 2005; Morris & Beaumont 2004; Porat et al. 2010; Thackeray et al. 1983; Walker et al. 2014; Wilkins et al. 2012).

Beaumont et al. (1995) commented that thousands of square kilometres of Bushmanland are covered by low-density lithic scatters. It is therefore not surprising that Stone Age sites and lithic scatters were identified by CRM practitioners between the Garona substation and the Gariep/Orange River in numerous surveys conducted during the recent years. Scatters of MSA material have been recorded close to Griekwastad, Hotazel. Postmasburg and Kenhardt, Pofadder, Marydale, and in the Upington district (Dreyer 2006, 2012, 2014; Pelser & Lombard 2013; PGS Heritage 2009, 2010; Webley 2013). MSA and LSA tools as well as rock engravings were also found at Putsonderwater, Beeshoek and Bruce (Morris 2005; Snyman 2000; Van Vollenhoven 2012b; Van Vollenhoven 2014).

Archaeological surveys have shown rocky outcrops and hills, drainage lines, riverbanks and confluences to be prime localities for archaeological finds and specifically Stone Age sites since these areas where utilized for base camps close to water and hunting ranges. If any such features occur in the study area, Stone Age manifestations can be anticipated (Lombard 2011).

5.1.2 Historical period

The historical period within the region coincides with the incursion of white traders, hunters, explorers, and missionaries into the interior of South Africa. Buildings and structures associated with the early missionaries, travellers, and traders such as PJ Truter's and William Somerville (arriving in 1801), Donovan, Burchell and Campbell, James Read (arriving around 1870) William Sanderson, John Ryan and John Ludwig's (De Jong 2010; Snyman 2000) arrival during the 19th century, and the settlement of the first white farmers and towns, are still evident in the Northern Cape. Numerous heritage reports that provide a synthesis of the incursions of travellers, missionaries and the early European settlers have been captured on the SAHRIS database.

San hunter-gatherer groups utilised the landscape for thousands of years and Khoi herders moved into South Africa with their cattle and sheep approximately 2000 years ago. With the arrival of the Dutch settlers in the Cape in the mid-17th century, clashes between the Europeans and Khoi tribes in the Cape Peninsula resulted in the Goringhaiqua and Goraxouqua migrating north towards the Gariep/Orange River in 1680. These tribes became collectively known as the Korannas, living as small tribal entities in their own separate areas (Penn 2005).

According to Breutz (1953, 1954), and Van Warmelo (1935), several Batswana tribes, including the different Thlaping and Thlaro sections as well as other smaller groups, take their 18th and 19th century roots back to the area around Groblershoop, Olifantshoek, the Langeberg (Majeng) and Korannaberg ranges in the western part of the region. After Britain annexed Bechuanaland in 1885, the land of the indigenous inhabitants was limited to a few reserves. In 1895, when British Bechuanaland was incorporated into the Cape Colony, the land inside the reserves remained the property of the Tswana and could only be alienated with the consent of the British Secretary of State.

Because of its distance from the Cape Colony, this arid part of South Africa's interior was generally not colonised until relatively recent. According to history, the remote northern reaches of the Cape Colony were home to cattle rushers, gun-runners, river pirates and various manner of outlaws. Distribution of land to colonial farmers only occurred from the 1880s onwards when Government-owned land was surveyed, divided into farms, and transferred to farmers. More permanent large-scale settlement however only started in the late 1920s and the first farmsteads were possibly built during this period. The region remained sparsely populated until the advent of the 20th century (De Jong 2010, Penn 2005).

The region has been the backdrop to various incidents of conflict. The arrival of large numbers of Great Trek Boers from the Cape Colony to the borders of Bechuanaland and Griqualand West in 1836 caused conflict with many Tswana groups and the missionaries of the London Mission Society. The conflict between Boer and Tswana communities escalated in the 1860s and 1870s

when the Korana and Griqua communities and the British government became involved. The Northern Cape was very important in the Anglo-Boer War (1899-1902) and major battles took place within 120 km of Kimberley, including the battle of Magersfontein. Boer guerrilla forces roamed the entire Northern Cape region and skirmishes between Boer and Brits were regular occurrences. Furthermore, many graves in the region tell the story of battles fought during the 1914 Rebellion (Hopkins 1978).

5.2 Local

During 1778, Swedish-born traveller and explorer Hendrik Wikar, reached the middle and lower reaches of the Orange River after a long land journey that started in Cape Town. As a deserter from the service of the Dutch East India Company, Wikar spent several years within the area, and compiled a report of his experiences in exchange for a pardon (Ross 1975). He documented his encounters with Khoisan communities who called themselves the *Einiqua*, or *River People*. The *Einiqua* were divided into three "kraals": the *Namnykoa* near the Augrabies Falls, the *Kaukoa* on islands west of Keimoes, and the *Aukokoa* of Kanoneiland and other islands to the east. Their kraals consisted of considerable amount of sheep and cattle, they collected plants, hunted game, and cultivated dagga but no other crops according to Wikar (Ross 1975). Amongst the pastoralist communities living on the islands were the *Anoe eis* people who Wikar characterised as "Bushmen". They possessed no domesticated stock, subsisted by fishing, game-trapping, hunting and the gathering of plant foods (Morris & Beaumont 1991). Colonel Robert Jacob Gordon who visited the area in 1779, however remarked that they were actually *Einiqua* (i.e. Khoi) who had "lost their cattle as a result of an argument with the *Namneiqua* village (Morris & Beaumont 1991).

The name of the area originates with the *Einiqua* and there are several theories as to the meaning of the word Kakamas:

- *Bad Grazing*: Before canals and irrigation schemes were developed, the area was notorious for its poor grazing pastures.
- *Angry/Charging Cow/Chasing Cows*: This may derive from the Korana word *kagamas*, which could have become associated with the place because the river banks nearby had sloping banks making it an easy crossing place for cattle herds. Most herds were reluctant to enter the river and would apparently turn on their herdsmen.
- *Thakemas*, meaning *drink place*. This would refer to the ease with which livestock could be herded to the area to drink
- *Swimming water*: Possibly the San word, given to the place because it was possible to swim across the river at this point. (De Jong 2010).

