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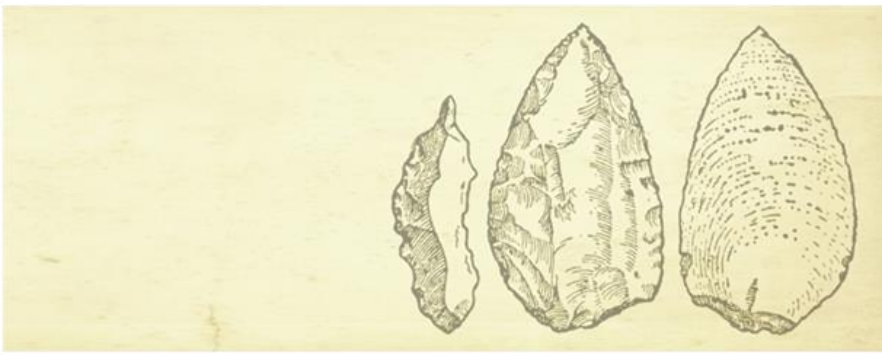

PHASE 1 HIA REPORT FARM 387 PORTION 18 GROBLERSHOOP NORTHERN CAPE

HOLIDAY RESORT DEVELOPMENT ON PORTION 18 OF FARM 387, GORDONIA RD, EASTERN BANK OF THE ORANGE RIVER, APPROXIMATELY 1.7 KM NORTH OF GROBLERSHOOP, Z.F. MGCAWU DISTRICT MUNICIPALTY, NORTHERN CAPE.

PREPARED FOR:
ENVIROAFRICA

PREPARED BY:
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25 AUGUST 2018

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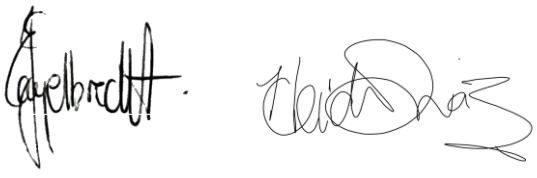
For this project, Mr Engelbrecht was responsible for the field survey of the development footprint, identification of heritage resources, and recommendations. Ms Fivaz was responsible for research and report compilation.

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:
J.A.C. Engelbrecht & H. Fivaz
UBIQUE Heritage Consultants

Date: 2018-08-25

EXECUTIVE SUMMARY

Technical summary

Project description	
Project name	PROPOSED RESORT DEVELOPMENT ON PORTION 18 OF FARM 387, GORDONIA RD, GROBLERSHOOP.
Description	Holiday resort development in Groblershoop, Northern Cape
Developer	
Leon Humphreys. Cell. 078 110 8170 E-mail: leon.humphreys20@gmail.com Carmen Humphreys. Cell. 072 346 2218 E-mail: Carmen.humphreys@yahoo.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	!Kheis Local Municipality
Topo-cadastral map	2821DD, 2822CC
Farm name	Farm 387, Portion 18
Closest town	Groblershoop
GPS Co-ordinates	28º 52' 37.13" S, 21º 59' 24.25" E. (site access)
Development footprint size	5 – 10 ha

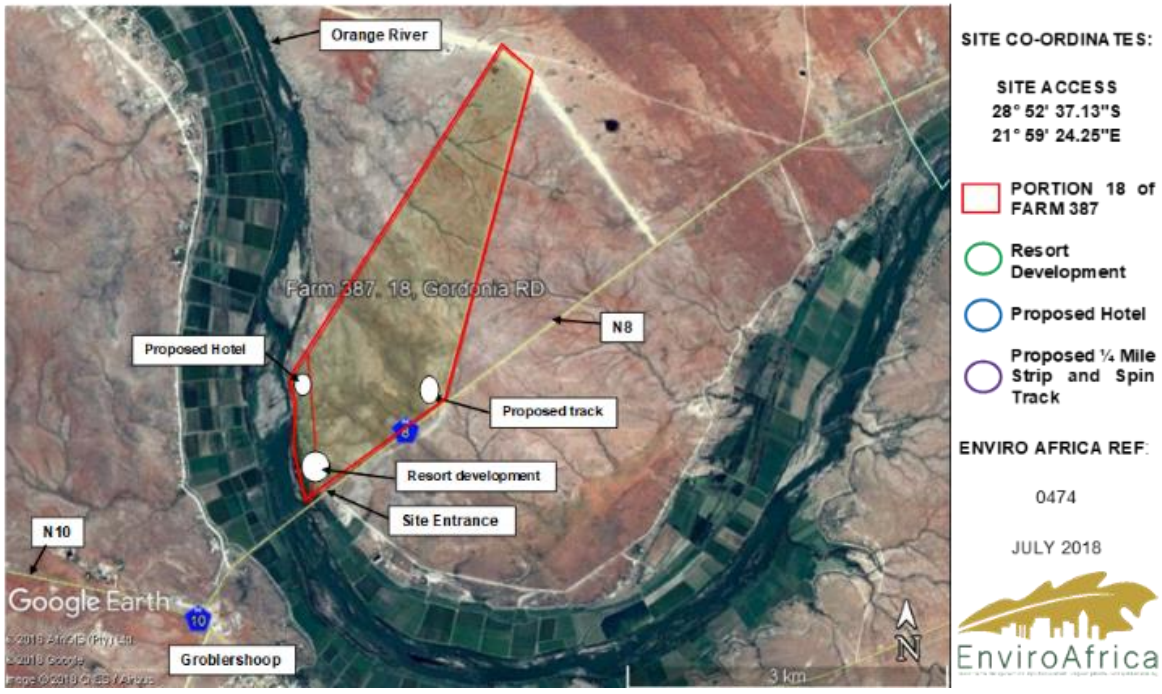


Figure 1 *Proposed resort development on Farm 387 Portion 18, Groblershoop (map provided by EnviroAfrica cc).*

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 development of a holiday resort on Portion 18 of Farm 387 Groblershoop, on any sites, features, or objects of cultural heritage significance. The site is located on Gordonia Rd, approximately 1.7 km north of Groblershoop in the Z.F. McCawu District Municipality, Northern Cape. Construction of various accommodation types, a thatched roof entrance, restaurant, ablution facilities, swimming pool and laundry room, are already in process. Infrastructure such as septic tanks has been erected and access and internal roads have been cleared. Further development will involve the construction of recreational facilities such as an amphitheatre, a solid waste facility, additional accommodation, a double-story hotel, and a quarter mile racing strip and spin track with a paved parking area with separate access from the N8.

Findings and Impact on Heritage Resources

Description	Period	Location	Field rating/ Significance
Stone Age			
1. Two isolated LSA/MSA stone cores. Retouched. No context.	LSA/MSA	28º 50' 47.2" S 22º 00' 09.6" E	Field Rating IV C Low significance
2. LSA/MSA open scatter.	LSA/MSA	28º 51' 07.2" S 22º 00' 18.4" E	Field Rating IV C Low significance
3. LSA/MSA isolated stone core. No context.	LSA/MSA	28º 51' 08.5" S 22º 00' 19.1" E	Field Rating IV C Low significance
4. High density LSA open lithic scatter with local ceramics. Surface scatter of flakes, scrapers, cores, and microliths. Probable hunter/herder site.	LSA	28º 52' 08.4" S 21º 59' 13.8" E	Field Rating IV A High/Medium significance
5. High density LSA/MSA open lithic scatter without local ceramics. Surface scatter of flakes, scrapers, cores, and microliths.	LSA/MSA	28º 52' 08.5" S 21º 59' 13.7" E	Field Rating IV A High/Medium significance
6. LSA/MSA open scatter of flakes, scrapers, cores and microliths. Moderate density, frequency. Without local ceramics.	LSA/MSA	28º 52' 08.0" S 21º 59' 23.5" E	Field Rating IV A High/Medium significance
7. Upper grindstone. No context. Dune site vicinity.	LSA	28º 52' 08.4" S 21º 59' 23.9" E	Field Rating IV C Low significance
8. LSA/MSA open scatter of flakes and scrapers.	LSA/MSA	28º 52' 08.6" S 21º 59' 24.0" E	Field Rating IV C Low significance
9. High density LSA/MSA open lithic scatter without local ceramics. Surface scatter of flakes, scrapers, cores, and microliths.	LSA/MSA	28º 52' 12.9" S 21º 59' 15.0" E	Field Rating IV A High/Medium significance

10. High density LSA open lithic scatter with local ceramics. Surface scatter of flakes, scrapers, cores, and microliths. Probable hunter/herder site.	LSA	**28° 52' 13.4" S 21° 59' 15.9" E**	Field Rating IV A High/Medium significance
11. High density LSA open lithic scatter without local ceramics. Surface scatter of microliths. Dune site.	LSA	**28° 52' 06.0" S 21° 59' 34.5" E**	Field Rating IV A High/Medium significance
12. LSA/MSA open scatter of flakes and scrapers	LSA/MSA	**28° 52' 16.4" S 21° 59' 16.1" E**	Field Rating IV C Low significance
13. High density LSA/MSA open lithic scatter without local ceramics. Surface scatter of flakes, scrapers, cores, and microliths. Probable knapping site. Dune site 1. Approximately 500 m².	LSA/MSA	**28° 52' 10.7" S 21° 59' 27.0" E**	Field Rating IV A High/Medium significance
14. High density LSA/MSA open lithic scatter without local ceramics. Surface scatter of flakes, scrapers, cores, and microliths. Probable knapping site.	LSA/MSA	**28° 52' 16.5" S 21° 59' 16.6" E**	Field Rating IV A High/Medium significance
15. Upper grindstone. Dune site.	LSA/MSA	**28° 52' 08.7" S 21° 59' 35.6" E**	Field Rating IV C Low significance
16. High density LSA/MSA open lithic scatter without local ceramics. Surface scatter of flakes, scrapers, cores, and microliths. Probable knapping site. Dune site 2. Approximately 200 m².	LSA/MSA	**28° 52' 08.1" S 21° 59' 38.8" E**	Field Rating IV A High/Medium significance
17. LSA/MSA isolated scraper. No context. Dune site.	LSA/MSA	**28° 52' 11.0" S 21° 59' 43.7" E**	Field Rating IV C Low significance
18. LSA/MSA open scatter of flakes and scrapers.	LSA/MSA	**28° 52' 25.6" S 21° 59' 21.7" E**	Field Rating IV C Low significance
19. High density LSA/MSA open lithic scatter without local ceramics. Surface scatter of flakes, scrapers, cores, and microliths. Probable knapping site. Dune site 3. Approximately 1500 m².	LSA/MSA	**28° 52' 12.3" S 21° 59' 48.4" E**	Field Rating IV A High/Medium significance
20. High density LSA/MSA open lithic scatter without local ceramics. Surface scatter of flakes, scrapers, cores, and microliths. Probable knapping site.	LSA/MSA	**28° 52' 27.7" S 21° 59' 22.1" E**	Field Rating IV A High/Medium significance
21. Centre of Resort development. Extremely disturbed ground and with possible Stone Age sites destroyed. Development started prior to the EIA/AIA application.	LSA/MSA	**28° 52' 30.3" S 21° 59' 19.9" E**	Field Rating IV C Low significance
22. LSA/MSA open scatter of flakes and scrapers. Dune site.	LSA/MSA	**28° 52' 19.1" S 21° 59' 42.6" E**	Field Rating IV A High/Medium Significance