Numerous Heritage Impact Assessments have been conducted in the wider Kakamas landscape. These include, but are not limited to, studies involving agricultural developments at Steynmond Boerdery on Kakamas North Farm 339 (Beaumont 2007), and at the Cillie cemetery and township extensions (Dreyer 2013; Van Schalkwyk 2013). De Jong (2010) and Morris (2016; 2017) assessed areas for intended agricultural development to the north and south of the Orange River on Kakamas North and Kakamas South Settlements respectively.

5.2.1 Stone Age

Scatters of stone artefacts around Kakamas have been reported by ACRM (2012), Beaumont (2008), Kaplan (2012; 2013; 2016; 2017), Morris (2011; 2012; 2017), and Van Schalkwyk (2010c; 2011; 2013), to name a few. The lithics documented are predominantly associated with the MSA, with a few localities attributed to the LSA. The incidences of lithics have little to no context and are largely described as of poor preservation and of low significance (Morris 2012). ACRM (2012) noted that 95% of the tools documented are made from locally available, fine-grained banded ironstone, which is a favoured raw material on many sites in the Northern Cape. The remainder are in indurated shale, chert, quartzite and quartz, and hornfels.

To the north west of the study area on agricultural lot 2371 Kakamas South Settlement, Morris (2017b) reports the unexpected occurrence of a rock gong on a rocky granite-gneiss outcrop. Rock gongs (or lithophones) are rocks that ring when struck and are characterised by beating marks that reflect ancient use (Morris 2017b). According to Morris (2017b), the find is significant as it is the first rock gong to be identified from this part of the Northern Cape and on granite-gneiss. Often found in association with rock art, they are a feature of the LSA, with alleged ritual connotations (Morris 2017b).

Another interesting prehistoric find in the greater vicinity is the discovery of two kite-like features 22km north of Keimoes (Van der Walt & Lombard 2018). The large funnel-shaped features of undetermined age were constructed and shaped by organising local dolerite stones, sometimes incorporating in-situ dolerite outcrops/boulders. Kites are widely accepted as being utilised as hunting traps (Holzer *et al.* 2010 in Van der Walt & Lombard 2018). The ethno-historical records documented various kinds of hunting traps used by San hunter-gatherers, but the use of these funnel-shaped stone features by Stone Age herding communities (who also hunted) cannot be conclusively discounted (Van der Walt & Lombard 2018).

Furthermore, Morris (2014; Morris & Beaumont 1991) hypothesizes that the archaeological footprint of substantial herder and short-term hunter-gatherer encampments along the floodplain of the Orange River, have been disrupted and destroyed by intensive farming alongside the river since colonial settlement.

5.2.2 Historical period

The town of Kakamas grew out of an irrigation scheme that was established in 1898 by the community. The town was laid out in 1931 and attained full municipal status in 1964 (Van Schalkwyk 2013).

The historic irrigation scheme set up by the Dutch Reformed Mission Church community in Kakamas was developed to alleviate the need of farmers left destitute by the severe drought and rinderpest epidemic of 1895-1897. Led by Rev. Schroder, the irrigation scheme included canals dug by hand, beginning at the upper end of Neus Island (Hopkins 1978; Van Vuuren 2011). Four

historic water wheels situated along the *Noordvoor,* or northern furrow on Erven 103, 1057, 268 and 1467 Kakamas South Settlement, have been designated as provincial heritage sites (http://sahra.org.za/sahris/sites). The development of canal systems played an important role in irrigating extensive vineyards and orchards within the region and the development of substantial agricultural initiatives within the area.

The Kakamas settlement is also known for its pioneering development of a hydro-electric power generator, brought into operation in 1924 (Hopkins 1978). The building which housed the old transformer in Voortrekker Street has been ear-marked as a museum (Morris 2010; 2017; http://sahra.org.za/sahris/sites).

De Jong (2010) classifies the cultural landscape of Kakamas as predominantly historic farmland. The affected area consists of working (operating) irrigation and grazing farms located in a typical Lower Orange River environment. These farms display heritage features that typically occur in the district, such as their large size, irrigation furrows and pipelines, fences, tracks, farmsteads, and irrigated fields. Farmsteads are clustered close to rivers and main roads (De Jong 2010). According to De Jong (2010) this class of landscape is of relatively low heritage sensitivity because it can absorb adverse effects of new development through some mitigation.

Just outside the town of Kakamas North on Lot 189 is a monument that commemorates First World War German troops killed in a battle against South African Union forces on the 4th of February 1915 on this site. Union troops assembled near Upington to launch an attack on German South West Africa, while the German forces prepared an attack on Kakamas. A heavy battle ensued between two unevenly matched forces at Kakamas that resulted in seven dead, six wounded and sixteen prisoners of war amongst the Germans. The memorial was erected by the '*Volksbund Deutschen Kriegs-graberfflrsorge'* (http://sahra.org.za/sahris/sites/).

5.2.3 Oral history

No interviews with locals were conducted regarding the history of the area.

6. IDENTIFIED RESOURCES AND HERITAGE ASSESSMENT

6.1 Surveyed area

The area surveyed for the impact assessment was dictated by the Google Earth map of the development footprint provided by the client. The pedestrian survey commenced on the southern boundary of the site and was completed at the North-western corner of the site at the N14 national road. Survey was conducted in 30m transects throughout the entire 60ha footprint. The route of the proposed pipeline was followed from its point of origin on the Orange River towards the N14 and on to the site. The pipeline will run through existing vineyards on the northern side of the N14.