Historical			
23. Location of previous settlements and cement foundations of labourer structures from 1975 to 1980s who assisted with the building of the new Orange River Bridge. Between old foundations and general area there are surface scatters of lithics, and several upper and lower grinders. Area is very disturbed.	1975 -1980	**28º 52' 25.4" S 21º 59' 21.1" E**	Field Rating IV C Low significance
24. Part of the previous 1975-80s site with cement foundations. Only the foundations are left, no houses or settlements such as *rondawels,* etc. Highly disturbed.	1975 -1980	**28º 52' 31.8" S 21º 59' 29.3" E**	Field Rating IV C Low significance
Graves			
25. Unmarked grave (Freeman graves)		**28º 52' 24.6" S 21º 59' 25.9" E**	Field Rating/Grade IIIB High significance
26. Unmarked grave (Freeman graves)		**28º 52' 24.7" S 21º 59' 25.9" E**	Field Rating/Grade IIIB High significance
27. Unmarked grave (Freeman graves)		**28º 52' 24.8" S 21º 59' 25.9" E**	Field Rating/Grade IIIB High significance
28. Possible grave. Not confirmed and unmarked		**28º 52' 07.7" S 21º 59' 14.3" E**	Field Rating/Grade IIIB High significance
29. Possible grave. Not confirmed and unmarked		**28º 52' 07.9" S 21º 59' 14.2" E**	Field Rating/Grade IIIB High significance

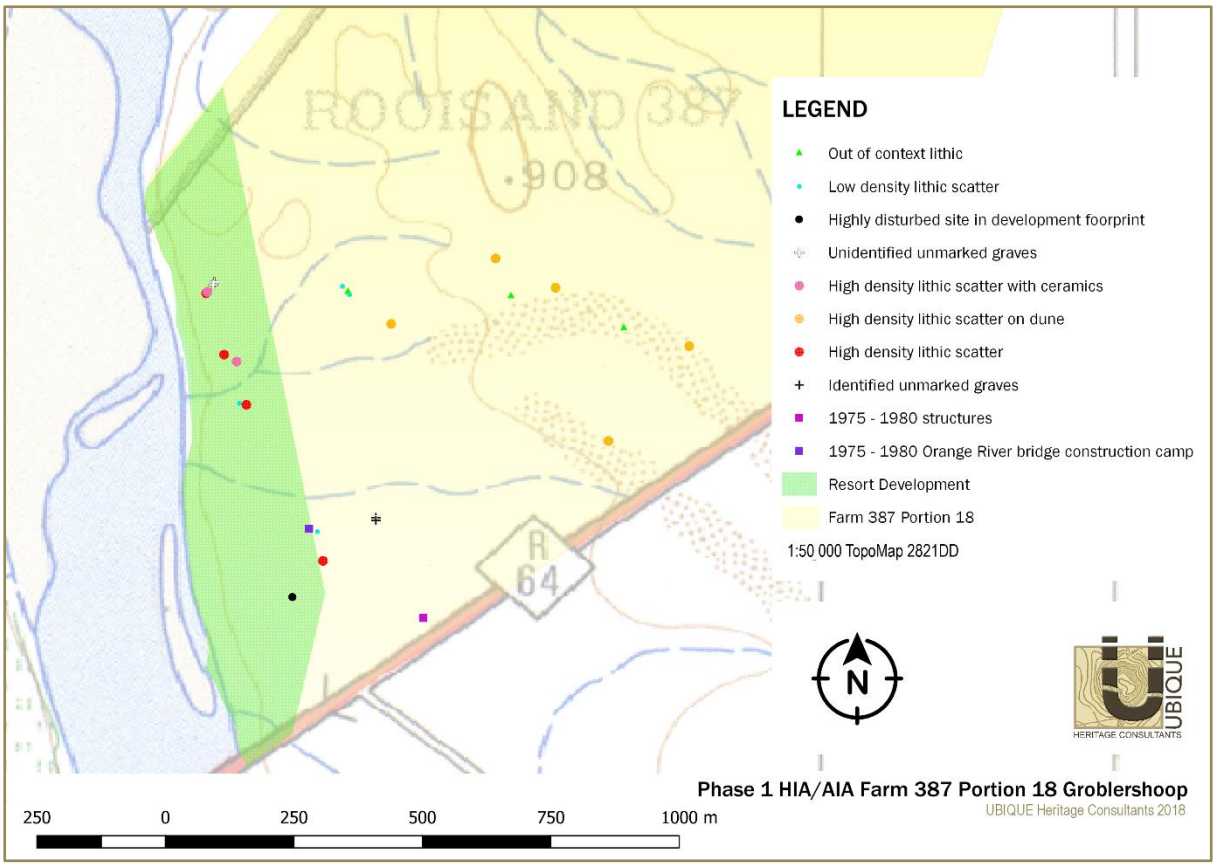


Figure 2 *Locations of identified sites within and adjacent to development footprint marked on WGS2821DD topographic map.*

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. For the isolated stone tools, lithic scatters of low significance, and 20th-century structures and features, no further action is required.

2. The knapping sites located on the series of dunes to the east of the development footprint are of medium to high significance. The dunes are approximately 2-5 km from the present development on the east shore. Currently no developments are planned for this area, therefore no mitigation is necessary at present. It should be noted that if any future developments are considered, mitigation of these sites should be undertaken. Mitigation should include comprehensive mapping and recording of the sites, and possible sample collections. Furthermore, these areas should be considered as archaeologically sensitive, and the owners and developers should be made aware of the impact that construction vehicles and recreational vehicles could have on these heritage resources.

3. In the resort development area on the eastern shore of the Gariep/Orange River, construction activities have already had a negative impact on archaeological resources. Mitigation for the remaining LSA sites in the footprint area is recommended after which the sites may be destroyed. Mitigation usually involves the collection or excavation of a sample of the cultural and other remains that will adequately allow characterization and dating of the site. Following the Phase 1 HIA/AIA specialist recommendation and the comments from the governing South African Heritage Resources Agency (SAHRA) on the Phase 1 report, an application for a Mitigation Permit for sample excavation and collection will be completed. After the Phase 2 HIA/AIA, the developer will be assisted in applying for a destruction permit from SAHRA.

4. The graves do not need to be relocated to make way for development. It is therefore only recommended that the area is fenced and clearly demarcated, especially during construction, and that no construction should take place within 50 m of the perimeter thereof. If any other graves or human remains are uncovered during construction activities, law enforcement and heritage authorities, including SAHRA, need to be notified.

5. Due to the low palaeontological significance of the area (Almond 2013, Butler 2018), 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 carried 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 the 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 development of a holiday resort on Portion 18 of Farm 387 near Groblershoop, in the Z.F. McCawu District 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 02 August and 03 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

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

The project involves the development of a holiday resort on the eastern shore of the Gariep/Orange River named "Destination Holiday Resort". The proposed holiday resort is located on Gordonia Rd, approximately 1.7 km north of Groblershoop in the Z.F. McCawu District Municipality, Northern Cape. Access to the site is located on the north-western side of the N8, just after the Orange River Bridge. The proposed project will include the development, upgrading and the restoration of viable tourism and recreational facilities.

Construction of the resort had already commenced at the time of our assessment, and much of the terrain on the site has been disturbed by construction. Currently no less than 3 to 5 thatched roof chalets, two mobile home accommodation blocks, a thatched roof entrance, several tented chalets, a swimming pool and picnic area with a restaurant/bar have been completed. Furthermore, infrastructure such as a paved entrance and site roads, streetlights, ablution and laundry facilities, and septic tanks, has been constructed. Access and internal roads, as well as other building areas, have been cleared. Further development will involve the construction of recreational facilities such as an amphitheatre, a solid waste facility, additional accommodation, a double-story 16-bed hotel on the eastern bank of the Orange River to the north-west of the property, and a racing strip and spin track with a paved parking area on the south-eastern side of the property and separate access from the N8.

The main development for the holiday resort will be along the eastern bank of the Orange River and will enclose an area of approximately 5 to 10 ha. The rest of the farm will be populated by game. The eastern and northern boundary of the farm consists of a game fence of 2.4 m in height. According to the owner, game will be introduced on the farm after completion and it will serve as a private reserve for tourists, with game viewing and game drives. The southern boundary of the farm consists of a normal 1.2 m mesh wire fence and runs adjacent to the N8 national road from Groblershoop towards Kimberley. Future developments on the farm on the eastern side might be possible. The entire farm property covers an area of approximately 360 ha.

4.1 Technical information

Project description	
Project name	PROPOSED RESORT DEVELOPMENT ON PORTION 18 OF FARM 387, GORDONIA RD, GROBLERSHOOP.
Description	Holiday resort named "Destination Holiday Resort" development in Groblershoop, Northern Cape

Developer	
Leon and Carmen Humphreys	
Contact information	Leon Humphreys. Cell: 078 110 8170 E-mail: leon.humphreys20@gmail.com Carmen Humphreys. Cell: 072 346 2218 E-mail: Carmen.humphreys@yahoo.com
Development type	Commercial/ recreational/ tourism
Land owner	
Leon and Carmen Humphreys	
Contact information	Leon Humphreys. Cell: 078 110 8170 E-mail: leon.humphreys20@gmail.com Carmen Humphreys. Cell: 072 346 2218 E-mail: Carmen.humphreys@yahoo.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	!Kheis Local Municipality
Topo-cadastral map	2821DD; partial 2822CC
Farm name	Farm 387, Portion 18
Closest town	Groblershoop
GPS Co-ordinates	28° 52' 37.13" S, 21° 59' 24.25" E. (site access)
Property size	360 ha
Development footprint size	5- 10 ha
Land use	
Previous	Farming/Agricultural
Current	None accept for development
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.	No
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.	Yes

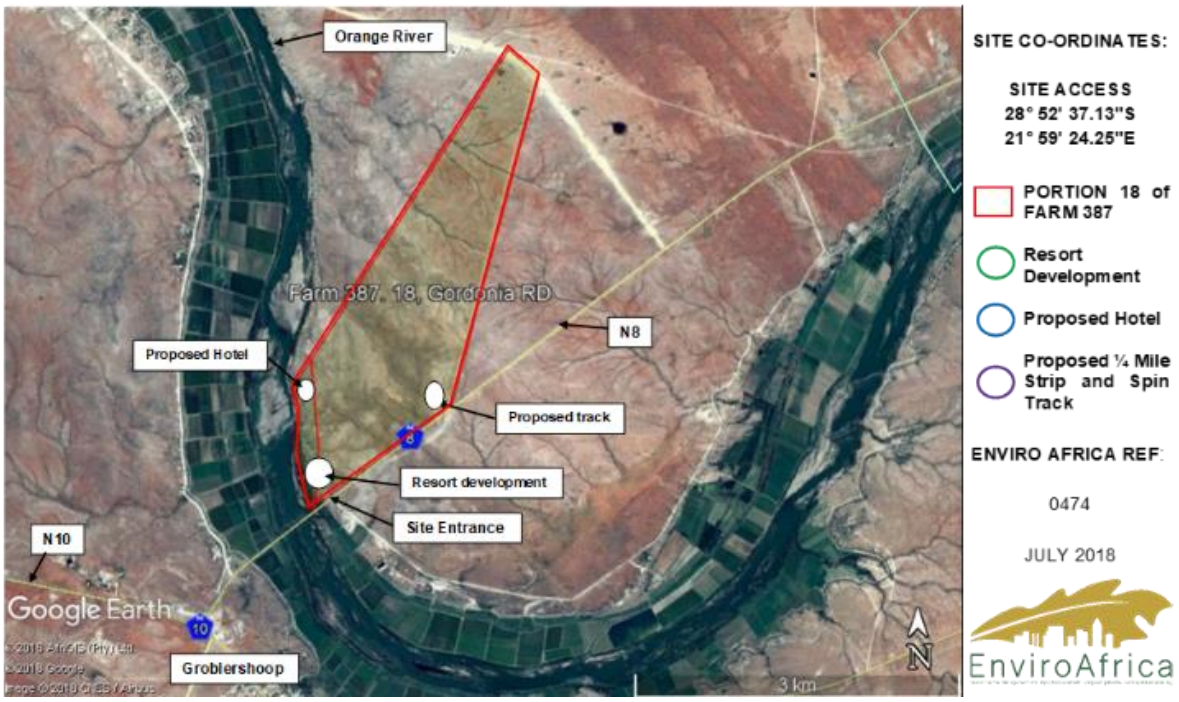


Figure 3 *Development footprint of proposed holiday resort, "Destination Holiday Resort", Farm 387, Portion 18, Groblershoop (image provided by EnviroAfrica cc).*