Figure 6 *Google Earth image showing survey track for Plot 1178 Kakamas South.*

Figure 7 *Google Earth image showing survey track of proposed pipeline.*

6.2 Identified heritage resources

Description	Period	Location	Field rating/ Significance
Stone Age			
11. Two possible retouched flakes. Two lithics in 0.5 m² area, found in dry riverine. (Figure 9(a),9(b))	LSA/MSA	**28º 46' 02.4" S 20º 35' 12.4" E**	Field Rating IV C Low significance
12. Banded ironstone core. One lithic in 0.5 m² area, found in dry riverine. (Figure 9(c))	LSA/MSA	**28º 45' 59.7" S 20º 35' 15.4" E**	Field Rating IV C Low significance
13. Possible retouched flake. One lithic in 0.5 m² area, found in dry riverine close to northern border of study area. (Figure 9(d))	LSA/MSA	**28º 45' 47.4" S 20º 35' 13.0" E**	Field Rating IV C Low significance
14. Lithics with scraper. Three lithics in 0.5 m² area, found in dry riverine close to dolerite outcrop. (Figure 9(e))	LSA/MSA	**28º 45' 58.9" S 20º 35' 15.1" E**	Field Rating IV C Low significance
15. Flake. One lithic in 0.5 m² area, found in dry riverine. (Figure 9(f))	LSA/MSA	**28º 46' 00.5" S 20º 35' 14.1" E**	Field Rating IV C Low significance
16. Possible banded ironstone concave side scraper. One lithic in 0.5 m² area, found in dry riverine. (Figure 9(g))	LSA/MSA	**28º 46' 00.9" S 20º 35' 14.7" E**	Field Rating IV C Low significance
17. Collection of lithics collected in an area of approximately 100 m² area in close proximity to dolerite outcrop. (Figure 9(h))	LSA/MSA	**28º 45' 58.7" S 20º 35' 14.8" E**	Field Rating IV C Low significance
18. Possible retouched banded ironstone flake. One lithic in 0.5 m² area in close proximity to dolerite outcrop. (Figure 9(i))	LSA/MSA	**28º 45' 58.1" S 20º 35' 14.7" E**	Field Rating IV C Low significance
Historical			
19. No historical features were identified.			N/A
Graves			
20. No formal or informal graves were identified.			N/A

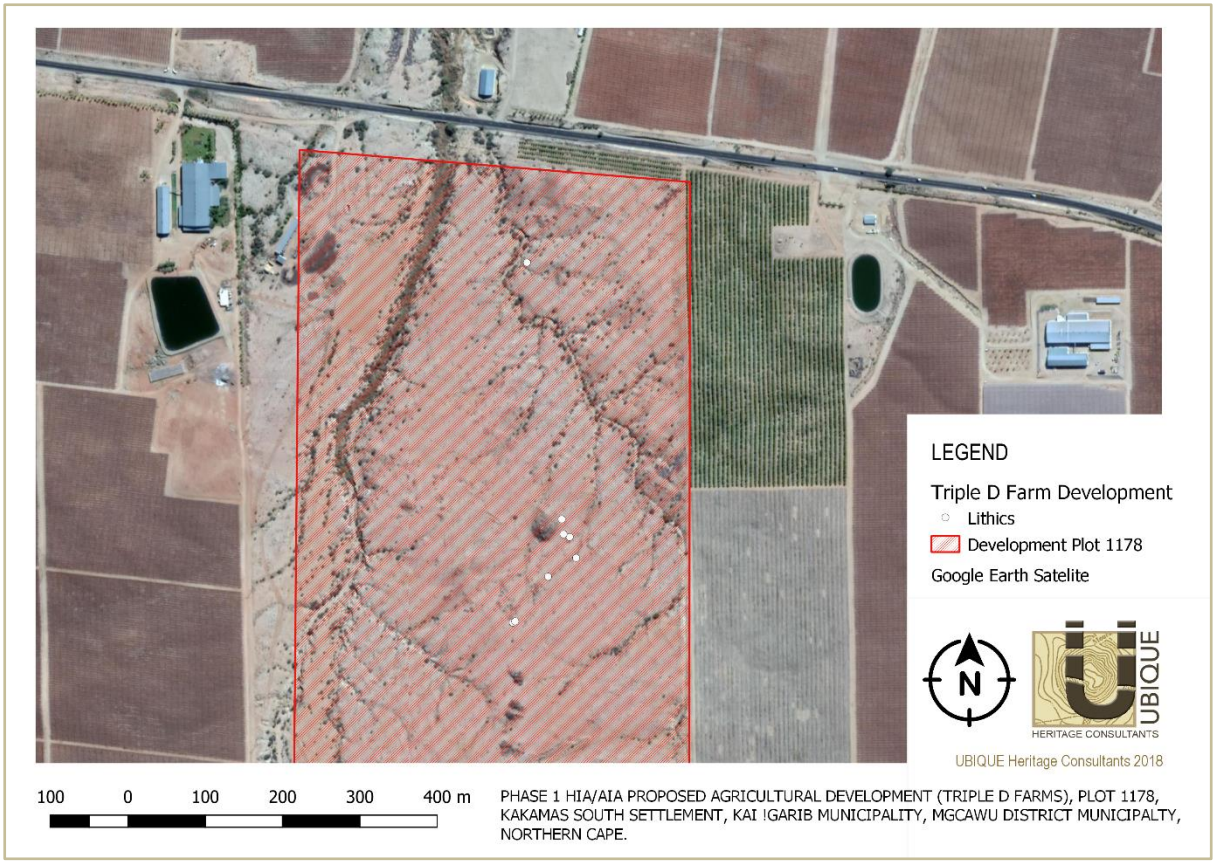


Figure 8 *Distribution of lithic occurrences across study area.*

6.3 Discussion

6.3.1 Archaeological features

A total of eight incidences of Stone Age material were recorded across the surveyed area (Figure 8). All eight locations are within the northern section of the surveyed area, with one isolated occurrence close to the northern boundary. The lithics are scattered ex situ in low densities along dry riverine and drainage lines, and amongst quartzite surface gravel. The cultural material shows various degrees of weathering and may either be representative of the Early Later Stone Age, or a mere mixture of LSA and MSA artefacts (Lombard 2011). The identified archaeological materials are of low significance, as the archaeological sample is small and without context, and therefor of little scientific value.

These Stone Age heritage finds are given a 'General' Protection C (Field Rating IV C). This means these sites have been sufficiently recorded (in the Phase 1). It requires no further action.

9(a)

9(b)

9(c)

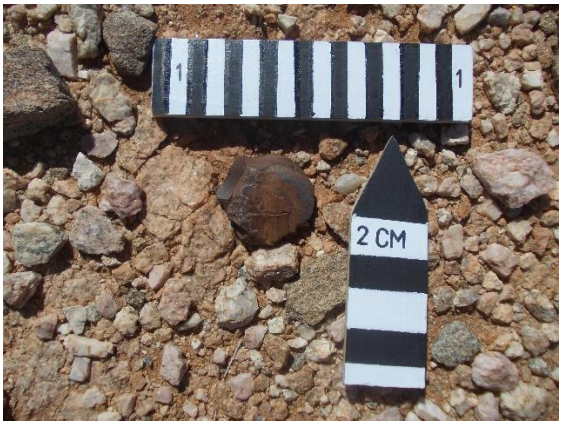
9(d)

9(e)

9(f)

9(g)

9(h)



9(i)

Figure 9 *Lithic finds from study area.*

6.3.2 Historical features

No significant historical features were identified within the study area.

6.3.3 Graves

No formal or informal graves were identified in the study area.

6.3.4 Palaeontological resources

The proposed development is entirely underlain by the Riemvasmaak Gneiss of the Namaqua-Natal Province. The Riemvasmaak Gneiss is an igneous rock type and the potential for any fossil materials occurring within this rock unit is zero (Butler 2018; Almond & Pether 2008). Elize Butler from Banzai Environmental proposes exemption from doing a full paleontological study for this project (see Appendix 1).

7. RECOMMENDATIONS

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

4. The lithic traces on the landscape of the study area are of low significance and the impact of the development on these resources are inconsequential. No further mitigation is required. Therefore, from a heritage point of view we recommend that the proposed development can continue.

5. Due to the low palaeontological significance of the area, no further palaeontological heritage studies, ground truthing and/or specialist mitigation are required pending the discovery of newly discovered fossils. It is considered that the development of the proposed development is deemed appropriate and feasible and will not lead to detrimental impacts on the palaeontological resources of the area. If fossil remains are discovered during any phase of construction, either on the surface or unearthed by fresh excavations, the ECO in charge of these developments ought to be alerted immediately. These discoveries ought to be protected (preferably in situ) and the ECO must report to SAHRA so that appropriate mitigation (e.g. recording, collection) can be carry out by a professional palaeontologist (Butler 2018).

6. Although all possible care has been taken to identify sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the assessment. If during construction, any possible discovery of finds such as stone tool scatters, artefacts, human remains, or fossils are made, the operations must be stopped, and a qualified archaeologist must be contacted for an assessment of the find. UBIQUE Heritage Consultants and its personnel will not be held liable for such oversights or for costs incurred as a result of such oversights.

8. CONCLUSION

This HIA has identified and recorded various heritage resources on plot 1178, Kakamas South Settlement, Kai !Garib Municipality, Mgcawu District Municipality, Northern Cape as set out in the report. In the development footprint are no archaeological, historical or cultural sites that will be impacted on negatively by the proposed development.

9. BIBLIOGRAPHY

ACRM. 2016. Archaeological Impact Assessment, proposed agricultural development on Farm 1726, Farm 1290 and Farm 1537 Augrabies, Northern Cape. Unpublished report: Rondebosch.

Beaumont, P.B. & Morris, D. 1990. *Guide to archaeological sites in the Northern Cape*. McGregor Museum: Kimberley.

Beaumont, P. 2004. Kathu Pan and Kathu Townlands/ Uitkoms. In Morris, D. and Beaumont, P. *Archaeology in the Northern Cape: some key sites*: 50-53. McGregor Museum: Kimberley.

Beaumont, P.B. 2008. Phase 1 Archaeological Impact Assessment Reprt on Kakamas South Farm 2092 Near Augrabies, Siyanda District Municipality, Northern Cape Province. Unpublished report. McGregor Museum: Kimberley.

Beaumont, P.B. 2013. *Phase 2 Archaeological Permit Mitigation Report on a 0.7ha Portion of the farm Bestwood* 549*, situated on the eastern outskirts of Kathu, John Taolo Gaetsewe District Municipality, Northern Cape Province.* Unpublished report. Dennesig.

Beaumont, P.B. & Vogel, J.C. 2006. On a timescale for the past million years of human history in central South Africa. *South African Journal of Science* 102: 217-228.

Beaumont, P.B., Smith, A.B. & Vogel, J.C. 1995. Before the Einiqua: the archaeology of the frontier zone. In Smith, A.B. (Ed.). *Einiqualand: Studies of the Orange River frontier*. University of Cape Town Press: Cape Town.

Breutz, P.L. 1953. The tribes of the Rustenburg and Pilanesberg districts. Department of Native Affairs, *Ethnological Publications* No.28. Government Printer: Pretoria.

Breutz, P.L. 1954. The tribes of Marico District. Department of Native Affairs, *Ethnological Publications* No. 30. Government Printer: Pretoria.

Breutz, P.L. 1963. The tribes of the districts of Kuruman and Postmasburg. Department of Native Affairs, *Ethnological Publications* No. 49. Government Printer: Pretoria.

Butler, E. 2018. *Palaeontological Desktop Assessment* Unpublished report. Banzai Environmental: Bloemfontein.

Coertze, P.J. & Coertze, R.D. 1996. *Verklarende vak woordeboek vir Antropologie en Argeologie*. R.D. Coertze: *Pretoria*.

Deacon, H.J. & Deacon, J. 1999. *Human Beginnings in South Africa: Uncovering the secrets of the Stone Age.* David *Phillips* Publishers: Cape Town.

De Jong, R.C. 2010. *Final Heritage Impact Assessment report: Proposed land use change to provide for irrigated agricultural activities on Erf 327 of the farm Kakamas North Settlement, Kai !Garib Municipality, Northern Cape Province.* Unpublished report. Cultmatrix: Pretoria.

Dreyer, J. *2006*. *First phase archaeological and cultural heritage assessment of the proposed Concentrated Solar Thermal Plant (CSP) at the farms Olyvenhouts Drift, Upington, Bokpoort 390 and Tampansrus 294/295, Groblershoop, Northern Cape*. Unpublished EIA report. Bohlweki Consultants: Johannesburg.