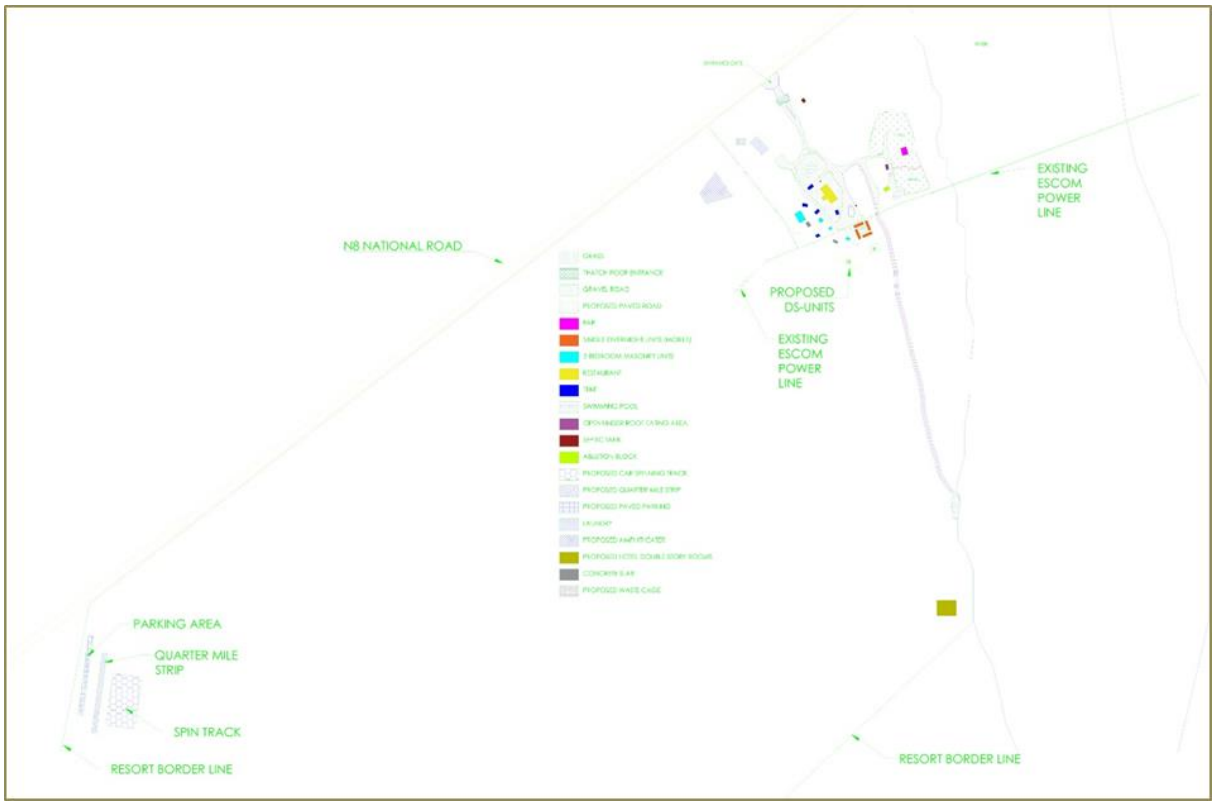


Figure 4 *Proposed resort layout (image provided by EnviroAfrica cc).*

Figure 5 *Proposed resort site plan with Google Earth image overlay (image provided by EnviroAfrica cc).*

6(a) Existing thatched roof entrance to resort development

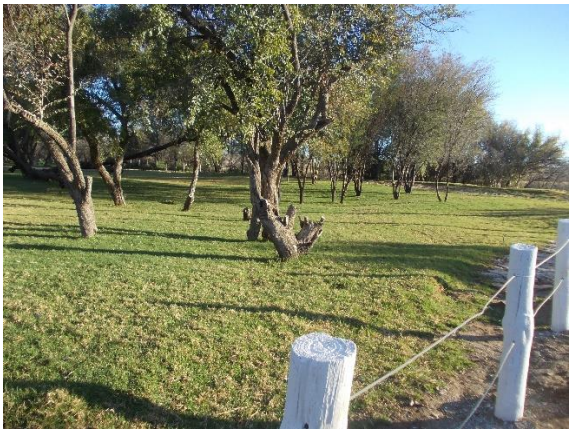
6(b) Existing tented chalets on development

6(c) Construction on site at time of our study

6(d) Construction on site with generator

6(e) Waterworks/supply with foundation on study area

6(f) Reservoir on site adjacent to waterworks/supply



6(g) Completed picnic/recreational area constructed on study area with new lawn and braai places

6(h) Another image of picnic place and bar on study area

Figure 6 *(a-h) Accommodation and infrastructure already under construction on Farm 387 Portion 18, Groblershoop.*

4.2 Description of affected environment

The Kheis! 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 Bushmanland Arid Grassland. The landscape is characterised by plains of dwarf shrubs (*Salsola* sp.) and white grasses (*Stipagrostis* spp.), low-lying quartzite rocky Koppies, and sandy loam and calcrete soils. Trees and tall shrubs such as Camel thorn (*Vachellia erioloba*), Swarthaak (*Senegalia mellifera*), Groenhaar doring (*Parkinsonia africana*), Crossberry (*Grewia flava*), Shepherd's tree (*Boscia albitrunca*), Kareebos (*Lycium cinereum*), and Driedoring (*Rhigozum trichotomum*) were evident. There is a set of two red-yellow apedal dunes (typical Kalahari dunes) orientated north west/south east. The approximate length of the two dunes is around 1 km with a width of about 20 to 50 m, and with a slope between 20 and 45 degrees (28º 52' 08.7" S; 21º 59' 35.6" E).

The south west section of the Farm 387, Portion 18, lies adjacent to the floodplain of the Gariep River that 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 being planted along the Gariep/Orange River (Mucina & Rutherford 2006).

Dry riverine and drainage lines traverse the property, running towards the Gariep/Orange River.

As the construction work on the resort has already been initiated, much of the terrain of the study area has been disturbed by construction activities. Furthermore, Eskom is in the process of installing a new power line which is currently still under construction. It runs from the N8 in a northerly direction all along the eastern boundary and then it turns left towards the Orange River in a north-western direction. The new power line runs through the resort development on the river bank/floodplain. The erection of the new Eskom line (Webley 2013) caused much terrain disturbance where the massive pylons have been and will still be planted. There are various two-track field paths on the farm and in the *klipveld* made by Eskom construction vehicles.

7(a)

7(b)

7(c)

7(d)

7(e)

7(f)

7(g)

7(h)

Figure 7 *(a-h) Views of the landscape and vegetation type on Farm 387, Portion 18, Groblershoop*

8(a)

8(b)

8(c)

8(d)

Figure 8 *(a-d) Soil disturbances from construction activities in the assessment 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).

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 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 e 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 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.

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. Distribution of land to colonial farmers initially 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).

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. Many graves in the region tell the story of battles fought during the 1914 Rebellion.

5.2 Local

Groblershoop is situated about 1 km south of the Gariep/Orange River and is locally referred to as the Gateway to the Green Kalahari.

5.2.1 Stone Age

Scatters of stone artefacts around Groblershoop have been reported by Dreyer (2006, 2012), Morris (2006, 2007, 2012), Van Ryneveld (2007), Van Vollenhoven (2014), and Webley (2013). Numerous localities with lithics pertaining to the ESA and MSA but with little or no context have been recorded. Morris (2012) characterized the distribution of archaeological sites in the area as: stone artefacts along the Orange River; stone artefacts on the sloping calcrete plain east of the Orange River; and stone artefact scatters between sand dunes. The recorded stone artefacts in the area are predominantly described as of poor preservation and of low significance (Morris 2012).

Webley (2013) conducted a "spot check" survey on a section of Farm 387 Portion 18 as part of the Phase 1 AIA for the proposed construction of the Eskom Groblershoop 132/22 kV substation and the Garona-Groblershoop 132 kV Kingbird line of approximately 20 km. (The pylons for this Eskom line are currently being erected on Farm 387, Portion 18.) Webley (2013) describe a background scatter of MSA artefacts made on both quartzite and banded ironstone formations (BIFs) cobbles throughout the study area. Artefacts were found to be randomly scattered across the landscape in low numbers, with some denser scatters recorded on and around small koppies. Furthermore, Webley (2013) mentions that several MSA and LSA stone artefact scatters were

identified on the eastern margins of the River, within the area that corresponds with the planned resort development that forms the focus of our current report. The Phase 1 AIA report goes on to suggest that the informally flaked hornfels cobbles and quartz flakes along the shore may be an indication of LSA occupations. Webley (2013) predicts the presence of more MSA scatters across the study area and foresees the likelihood that artefacts will be disturbed during the construction of the pylon towers. However, because the scatters are widespread they were considered of low significance, and no further mitigation was required. The LSA lithic scatters on the eastern shore, however, were designated as having medium significance. Webley (2013:15) wrote that these sites are "potentially interesting as they can inform us on hunter-gatherer and/or pastoralist settlement patterns along the River" and should be avoided by the construction of the pylon towers.

5.2.2 Historical period

The town of Groblershoop developed on the farm Uitdraai. Initially the town was called Sternham, and the first house was built in 1912. In 1935 the name was changed to Groblershoop after a former Minister of Agriculture, Mr PGW Grobler. Mr Grobler played an important role in the development of the Boegoeberg Dam and irrigation project in 1929, which created employment for many poor whites, and boosted development in the region (Van Zyl 2010). The heritage landscape of the town also includes a historic water turbine driven by solid-oak gears in the Orange River on the farm Winstead build in 1913.

Furthermore, there are graves in the area dating to the second Anglo Boer War (1899-1902) belonging to the Dragoon mounted infantry unit (Van Vollenhoven 2014). Some 25 km from Groblershoop on the road to Griquastad are 7 graves dating from the Rebellion of 1914 (Webley 2013).

5.2.3 Oral history

During the field visit, an employee of the current owners was interviewed regarding the history of the farm Rooisand on which the resort is being developed. Mr Hendrik Freeman grew up on this specific farm with his grandparents. He joined his grandparents on the farm in 1962, where they have been settled since the 1940-50s. They lived in an old house on the eastern shore of the Orange River. The house was made with reeds from the river and plastered with daub on the interior walls. His grandfather unfortunately drowned in the Orange River in 1975. They practised subsistence farming with goats, cattle, horses and sheep and relied on fish from the river as supplement. Mr Freeman was instrumental in identifying various features in the study area. Graves belonging to his family are situated on the property. Mr Freeman claims Khoisan ancestry.