Dreyer, J. 2012. *First phase archaeological and cultural heritage assessment of the proposed water pipeline from Sanddraai 391 to Bokpoort 390, Groblershoop, Northern Cape*. Unpublished EIA Report. SSI Engineers & Environmental 14 Consultants: Sandhurst.

Dreyer, J. 2014. *First phase archaeological & heritage investigation of the proposed mine prospecting at the remaining extent of the farm Inglesby 580 near Olifantshoek, Northern Cape Province*. Unpublished EIA report. Re A Kgona General Services: Kimberley.

Hopkins, H.C. 1978. *Kakamas: uit die wildernis 'n lushof*. Nasionale Boekdrukkery: Goodwood.

Korsman, S.A. & Meyer, A. 1999. Die Steentydperk en rotskuns. In: Bergh, J.S. (red.). *Geskiedenisatlas van Suid*-Afrika*. Die vier noordelike provinsies*. J.L. van Schaik: Pretoria.

Lombard, M. 2011. Howieson's *Poort. McGraw Hill Year Book of Science & Technology*. Article ID: YB120253; Sequence Number 14.

Lombard, M. & Parsons, I. 2008. Blade and bladelet function and variability in risk management during the last 2000 Years in the Northern Cape. *South African Archaeological Bulletin* 63: 18-27.

Lombard, M., Wadley, L., Deacon, J., Wurz, S., Parsons, I., Mohapi, M. Swart, J. & Mitchell, P. 2012. South African and Lesotho Stone Age sequence updated. *South African Archaeological Bulletin* 67: 123-144.

Kaplan, J. 2012. Archaeological Impact Assessment: The Proposed Keren Energy Kakamas Solar Farm on ERF 1654 Kakamas Northern Cape Province. Unpublished report. Agency for Cultural Resource Management: Rondebosch.

Kaplan, J. 2013. Archaeological Impact Assessment Proposed Low Cost Housing Project in Kakamas, Northern Cape Province. Unpublished report. Agency for Cultural Resource Management: Rondebosch.

Kaplan, J. 2016. Archaeological Impact Assessment Proposed housing development on Erf 1612, Kakamas, Northern Cape Unpublished report. Agency for Cultural Resource Management: Rondebosch.

Kaplan, J. 2017. Archaeological Impact Assessment Proposed Packing Shed, Portion of Erf 1731 Kakamas South, Northern Cape. Agency for Cultural Resource Management: Rondebosch.

Mitchell, P. 2002. *The archaeology of Southern Africa*. Cambridge: Cambridge University Press.

Morris, A. 1995. The Einiqua: an analysis of the Kakamas skeletons. In: Smith A.B. (ed.) *Einiqualand: studies of the Orange River frontier*: 110-164.

Morris, D. & Beaumont, P. 2004. *Archaeology in the Northern Cape: Some key sites*. SA3 Post-Conference Excursion, 8-10 April 2004. McGregor Museum: Kimberley.

Morris, D. 2005. Report on a Phase 1 Archaeological Impact Assessment of proposed mining areas on the farms Ploegfontein, Klipbankfontein, Welgevonden, Leeuwfontein, Wolhaarkop and Kapstevel, west of Postmasburg, Northern Cape. Unpublished report. McGregor Museum: Kimberley.

Morris, D. 2010. Heritage Impact Assessment of the proposed Hydropower station on the Orange River at Neus Island on the farm Zwartbooisberg, east of Kakamas, Northern Cape Unpublished Report. McGregor Museum: Kimberley.

Morris, D. 2011. Heritage Impact Assessment of the proposed new power-line route south of the river to Kakamas, Northern Cape Unpublished Report. McGregor Museum: Kimberley.

Morris, D. 2017. Heritage Impact Assessment of proposed sand mining in the bed of the Hartebees River on Lot 1768 Kakamas South, near Kakamas, Northern Cape. Unpublished Report. McGregor Museum: Kimberley.

Morris, D. 2017b. Heritage Impact Assessment of Agricultural Lot 2371 Kakamas South Settlement, near Kakamas, Northern Cape. Unpublished Report. McGregor Museum: Kimberley.

Mucina, L. & Rutherford, M.C. (eds) 2006. *The vegetation of South Africa,* Lesotho *and Swaziland.* Strelitzia 19. SANBI: Pretoria.

Orton, J. & Webley, L. 2013. *Heritage Impact Assessment for a proposed Hydro-Electric facility near Riemvasmaak, Northern Cape*. Unpublished report. ACO Associates cc: St James.

Pelser, A.J. & Lombard, M. 2013. *A report on the archaeological investigation of Stone Age finds on the Paling 434, Hay Magisterial District, near Postmasburg in the Northern Cape Province*. Unpublished EIA Report. Kia Batla Holdings: Craighall.

Penn, N. 2005. *The Forgotten Frontier: Colonist and Khoisan on the Cape's Northern Frontier in the 18th Century*. Athens. Ohio University Press and Double Storey Books: Ohio and Cape Town.

PGS Heritage. 2009. *Heritage Impact Assessment for Ntsimbintle Mining (Pty) Ltd on Portions 1, 2, 3 and 8 of the farm Mamatwan 331 and the farm Moab 700 in the Kgalagadi District Municipality of the Northern Cape Province*. Pretoria.

PGS Heritage. 2010a. *Heritage Impact Assessment for the Amari Kongoni Manganese Mine on Portion 1 and a section of the Remainder of the farm Kongoni 311 in the Kgalagadi District Municipality of the Northern Cape Province.* Pretoria.

PGS Heritage. 2010b. *Heritage Impact Assessment for the Proposed Lehating Mining (Pty) Ltd underground manganese mine on Portions of the Farm Lehating 714, approximately 20km northwest of Hotazel, Northern Cape Province*. Pretoria.

Porat, N., Chazan, M., Grun, Aubert, R., Eisenmann, V. & Horwitz, L. 2010. New radiometric ages for the Fauresmith industry from Kathu Pan, southern Africa: Implications for the Earlier to Middle Stone Age transition. *Journal of Archaeological Science* 37: 269-283.

Ross, R. 1975. The!Kora Wars on the Orange River, 1830-1880. *The Journal of African History*, 16 (4): 561-576.

Snyman, P.H.R. 2000. *Changing tides. The story of ASSMANG*. The Associated Manganese Mines of South Africa Limited: Johannesburg.

Thackeray, A.I., Thackeray, J.F. & Beaumont, P.B. 1983. Excavations at the Blinkklipkop specularite mine near Postmasburg, Northern Cape, *South African Archaeological Bulletin* 38:17-25.

Van der Walt, J. & Lombard, M. 2018. Kite-like structures in the Nama Karoo of South Africa. *Antiquity* (92) 363,e3: 1–6

Van Schalkwyk, J.A. 2010a. Archaeological impact survey report for the land use change on sections of the farm Vaalkoppies 40, Gordonia district, Northern Cape Province. Unpublished report 2010/JvS/069.

Van Schalkwyk, J.A. 2010b. Heritage impact assessment for the proposed agricultural development on a section of the property Kakamas South, Gordonia magisterial district, Northern Cape Province. Unpublished report 2010/JvS/093. Pretoria.

Van Schalkwyk, J.A. 2010c. Archaeological impact survey report for the Land Use Change on a Section of the Farm Kakamas North, Gordonia District. Northern Cape Province. Unpublished report. CULTMATRIX Consultants: Pretoria.

Van Schalkwyk, J.A. 2011. Heritage impact assessment report for the proposed establishment of the Inca Solar PV Power Plant, Kakamas region, Northern Cape Province. Unpublished report 2011/JvS/030.

Van Schalkwyk, J.A. 2011b. Heritage impact assessment for the proposed citrus orchard development on Portions of the farm Kakamas South, Augrabies, Gordonia magisterial district, Northern Cape Province. Unpublished report 2011/JvS/061.

Van Schalkwyk, J.A. 2013a. Cultural Heritage Impact Assessment for the Proposed Township Development on a Section of the Farm Kakamas Suid 28, Marchand, Kai !Garib Municipality, Northern Cape Province. Unpublished report. Pretoria.

Van Schalkwyk, J.A 2013b. Cultural Heritage Impact Assessment for the Proposed Township Development on a Section of the Farm Kakamas Suid 28, Augrabies, Kai !Garib Municipality, Northern Cape Province. Unpublished report. Pretoria.

Van Schalkwyk, J.A. 2013c. Cultural Heritage Impact Assessment for the Proposed Township Development on a Section of the Kakamas Suid 28, Alheit, Kai !Garib Municipality, Northern Cape Province. Unpublished report. Pretoria.

Van Schalkwyk, J.A. 2013d. Cultural Heritage Impact Assessment for the Proposed Township Development on a Section of the Farm Kakamas Noord 481, Cillie, Kai !Garib Municipalty, Northern Cape Province. Unpublished report. Pretoria.

Van Schalkwyk, J.A. 2013e. Cultural Heritage Impact Assessment for the Proposed Township Development on a Section of the Farm Kakamas North 481, Lutzburg, Kai !Garib Municipalty, Northern Cape Province. Unpublished report. Pretoria.

Van Ryneveld, K. 2007. *Archaeological Impact Assessment Phase 1: Portion of the farm Boksputs 118, Groblershoop district, Northern Cape South Africa*. Unpublished report.

Van Vollenhoven 2012a. *A report on a cultural heritage baseline study for the proposed exploration activities* at *the Jacomynspan Project, Northern Cape Province*. Unpublished report. Archaetnos: Groenkloof.

Van Vollenhoven, A.C. 2012b. *A report on a heritage impact assessment for the proposed SASOL CSP and CPV Project near Upington in the Northern Cape Province*. Unpublished report. Archaetnos: Groenkloof.

Van Vollenhoven, A.C. 2014a. *A report on a cultural heritage impact assessment for the proposed exploration activities at the Jacomynspan Project, Northern Cape Province.* Unpublished report. Archaetnos: Groenkloof.

Van Vollenhoven, A.C. 2014b. *A report on a basic heritage assessment for the proposed Eskom Fibre-Groblershoop 132 Kv power line, Northern Cape Province*. Unpublished report. Archaetnos: Groenkloof.

Van Vuuren, L. 2011. Kakamas– Oasis in the desert. *The Water Wheel,* March/April: 26-29.

Van Warmelo, N.J. 1935. A Preliminary Survey of the Bantu Tribes of South Africa. Department of Native Affairs, *Ethnological Publication*s Vol. V. Government Printer: Pretoria.

Van Zyl, L. 2010 (revised edition). *Boegoeberg se mense. 'n Flukse draai van die wiel*. Boegoeberg Watergebruikersvereniging: Groblershoop.

Walker, S.J.H., Chazan, M. & Morris, D. 2013. *Kathu Pan: Location and Significance* – A report requested by SAHRA, Cape Town.

Wilkins, J. 2010. Style, symbolling, and interaction in Middle Stone Age societies. *Explorations in Anthropology* 10(1):102–125.

ACTS

National Environmental Management Act, 1998 (Act 107 of 1998).

National Heritage Resources Act, 1999 (Act 25 of 1999).

SAHRA. 1999. *Government Gazette 1999*. National Heritage Resources Act No. 25 of 1999.

SAHRA. 2007. *SG 2.2 SAHRA APM Guidelines: Minimum Standards for the Archaeological and Palaeontological Components of Impact Assessment Reports.*

SAHRA. 2008. *Site Management Plans: Guidelines for the Development of Plans for the Management of Heritage Sites or Places*. (see specifically Section 7). (www.sahra.org.za).

WEB

http://www.sahra.org.za/sahris

APPENDIX A

PALAEONTOLOGICAL EXEMPTION FOR THE PROPOSED AGRICULTURAL DEVELOPMENT (TRIPLE D FARMS), PLOT 1178, KAKAMAS SOUTH SETTLEMENT, KAI !GARIB MUNICIPALITY, MGCAWU DISTRICT MUNICIPALTY, NORTHERN CAPE.