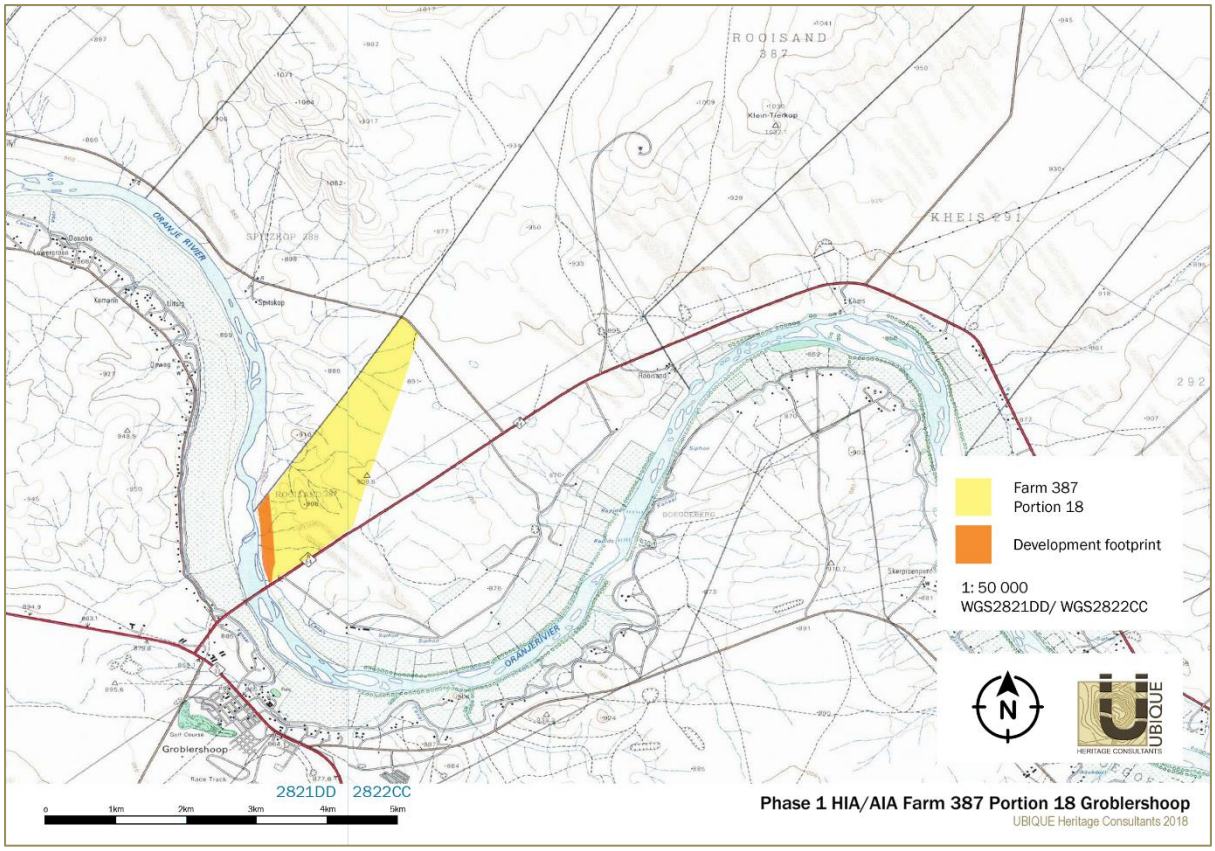


Figure 9 1: 50 000 topographic map WGS2821DD/ WGS2822CC with study area indicated.

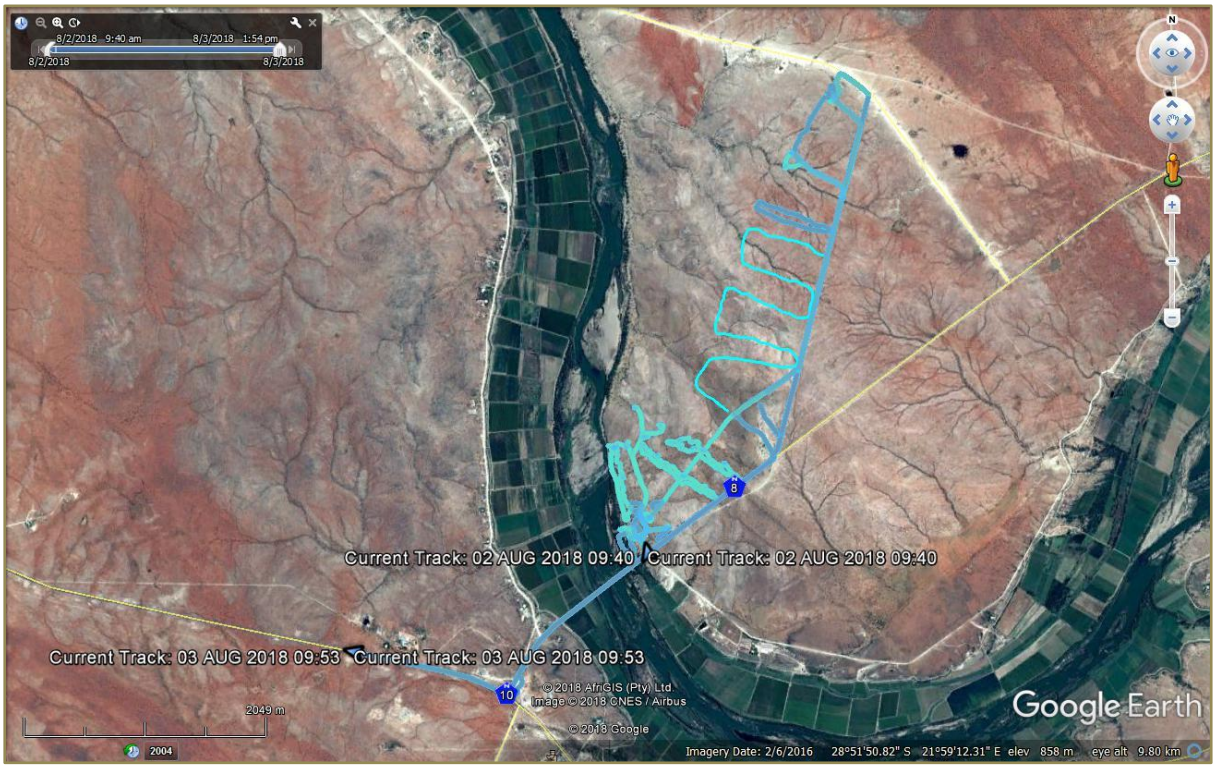


Figure 10 Survey GPS track mapped on Google Earth

6. IDENTIFIED RESOURCES AND HERITAGE ASSESSMENT

6.1 Surveyed area

The area surveyed for the impact assessment exceeded the limitation of the demarcated development area on the shore of the river. The survey commenced in grid 28º 50' 31, 2" S; 22º 00' 33, 7" E in the north eastern corner of the farm. The north eastern part of the property was traversed in wide transects, while the development area received a more comprehensive inspection.

6.2 Identified heritage resources

Description	Period	Location	Field rating/ Significance
Stone Age			
1. Two isolated LSA/MSA stone cores. Retouched. No context.	LSA/MSA	**28º 50' 47.2" S 22º 00' 09.6" E**	Field Rating IV C Low significance
2. LSA/MSA open scatter.	LSA/MSA	**28º 51' 07.2" S 22º 00' 18.4" E**	Field Rating IV C Low significance
3. LSA/MSA isolated stone core. No context.	LSA/MSA	**28º 51' 08.5" S 22º 00' 19.1" E**	Field Rating IV C Low significance
4. High density LSA open lithic scatter with local ceramics. Surface scatter of flakes, scrapers, cores, and microliths. Probable hunter/herder site.	LSA	**28º 52' 08.4" S 21º 59' 13.8" E**	Field Rating IV A High/Medium significance
5. High density LSA/MSA open lithic scatter without local ceramics. Surface scatter of flakes, scrapers, cores, and microliths.	LSA/MSA	**28º 52' 08.5" S 21º 59' 13.7" E**	Field Rating IV A High/Medium significance
6. LSA/MSA open scatter of flakes, scrapers, cores and microliths. Moderate density, frequency. Without local ceramics.	LSA/MSA	**28º 52' 08.0" S 21º 59' 23.5" E**	Field Rating IV A High/Medium significance
7. Upper grindstone. No context. Dune site vicinity.	LSA	**28º 52' 08.4" S 21º 59' 23.9" E**	Field Rating IV C Low significance
8. LSA/MSA open scatter of flakes and scrapers.	LSA/MSA	**28º 52' 08.6" S 21º 59' 24.0" E**	Field Rating IV C Low significance
9. High density LSA/MSA open lithic scatter without local ceramics. Surface scatter of flakes, scrapers, cores, and microliths.	LSA/MSA	**28º 52' 12.9" S 21º 59' 15.0" E**	Field Rating IV A High/Medium significance
10. High density LSA open lithic scatter with local ceramics. Surface scatter of flakes, scrapers, cores, and microliths. Probable hunter/herder site.	LSA	**28º 52' 13.4" S 21º 59' 15.9" E**	Field Rating IV A High/Medium significance

11. High density LSA open lithic scatter without local ceramics. Surface scatter of microliths. Dune site.	LSA	**28° 52' 06.0" S 21° 59' 34.5" E**	Field Rating IV A High/Medium significance
12. LSA/MSA open scatter of flakes and scrapers	LSA/MSA	**28° 52' 16.4" S 21° 59' 16.1" E**	Field Rating IV C Low significance
13. High density LSA/MSA open lithic scatter without local ceramics. Surface scatter of flakes, scrapers, cores, and microliths. Probable knapping site. Dune site 1. Approximately 500 m².	LSA/MSA	**28° 52' 10.7" S 21° 59' 27.0" E**	Field Rating IV A High/Medium significance
14. High density LSA/MSA open lithic scatter without local ceramics. Surface scatter of flakes, scrapers, cores, and microliths. Probable knapping site.	LSA/MSA	**28° 52' 16.5" S 21° 59' 16.6" E**	Field Rating IV A High/Medium significance
15. Upper grindstone. Dune site.	LSA/MSA	**28° 52' 08.7" S 21° 59' 35.6" E**	Field Rating IV C Low significance
16. High density LSA/MSA open lithic scatter without local ceramics. Surface scatter of flakes, scrapers, cores, and microliths. Probable knapping site. Dune site 2. Approximately 200 m².	LSA/MSA	**28° 52' 08.1" S 21° 59' 38.8" E**	Field Rating IV A High/Medium significance
17. LSA/MSA isolated scraper. No context. Dune site.	LSA/MSA	**28° 52' 11.0" S 21° 59' 43.7" E**	Field Rating IV C Low significance
18. LSA/MSA open scatter of flakes and scrapers.	LSA/MSA	**28° 52' 25.6" S 21° 59' 21.7" E**	Field Rating IV C Low significance
19. High density LSA/MSA open lithic scatter without local ceramics. Surface scatter of flakes, scrapers, cores, and microliths. Probable knapping site. Dune site 3. Approximately 1500 m².	LSA/MSA	**28° 52' 12.3" S 21° 59' 48.4" E**	Field Rating IV A High/Medium significance
20. High density LSA/MSA open lithic scatter without local ceramics. Surface scatter of flakes, scrapers, cores, and microliths. Probable knapping site.	LSA/MSA	**28° 52' 27.7" S 21° 59' 22.1" E**	Field Rating IV A High/Medium significance
21. Centre of Resort development. Extremely disturbed ground and with possible Stone Age sites destroyed. Development started prior to the EIA/AIA application.	LSA/MSA	**28° 52' 30.3" S 21° 59' 19.9" E**	Field Rating IV C Low significance
22. LSA/MSA open scatter of flakes and scrapers. Dune site.	LSA/MSA	**28° 52' 19.1" S 21° 59' 42.6" E**	Field Rating IV A High/Medium Significance
Historical			
23. Location of previous settlements and cement foundations of labourer structures from 1975 to 1980s who assisted with	1975 -1980	**28° 52' 25.4" S 21° 59' 21.1" E**	Field Rating IV C Low significance

the building of the new Orange River Bridge. Between old foundations and general area there are surface scatters of lithics, and several upper and lower grinders. Area is very disturbed.			
24. Part of the previous 1975-80s site with cement foundations. Only the foundations are left, no houses or settlements such as *rondawels,* etc. Highly disturbed.	1975 -1980	**28º 52' 31.8" S 21º 59' 29.3" E**	Field Rating IV C Low significance
Graves			
25. Unmarked grave (Freeman graves)		**28º 52' 24.6" S 21º 59' 25.9" E**	Field Rating/Grade IIIB High significance
26. Unmarked grave (Freeman graves)		**28º 52' 24.7" S 21º 59' 25.9" E**	Field Rating/Grade IIIB High significance
27. Unmarked grave (Freeman graves)		**28º 52' 24.8" S 21º 59' 25.9" E**	Field Rating/Grade IIIB High significance
28. Possible grave. Not confirmed and unmarked		**28º 52' 07.7" S 21º 59' 14.3" E**	Field Rating/Grade IIIB High significance
29. Possible grave. Not confirmed and unmarked		**28º 52' 07.9" S 21º 59' 14.2" E**	Field Rating/Grade IIIB High significance

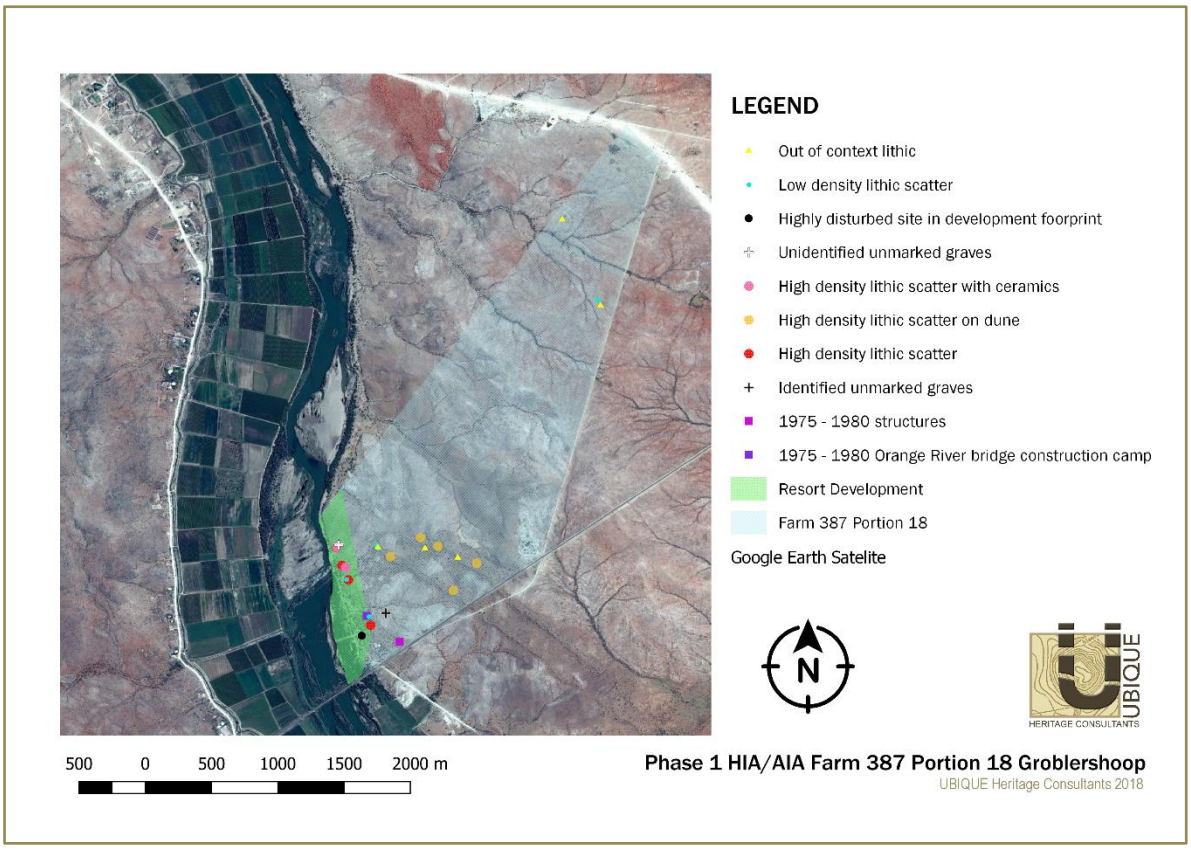


Figure 11 *Distribution of sites across Farm 387, Portion 18, Groblershoop.*

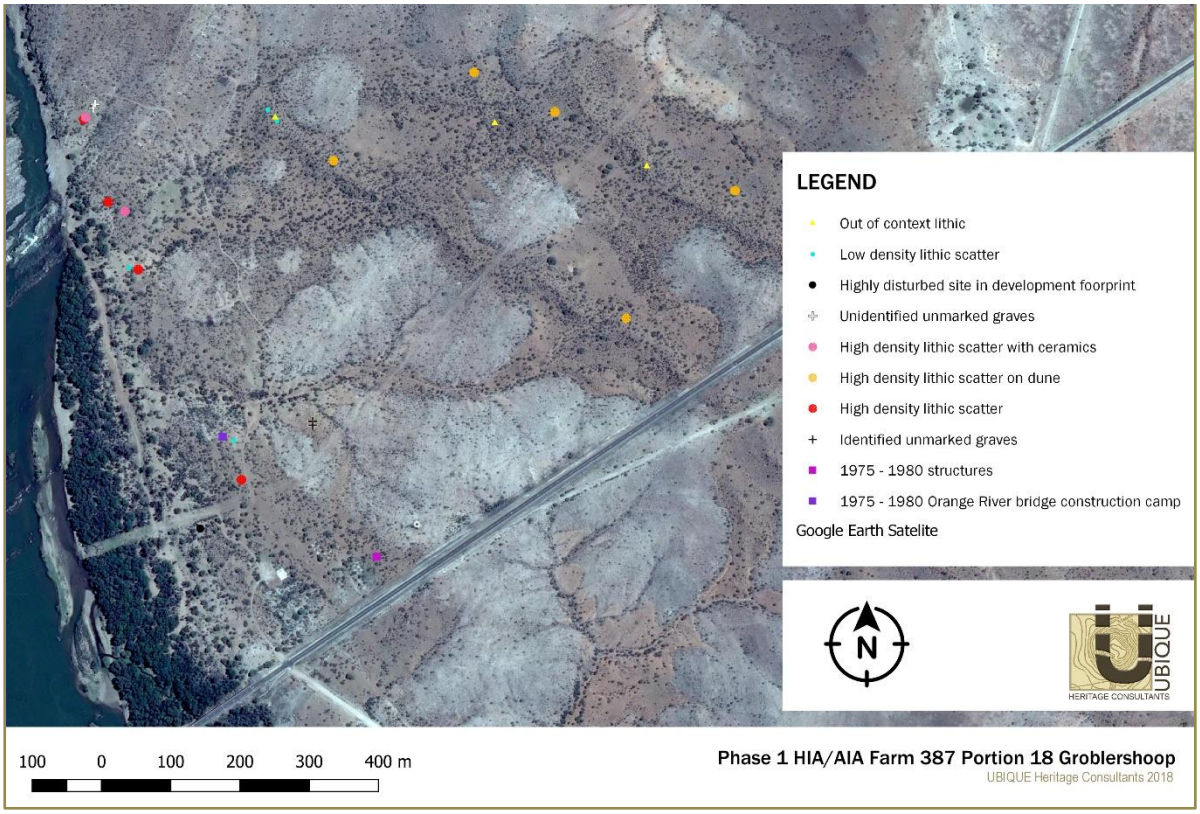


Figure 12 *Detail of area within and adjacent to resort development.*

6.3 Discussion

6.3.1 Archaeological features

A total of 22 locations with Stone Age material were recorded across the surveyed area (Figure 11 & 12). With only three occurrences recorded in the northern section of the property, 19 of these locations are situated within, or near, the south western development area. In the northern area of the property, three isolated banded ironstone cores (Figure 13 a-b), and a small scatter of surface lithics (Figure 13 c-e), have been identified. 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). An isolated long bone from a non-domestic juvenile bovid that exhibits rough cut marks, have also been noted on the *klipveld*, it is however without lithic context. The identified archaeological materials are of low significance, as the archaeological sample is small, and therefor of little scientific value. No development is planned for the area in which these artefacts occur. These sites 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.

Towards the southern part of the property, 2–5 km north east of the development area, four high-density lithic surface scatter sites (n= between 10 and 50 artefacts/m²), and one less dense surface scatter site was identified on the sand dunes, with three isolated stone tool positions and another low-density (n<10 artefacts/m²), lithic scatter also documented in the vicinity (see Figure 12). Three main sites, dune sites 1-3, have been identified. Dune site 1 (28° 52' 10.7" S; 21° 59' 27.0" E) covers a surface area of approximately 500 m², dune site 2 (28° 52' 08.1" S; 21° 59' 38.8" E) approximately 200 m², while the third dune site (28° 52' 12.3" S; 21° 59' 48.4" E) is around 1500 m². The dune sites assemblages consist of surface scatters of flakes, scrapers, cores, microliths, and stone working debris (Figure 14 a-f). Deposits are quite extensive and in addition to the three main sites, single scatters and isolated scrapers, flakes, grinders (upper and lower) cores and microliths have also been deposited throughout the dune areas. The type of lithics present points to the utilisation of the area as a probable knapping site by prehistoric people. Isolated lithics in the vicinity include two upper grindstones and one LSA/MSA scraper (Figure 15 a-c). Again, the cultural material shows various degrees of weathering and is a combination of LSA and MSA artefacts suggesting long term usage spanning both the LSA and MSA (Lombard 2011). Surface sites often exhibit a palimpsest of prehistoric utilization and may therefore contain lithics from different periods in the Stone Age succession. This area is deemed medium to high significance due to the density of stone artefacts on the surface and the repeated utilisation of the landscape through consequent periods. It lies outside the current development footprint, and even though the proximity to the development does raise some concern, it is not in any immediate danger from the development. The dune sites are of high/medium significance and receives a 'General' Protection A (Field Rating IV A). These sites should be avoided or mitigated before any future development are planned and might take place in this area.

Within the development footprint, five high-density lithic scatters (10-20 stone flakes, tools or debitage per square meter in an area of approximately 50-100 m²) and two scatters of lower density were recorded (Figure 12). Two of the high-density scatters also include indigenous ceramics (Figure 16 a-f). The ceramics are undecorated, low fired, thin walled, mineral tempered and associated with hunters-with-livestock/herders (Lombard & Parsons 2008; Mitchell 2002). The lithic assemblages, made from quartz, banded ironstone, quartzite, and hornfels, consist of

very few formal tools, mostly large untrimmed flakes, and geometric shaped segments, and grinding stones. Some of the flake blanks have been utilized, demonstrating their use as expedient tools. The occurrence area is approximately 20 000 m². The location and material present may point to this area being used for camping or semi-permanent settlement as opposed to the knapping sites on the dunes. This corresponds with Webley's (2013) conclusions that the eastern shore margin, for up to 800 m from the river, may have been settled by LSA people. Several similar LSA sites associated with pastoralist Khoekhoe camps were recorded further north towards Kakamas by Orton and Webley (2012). These sites were mostly situated close to or beneath trees on the silty plains along the river margins (Orton & Webley 2012).