RECOMMENDED EXEMPTION FROM FURTHER PALAEONTOLOGICAL STUDIES: OF PROPOSED AGRICULTURAL DEVELOPMENT, PLOT 1178, KAKAMAS SOUTH SETTLEMENT, KAI! GARIB MUNICIPALITY

Prepared by

BANZAI ENVIRONMENTAL (PTY) LTD

27 September 2018

1. BACKGROUND

Triple D Farms, Plot 1178, Kakamas South plans to develop approximately 60 ha of vineyards for table grape and raisin production. The development will comprise of the following: 1) a new pump station on the bank of the Orange River, 2) pipelines, 3) off-stream storage dam or reservoir, 4) filtering system, 5) fuel-depot and generator, and 6) packing shed and labour housing. The planned pipelines and pump station will be situated within registered servitudes.

This report is a **recommended exemption** from further Palaeontological studies as the proposed development site is underlain by the Riemvasmaak Gneiss of the Namaqua-Natal Province. These rocks are from igneous nature and thus **unfossiliferous**.

2. OUTLINE OF PROPOSED DEVELOPMENT

The proposed 60 ha development will be divided in two 30 ha irrigation systems each with their own pump, filtration system and mainline to the irrigation blocks, while irrigation will occur from the storage dam. Each 30 ha system will in turn be divided into 4 irrigation shifts of 7.5 ha each. The volume of the storage dam will be adequate to supply the 60 ha with a 12mm/day. The water requirement of the development will be 7200m^3 per day and water will be extracted from the river for 19 hrs per day.

3. GEOGRAPHICAL LOCATION OF THE SITE

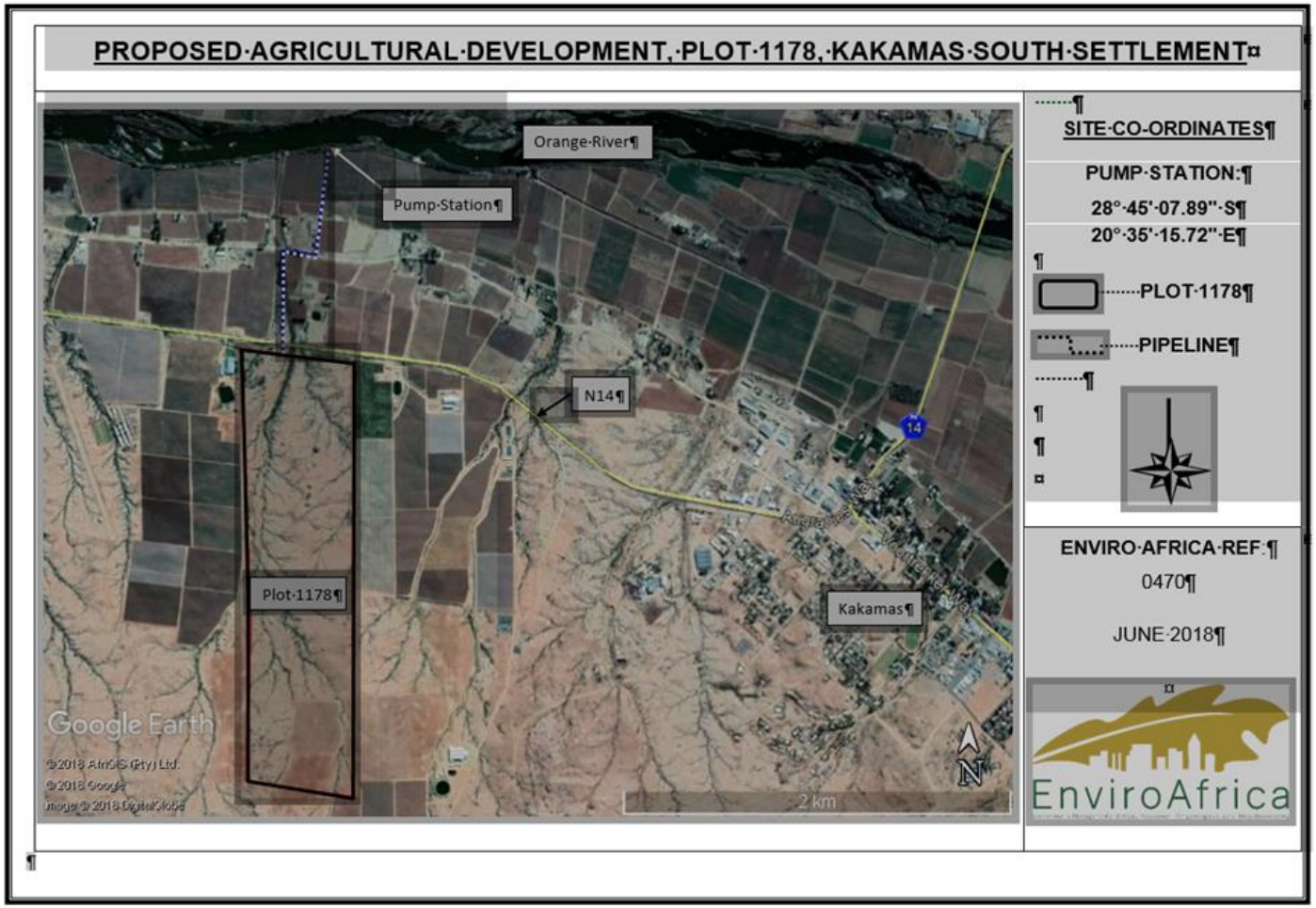


Figure 1: The location of the proposed 60 ha irrigation development: Triple D Farms, Plot 1178, Kakamas South. Map provided by EnviroAfrica.