The eastern shore of the river is the focus of the resort development. The area is already very disturbed because of a quarry, and roads and buildings that are being constructed. It is suspected that a few LSA sites have already been bulldozed and compromised prior to this study. There are however LSA sites close to the development to the north along the river which are significant and need to be conserved or saved. The high-density scatters in the development footprint are deemed high/medium significance. These sites are therefore designated with a 'General' Protection A (Field Rating IV A) rating. The remaining sites that are still intact should be mitigated before destruction.

13(a) Banded ironstone cores (28° 50' 47.2" S; 22° 00' 09.6" E)

13(b) Isolated banded ironstone core (28° 51' 08.5" S; 22° 00' 19.1" E)

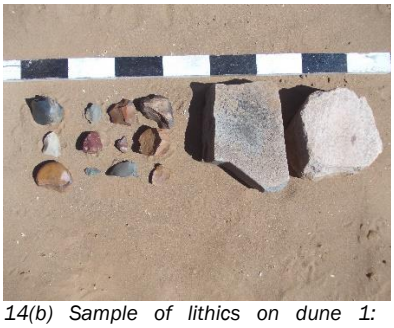
13(c) In area of small lithic surface scatter (28° 51' 07.2" S; 22° 00' 18.4" E)

13(d) Site of small lithic surface scatter (28° 51' 07.2" S; 22° 00' 18.4" E)

13(e) Sample of cores and flakes (28° 51' 07.2" S; 22° 00' 18.4" E)

Figure 13 *(a-e) Archaeological material from the northern part of Farm 387 Portion 18*

14(a) Dune site 1
(28° 52' 10.7" S; 21° 59' 27.0" E)



14(b) Sample of lithics on dune 1: includes cores, flakes, and debitage. (28° 52' 10.7" S; 21° 59' 27.0" E)

14(c) Dune site 2
(28° 52' 08.1" S; 21° 59' 38.8" E)

14(d) Surface lithic scatter on dune 2
(28° 52' 08.1" S; 21° 59' 38.8" E)

14(e) Dune site 3
(28° 52' 12.3" S; 21° 59' 48.4" E)

14(f) Lithics from dune site 3
(28° 52' 12.3" S; 21° 59' 48.4" E)

Figure14 *(a-f) Dune sites lithic scatters*

15(a) Hornfels ground stone with broken edge
(28° 52' 08.7" S; 21° 59' 35.6" E)

15(b) Upper grinding stone in vicinity of dune sites
(28° 52' 08.4" S; 21° 59' 23.9" E)

15(c) LSA scraper
(28° 52' 11.0" S; 21° 59' 43.7" E)

Figure 15 *(a-c) Isolated lithics near dune scatters*

16(a) High-density scatters with ceramics, site 1
(28° 52' 08.4" S; 21° 59' 13.8" E)

16(b) Collection of ceramics and lithics
(28° 52' 08.4" S; 21° 59' 13.8" E)

16(c) High-density scatters with ceramics, site 2
(28° 52' 13.4" S; 21° 59' 15.9" E)

16(d) High-density scatters with ceramics, site 2 (28° 52' 13.4" S; 21° 59' 15.9" E)

16(e) Lithics and ceramics, site 2 (28° 52' 13.4" S; 21° 59' 15.9" E)

16(f) Lithics, site 2 (28° 52' 13.4" S; 21° 59' 15.9" E)

Figure 16 *(a-f) High-density scatter with ceramics located within development area*

17(a) High-density surface scatters within development area

17(b) Collection of hornfels and banded ironstone cores and flakes, high-density scatter development area

17(c) Lower grinder with collection of high density flake scatter within development area

Figure 17 *(a-c) High-density scatter without ceramics within development area*

6.3.2 Historical features

No significant historical features were identified within the study area. Two areas of mild interest were recorded, both associated with the encampment utilised by construction workers during the building of the Orange River Bridge (1975-1980) (Figure 11 & 12). These sites were identified with the help of a farm resident, Mr Hendrik Freeman, and dated according to dates etched into bricks found scattered around the area. Old cement foundations, and middens with surface scatter of contemporary artefacts, are present amongst a disturbed Stone Age lithic scatter together with upper and lower grinding stones (Figure 18 (a-f). The encampment was abandoned after the completion of the bridge construction. This zone is mostly disturbed, is too recent to be of any significance, and the Phase 1 HIA is considered adequate recording of these areas. A 'General' Protection C (Field Rating IV C) will suffice, and destruction may take place.

18(a) Cement foundations

18(b) Foundation remains

18(c) Dated building material

18(d) Upper and lower grinding stones

18(e) European ceramics- midden surface

18(f) European ceramics and glass bottle - midden surface

Figure 18 *(a-f) 1975-1980 Orange River Bridge construction camp*

6.3.3 Graves

There are three stone-covered unmarked graves located approximately 500–600 m east of the current resort development (see Figure 11 & 12). Two of the graves are adult sized, while the third is child sized (Figure 19 (a-c)). Even though these graves are unmarked, they have been identified by Mr Hendrik Freeman as belonging to his family. His grandfather, uncle and little sister are buried here. Currently these graves are unfenced.

19(a) Grave 1

(28° 52′ 24.6″ S; 21° 59′ 25.9″ E)

19(b) Grave 2

(28° 52′ 24.7″ S; 21° 59′ 25.9″ E)

19(c) Grave 3

(28° 52′ 24.8″ S; 21° 59′ 25.9″ E)

Figure 19 *(a-c) Identified unmarked graves of the Freeman family*

Two more possible unmarked graves were noted towards the northern boundary of the farm on the eastern shore of the river (Figure 20). These graves could not be confirmed by the owner or by oral

history. The stones are lying in a distinctive way with slight mounds perceptible, and are close to high-density lithic scatters, which include ceramics. The stone cairns are however not very prominent and therefore uncertain. Morris (1995) has reviewed the occurrence of pre-colonial graves in the local landscape and found that they are likely to be very common. These stone features might be burials, but it is impossible to say this for sure without subsurface testing, which lies outside the scope of this study.

All graves are of high significance and care should be taken to protect them. The graves are of 'Local' significance with Field Rating/Grade IIIB. It could be mitigated and partly retained as a heritage register site (High significance). In view of the presence of burial cairns further down river near Kakamas, it is recommended that a more detailed survey of the banks of the Orange River, specifically the eastern margins of the river, be conducted.

20(a) Possible grave 4

20(b) Possible grave 5

***Figure 20** (a-b) Unconfirmed unmarked graves*

6.3.4 Palaeontological resources

A Palaeontological Impact Assessment desktop study (Appendix A) was completed on our behalf by Elize Butler (Banzai Environmental (Pty) Ltd). The PIA concludes that the geology of the proposed development footprint is underlain by the Groblershoop Formation of the Brulpan Group (Namaqua–Natal Province) as well as the Kalahari Group. According to the SAHRIS PalaeoMap the Groblershoop Formation, Brulpan Group (Namaqua–Natal Province) has a Zero Palaeontological sensitivity and the Kalahari Group has a Low Palaeontological significance (Butler 2018).

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:

1. For the isolated stone tools, lithic scatters of low significance, and 20th-century structures and features, no further action is required.

2. The knapping sites located on the series of dunes to the east of the development footprint are of medium to high significance. The dunes are approximately 2-5 km from the present development on the east shore. Currently no developments are planned for this area, therefore no mitigation is necessary at present. It should be noted that if any future developments are considered, mitigation of these sites should be undertaken. Mitigation should include comprehensive mapping and recording of the sites, and possible sample collection. Furthermore, these areas should be considered as archaeologically sensitive, and the owners and developers should be made aware of the impact that construction vehicles and recreational vehicles could have on these heritage resources.

3. In the resort development area on the eastern shore of the Gariep/Orange River, construction activities have already had a negative impact on archaeological resources. Mitigation for the remaining LSA sites in the footprint area is recommended after which the sites may be destroyed. Mitigation usually involves the collection or excavation of a sample of the cultural and other remains that will adequately allow characterization and dating of a site. Following the Phase 1 HIA/AIA specialist recommendation and the comments from the governing heritage agency (SAHRA) on the Phase 1 report, an application for a Mitigation Permit for sample excavation and collection will be completed. After the Phase 2 HIA/AIA, the developer will be assisted in applying for a destruction permit from SAHRA.

4. The graves do not need to be relocated to make way for development. It is therefore only recommended that the area is fenced and clearly demarcated, especially during construction, and that no construction should take place within 50 m of the perimeter thereof. If any other graves or human remains are uncovered during construction activities, law enforcement and heritage authorities need to be notified.

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 Farm 387 Portion 18 as set out in the report. In the development footprint are archaeological sites that will be impacted on negatively. Some heritage resources may have already been disturbed due to construction activities that commenced before this study was undertaken. Section 7 contains the recommendations made to contain adverse impacts on these resources. Mitigation (7.3) for some of the heritage resources is necessary, and a Phase 2 study will need to be conducted to salvage resources in the development area, before development can continue.

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WEB

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

APPENDIX A

PALAEONTOLOGICAL DESKTOP ASSESSMENT OF THE PROPOSED RESORT DEVELOPMENT ON PORTION 18 OF FARM 387, GORDONIA RD, Z.F. MCCAWU DISTRICT MUNICIPALITY, !KHEIS LOCAL MUNICIPALITY

PALAEONTOLOGICAL DESKTOP ASSESSMENT OF THE PROPOSED RESORT DEVELOPMENT ON PORTION 18 OF FARM 387, GORDONIA RD, Z.F. MCCAWU DISTRICT MUNICIPALITY, !KHEIS LOCAL MUNICIPALITY

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18 AUGUST 2018

Prepared by:

BANZAI ENVIRONMENTAL (PTY) LTD

EXECUTIVE SUMMARY

UBIQUE Heritage Consultants appointed Banzai Environmental (Pty) Ltd to undertake a Palaeontological Impact Assessment assessing the palaeontological impact of the proposed resort on Portion 18 of Farm 387, Gordonia RD, Z.F. McCawu District Municipality, !Kheis Local Municipality, Northern Cape. According to the National Heritage Resources Act (Act No 25 of 1999, Section 38), a palaeontological impact assessment is required to identify the occurrence of fossil material within the proposed development footprint and to calculate the impact of the development on the palaeontological resources.

The geology of the proposed development footprint is underlain by the Groblershoop Formation of the Brulpan Group (Namaqua–Natal Province) as well as the Kalahari Group. According to the SAHRIS PalaeoMap the Groblershoop Formation, Brulpan Group (Namaqua–Natal Province) has a Zero Palaeontological sensitivity and the Kalahari Group has a Low Palaeontological significance. It is consequently recommended that 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.

In the event that 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 paleontologist.

Preceding any collection of fossil material, the specialist would need to apply for collection permit from SAHRA. Fossil material must be curated in an approved collection (museum or university) and all fieldwork and reports should meet the minimum standards for palaeontological impact studies developed by SAHRA.

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INTRODUCTION

EnviroAfrica has appointed UBIQUE Heritage Consultants which in turn appointed Banzai Environmental (Pty) Ltd to undertake a Palaeontological Impact Assessment assessing the palaeontological impact of the proposed resort development site on Portion 18 of Farm 387, Gordonia RD, Z.F. McCawu District Municipality, !Kheis Local Municipality, Northern Cape. The proposed project will consist of the development as well as upgrading and restoration of feasible tourism and recreational facilities.

Currently, 3 to 5 thatched roof chalets, a thatched roof entrance, two mobile home accommodation blocks, numerous tented chalets, a swimming pool and picnic area with a restaurant/ bar have been completed. Infrastructure have been constructed and includes a paved entrance and site roads, streetlights, ablution and laundry facilities, and septic tanks. Access and internal roads, in addition to other building areas have been cleared. Future development will comprise the construction of recreational facilities such as an amphitheatre, additional accommodation, a solid waste facility as well as a double-story 16-bed hotel on the eastern bank of the Orange River to the north-west of the property. A quarter mile racing strip and spin track with a paved parking area on the south-eastern side of the property and separate access from the N8 is also planned.

The bulk development for the holiday resort will be on the eastern bank of the Orange river and will comprise an area of about 5 to 10 ha. The rest of the farm will be utilised as a game farm. The eastern and northern boundary of the farm comprises of a 2,4 m game fence. The owner plans to introduce game on the farm that will serve as a private reserve for tourists. The southern boundary of the farm consists of a normal 1,2 m mesh wire fence which lies adjacent to the N8 national road from Groblershoop to Kimberley. Future developments on the eastern side of the farm might be possible. The entire farm is 360 ha in extent.

Construction work on the resort has already begun and much of the terrain of the study area has been disturbed. Eskom is in the process of constructing a new power line which runs from the N8 in a northerly direction all along the eastern boundary and turns towards the Orange river in a north-western direction. The new power line then runs through the resort development on the river bank.

Application for environmental authorisation for the following activities in terms of NEMA EIA Regulations 2014:

- Government Notice R327 (Listing Notice 1): Activity No. **12**, **19**, **27**
- Government Notice R324 (Listing Notice 3): Activity No. **6**, **11, 12, 14**

The activities that have been completed or have commenced (Section 24G Application) will constitute the following listed activities in terms of the NEMA EIA Regulations 2014:

- Government Notice R327 (Listing Notice 1): Activity No. **12, 19**, **27**
- Government Notice R324 (Listing Notice 3): Activity No. **6**, **12**, **14**

Construction of the resort had already commenced at the time of our assessment, and much of the terrain on the site has been disturbed by construction.

LEGISLATION

NATIONAL HERITAGE RESOURCES ACT (ACT 25 OF 1999)

Cultural Heritage in South Africa, includes all heritage resources, is protected by the National Heritage Resources Act (Act 25 of 1999) (NHRA). Heritage resources as defined in Section 3 of the Act include **"all objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens**".

Palaeontological heritage is unique and non-renewable and is protected by the NHRA. Palaeontological resources may not be unearthed, moved, broken or destroyed by any development without prior assessment and without a permit from the relevant heritage resources authority as per section 35 of the NHRA.

This Palaeontological Desktop Assessment forms part of the Heritage Impact Assessment (HIA) and adhere to the conditions of the Act. According to **Section 38 (1)**, an HIA is required to assess any potential impacts to palaeontological heritage within the development footprint where:

- the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;
- the construction of a bridge or similar structure exceeding 50 m in length;
- any development or other activity which will change the character of a site—
  (exceeding 5 000 m^2 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 10 000 m^2 in extent;

or any other category of development provided for in regulations by SAHRA or a Provincial heritage resources authority.

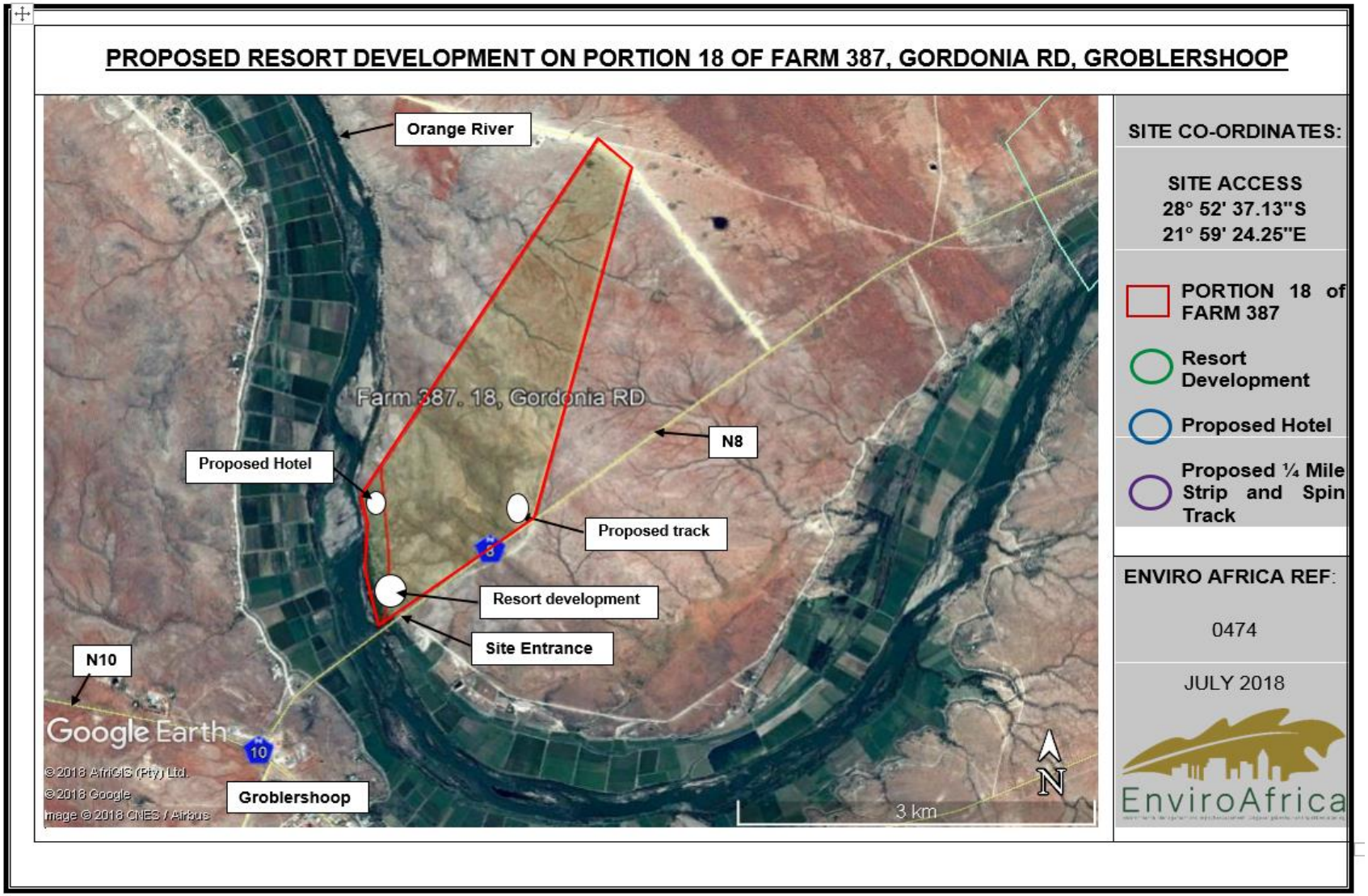

Figure 1: The proposed resort development site on Portion 18 of Farm 387, Gordonia RD, Z.F. McCawu District Municipality, !Kheis Local Municipality, Northern Cape. The development site is approximately 1.7km north of Groblershoop. Map provides by EnviroAfrica.

OBJECTIVE

The objective of a Palaeontological Desktop Assessment is to determine the impact of the development on potential palaeontological material at the site. According to the "SAHRA APM Guidelines: Minimum Standards for the Archaeological and Palaeontological Components of Impact Assessment Reports" the aims of the palaeontological impact assessment are: 1) to identify the palaeontological importance of the exposed and subsurface rock formations in the development footprint 2) to evaluate the palaeontological importance of the formations 3) to determine the impact of the development on fossil heritage; and 4) to recommend how the developer ought to protect or mitigate damage to fossil heritage.

When a palaeontological desktop study is compiled, the potentially fossiliferous rocks present within the study area are established utilizing 1:250 000 geological maps. The topography of the development area is identified by using 1:50 000 topography maps as well as Google Earth Images of the development area. Possible fossil heritage within of the development area is obtained from previous palaeontological impact studies in the same region as well as the PalaeoMap from SAHRIS and thus the palaeontological importance of the rock units is calculated. The possible impact of the proposed development footprint on local fossil heritage by: 1) the palaeontological importance of the rocks and 2) the type of the development footprint and 3) quantity of bedrock excavated.

When rocks of moderate to high palaeontological sensitivity are present within the study area, a field-based assessment by a professional palaeontologist is required. Based on the desktop data and field assessment the impact significance of the planned development is measured with recommendations for further studies or mitigation. Usually, destructive impacts on palaeontological heritage only occur during construction. The excavations will transform the current topography and may destruct or permanently seal-in fossils at or below the ground surface. Fossil Heritage will then no longer be accessible for scientific research.

GEOLOGICAL AND PALAEONTOLOGICAL HERITAGE

The geology of the proposed development footprint is underlain by the Groblershoop Formation of the Brulpan Group (Namaqua–Natal Province) as well as the Kalahari Group (Fig 2).

PALAEONTOLOGY

Quaternary fossil assemblages are generally rare and low in diversity and occur over a wide-ranging geographic area. These fossil assemblages may in some cases occur in extensive alluvial and colluvial deposits cut by dongas. In the past palaeontologists did not focus on Caenozoic superficial

deposits although they sometimes comprise of significant fossil biotas. Fossils assemblages may comprise of mammalian teeth, bones and horn corns (including hyena dens and owl pellets), reptile skeletons and fragments of ostrich eggs. Microfossils, terrestrial mollusc shells and freshwater stromatolites are also known from Quaternary deposits. Plant material such as foliage, wood, pollens and peats are recovered as well as trace fossils like vertebrate tracks, burrows, termitaria (termite heaps/ mounds) and rhizoliths (root casts).

These sediments are Palaeontology poorly studied.

GEOLOGY

Quaternary Ceanozoic superficial deposits

The Tertiary to Quaternary Ceanozoic superficial deposits (represented on Geological maps by Qs,) consist of aeolian sand, alluvium (clay, silt and sand deposited by flowing floodwater in a river valley/ delta producing fertile soil), colluvium (material collecting at the foot if a steep slope), spring tufa/tuff (a porous rock composed of calcium carbonate and formed by precipitation from water) and cave, lake, spring and pan deposits, peats, pedocretes or duricrusts (calcrete, ferricrete), soils and gravels. Rock Types and Age:

Namaqua-Natal Metamorphic

The Namaqua-Natal Metamorphic Province consists of a large number of subunits. These Early to Mid-Proterozoic (Mokolian) (approximately 2-1 Ga years old) granite-gneiss basement rocks is unfossiliferous because they are igneous in origin or too highly metamorphosed.

Table 1: Explanation of geology, lithology and approximate ages in the proposed development footprint.