GEOLOGICAL AND PALAEONTOLOGICAL HERITAGE

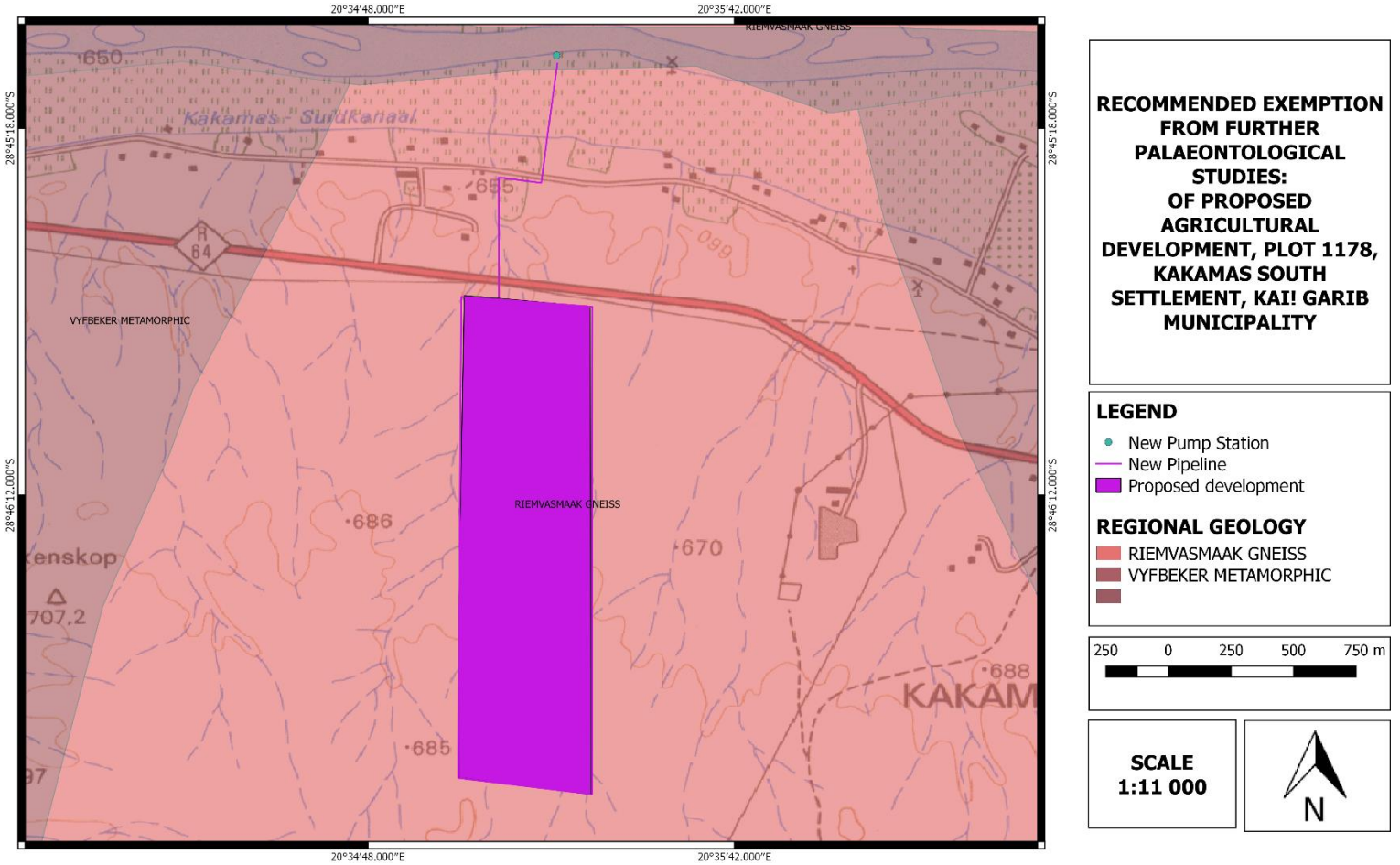


Figure 2: The surface geology of the proposed irrigation development: Triple D Farms, Plot 1178, Kakamas South. The proposed development is entirely underlain by the Riemvasmaak Gneiss of the Namaqua-Natal Province. Map drawn QGIS Desktop 2.18.14. The Orange River is represented by the brown in the map).

The proposed development is entirely underlain by the Riemvasmaak Gneiss of the Namaqua-Natal Province. These rocks are commonly found in KwaZulu-Natal and the Northern Cape and consists of igneous and metamorphic rocks formed during the Namaqua Orogeny approximately 1200 to 1000 million years ago. The proposed development probably falls in the Kakamas Terrane of the Namaqua-Natal Province which is ~ 200 million years old. The Riemvasmaak Gneiss consists of pink-weathering granular or augen quartz-feldspar gneiss. A gneiss is formed by high-temperature and high –pressure metamorphic processes.

The Riemvasmaak Gneiss is an igneous rock type and the potential for any fossil materials occurring within this rock unit is thus zero.

4. CONCLUSIONS & RECOMMENDATIONS

The proposed irrigation development: Triple D Farms, Plot 1178, Kakamas South is of NO significance in terms of local palaeontological heritage since the igneous rocks underlying the site are unfossiliferous.

It is therefore recommended that exemption from further specialist palaeontological studies and mitigation be granted for this development.

5.REFERENCES

ALMOND, J.E. 2011. Proposed Rooipunt Solar Power Park on Farm Rooipunt 617, near Upington, Gordonia District, Northern Cape Province. Palaeontological specialist study: desktop assessment, 12 pp

ALMOND, J.E. & PETHER, J. 2008. Palaeontological heritage of the Northern Cape. Interim SAHRA technical report, 124 pp. Natura Viva cc, Cape Town.

CORNELL, D.H. et al. 2006. The Namaqua-Natal Province. In: Johnson, M.R., Anhaeusser, C.R. & Thomas, R.J. (Eds.) The geology of South Africa, pp 325-379. Geological Society of South Africa, Johannesburg & Council for Geoscience, Pretoria.

MCARTHY, T. and Rubidge, B. 2005. The Story of Earth Life: A southern African perspective on a 4.6-billion-year journey. Struik, Pp 333.

NORMAN, N. and WHITFIELD, G., 2006. Geological Journeys. De Beers, Struik, Pp 1-320. RUBIDGE, B. S. (Ed.), 1995. Biostratigraphy of the Beaufort Group (Karoo Supergroup). South African Committee for Biostratigraphy, Biostratigraphic Series No. 1, 46pp. Council for Geoscience, Pretoria.

SNYMAN, C.P. 1996. Geologie vir Suid-Afrika, Departement Geologie, Universiteit van Pretoria, Pretoria, Volume 1, Pp 513.

VISSER, D.J.L. 1984. Geological Map of South Africa 1:100 000. South African Committee for Stratigraphy.Council for Geoscience. WALRAVEN, F. 1978. Geological Map 2528 Pretoria, 1:250 000.Council for Geoscience, Pretoria.