Group/Formation	Lithology	Approximate Age
Kalahari Group	Sand, limestone	Cenozoic
Brulsands Group,	Arenaceous; quartzite, shale, greywacke	ca 2000-1750 Ma

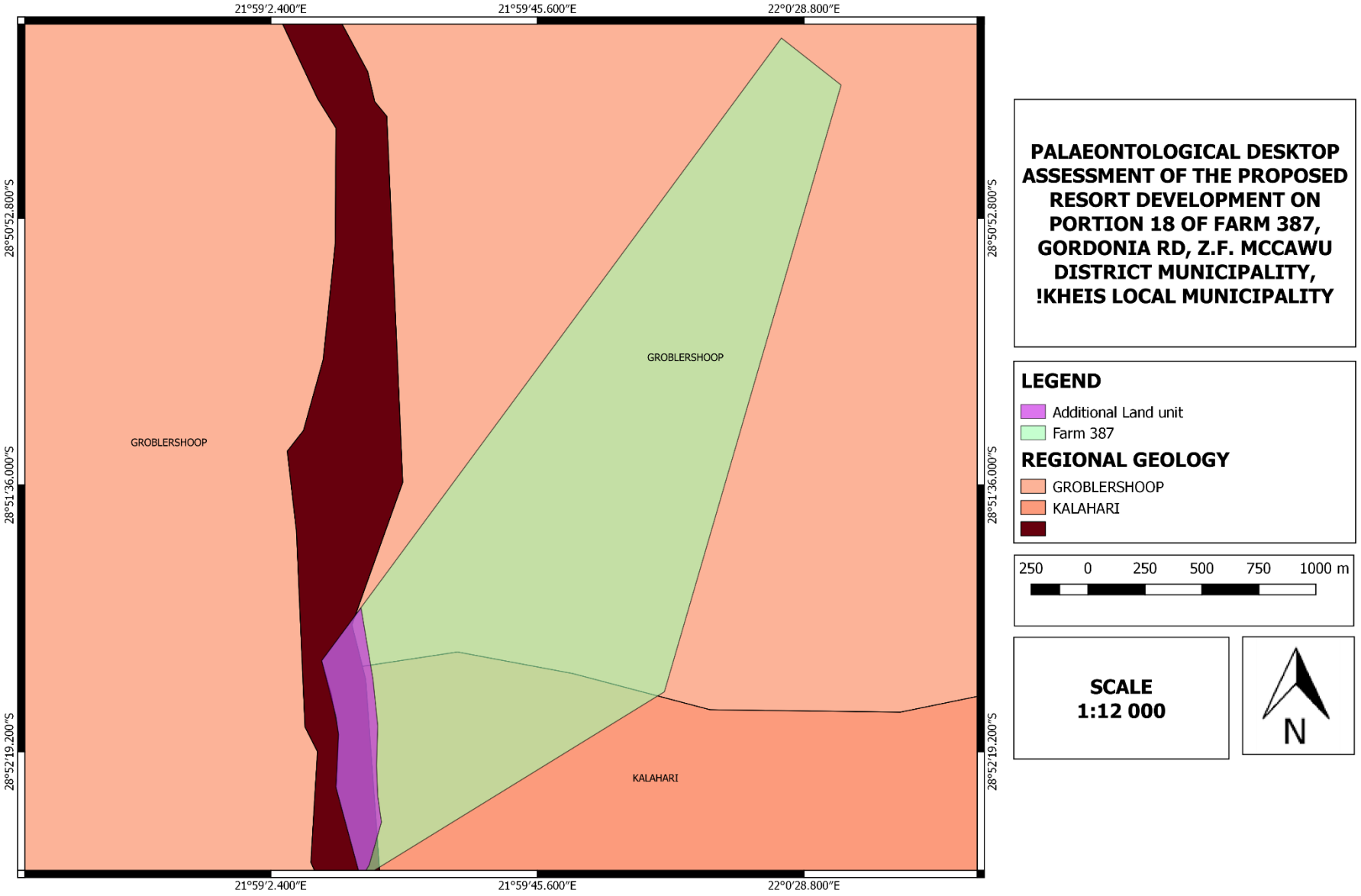

Figure 5. The surface geology of the resort development on Portion 18 of Farm 387, Gordonia RD, approximately 1.7km north of Groblershoop. The development sit is primary underlain by rocks of the Kalahari Group and Groblershoop Formation of the Brulpan Group. Map drawn QGIS Desktop 2.18.14. The Orange Rivier is represented by the maroon colour in the map).

GEOGRAPHICAL LOCATION OF THE SITE

The proposed development site is on Portion 18 of Farm 387, Gordonia RD, is approximately 1.7km north of Groblershoop. The site is can be accessed just after the Orange River bridge on the north-western side of the N8.

Site access co-ordinates are 28° 52' 37.13" S, 21° 59' 24.25" E.

METHODS

A desktop study was conducted to assess the potential risk to palaeontological material (fossils and trace fossils) in the proposed area of development. When writing the desktop report to assess the proposed development footprint, topographical and geological maps are utilized as well as aerial photos (using Google Earth, 2017/2018) as well as other impact assessment reports from the same area.

ASSUMPTIONS AND LIMITATIONS

The accurateness of Palaeontological Desktop Impact Assessments is reduced by old fossil databases that do not always include relevant locality or geological formations. The geology in various remote areas of South Africa may be less accurate because it is based entirely on aerial photographs. The accuracy of the sheet explanations for geological maps is inadequate as the focus was never intended to be on palaeontological material.

The entire South Africa has not been studied palaeontologically. Similar Assemblage Zones but in different areas, might provide information on the presence of fossil heritage in an unmapped area. Desktop studies of similar geological formations generally assume that unexposed fossil heritage is present within the development area. Thus, the accuracy of the Palaeontological Impact Assessment is improved by a field-survey.

Impact Rating System

Impact assessment must take account of the nature, scale and duration of impacts on the environment whether such impacts are positive or negative. Each impact is also assessed according to the following project phases:

- Construction
- Operation
- Decommissioning

Where necessary, the proposal for mitigation or optimisation of an impact should be detailed. A brief discussion of the impact and the rationale behind the assessment of its significance should also be included. The rating system is applied to the potential impacts on the receiving environment and includes an objective evaluation of the mitigation of the impact. In assessing the significance of each impact, the following criteria is used:

Table 1: *The rating system*

NATURE		
Include a brief description of the impact of environmental parameter being assessed in the context of the project. This criterion includes a brief written statement of the environmental aspect being impacted upon by a particular action or activity. The Nature of the Impact is the possible destruction of fossil heritage		
GEOGRAPHICAL EXTENT		
This is defined as the area over which the impact will be experienced.		
1	Site	The impact will only affect the site.
2	Local/district	Will affect the local area or district.
3	Province/region	Will affect the entire province or region.
4	International and National	Will affect the entire country.
PROBABILITY		
This describes the chance of occurrence of an impact.		
1	Unlikely	The chance of the impact occurring is extremely low (Less than a 25% chance of occurrence).
2	Possible	The impact may occur (Between a 25% to 50% chance of occurrence).
3	Probable	The impact will likely occur (Between a 50% to 75% chance of occurrence).
4	Definite	Impact will certainly occur (Greater than a 75% chance of occurrence).

Table 1 Continues

DURATION		
This describes the duration of the impacts. Duration indicates the lifetime of the impact as a result of the proposed activity.		
1	Short term	The impact will either disappear with mitigation or will be mitigated through natural processes in a span shorter than the construction phase (0 – 1 years), or the impact will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0 – 2 years).
2	Medium term	The impact will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years).
3	Long term	The impact and its effects will continue or last for the entire operational life of the development but will be mitigated by direct human action or by natural processes thereafter (10 – 30 years).
4	Permanent	The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered indefinite.
INTENSITY/ MAGNITUDE		
Describes the severity of an impact.		
1	Low	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.
2	Medium	Impact alters the quality, use and integrity of the system/component but system/component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity).
3	High	Impact affects the continued viability of the system/ component and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation.

4	Very high	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired. Rehabilitation and remediation often impossible. If possible rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.

Table 1 Continues

REVERSIBILITY		
This describes the degree to which an impact can be successfully reversed upon completion of the proposed activity.		
1	Completely reversible	The impact is reversible with implementation of minor mitigation measures.
2	Partly reversible	The impact is partly reversible but more intense mitigation measures are required.
3	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
4	Irreversible	The impact is irreversible, and no mitigation measures exist.
IRREPLACEABLE LOSS OF RESOURCES		
This describes the degree to which resources will be irreplaceably lost as a result of a proposed activity.		
1	No loss of resource	The impact will not result in the loss of any resources.
2	Marginal loss of resource	The impact will result in marginal loss of resources.
3	Significant loss of resources	The impact will result in significant loss of resources.
4	Complete loss of resources	The impact is result in a complete loss of all resources.
CUMULATIVE EFFECT		
This describes the cumulative effect of the impacts. A cumulative impact is an effect which in itself may not be significant but may become significant if added to other existing or potential impacts emanating from other similar or diverse activities as a result of the project activity in question.		
1	Negligible cumulative impact	The impact would result in negligible to no cumulative effects.

2	Low cumulative impact	The impact would result in insignificant cumulative effects.
3	Medium cumulative impact	The impact would result in minor cumulative effects.
4	High cumulative impact	The impact would result in significant cumulative effects

Table 1 Continues

SIGNIFICANCE		
Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The calculation of the significance of an impact uses the following formula: (**Extent + probability + reversibility + irreplaceability + duration + cumulative effect) x magnitude/intensity.** The summation of the different criteria will produce a non-weighted value. By multiplying this value with the magnitude/intensity, the resultant value acquires a weighted characteristic which can be measured and assigned a significance rating.		
Points	Impact significance rating	Description
6 to 28	Negative low impact	The anticipated impact will have negligible negative effects and will require little to no mitigation.
6 to 28	Positive low impact	The anticipated impact will have minor positive effects.
29 to 50	Negative medium impact	The anticipated impact will have moderate negative effects and will require moderate mitigation measures.
29 to 50	Positive medium impact	The anticipated impact will have moderate positive effects.
51 to 73	Negative high impact	The anticipated impact will have significant effects and will require significant mitigation measures to achieve an acceptable level of impact.
51 to 73	Positive high impact	The anticipated impact will have significant positive effects.
74 to 96	Negative very high impact	The anticipated impact will have highly significant effects and are unlikely to be able to be mitigated adequately. These impacts could be considered "fatal flaws".
74 to 96	Positive very high impact	The anticipated impact will have highly significant positive

FINDINGS AND RECOMMENDATIONS

The geology of the proposed development footprint is underlain by the Groblershoop Formation of the Brulpan Group (Namaqua –Natal Province) as well as the Kalahari Group. According to the SAHRIS PalaeMap the Groblershoop formation, Brulpan Group (Namaqua–Natal Province) has a zero Palaeontological sensitivity and the Kalahari Group has a Low Palaeontological significance. It is consequently recommended that no further Palaeontological heritage studies, ground truthing and/or specialist mitigation are required pending the discovery of newly discovered fossils. It is thus 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.

In the event that 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 paleontologist.

Preceding any collection of fossil material, the specialist would need to apply for collection permit from SAHRA. Fossil material must be curated in an approved collection (museum or university) and all fieldwork and reports should meet the minimum standards for palaeontological impact studies developed by SAHRA.

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QUALIFICATIONS AND EXPERIENCE OF THE AUTHOR

The author (Elize Butler) has an MSc in Palaeontology from the University of the Free State, Bloemfontein, South Africa. She has been working in Palaeontology for more than twenty-three years. She has extensive experience in locating, collecting and curating fossils, including exploration field trips in search of new localities in the Karoo Basin. She has been a member of the Palaeontological Society of South Africa for 10 years. She has been conducting Palaeontological Impact Assessments since 2014

Declaration of Independence

I, Elize Butler, declare that –

General declaration:

- I act as the independent palaeontological specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting palaeontological impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in section 38 of the NHRA when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- All the particulars furnished by me in this form are true and correct;
- I will perform all other obligations as expected a palaeontological specialist in terms of the Act and the constitutions of my affiliated professional bodies; and

- I realise that a false declaration is an offence in terms of regulation 71 of the Regulations and is punishable in terms of section 24F of the NEMA.

Disclosure of Vested Interest

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;

PALAEONTOLOGICAL CONSULTANT: Banzai Environmental (Pty) Ltd

CONTACT PERSON: Elize Butler

Tel: +27 844478759

Email: elizebutler002@gmail.com

SIGNATURE: