

A vertical image showing raindrops on a window pane. A rainbow is visible in the background, with colors ranging from blue on the left to red on the right. The text is overlaid on this image.

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Heritage Impact Assessment for the proposed Prospecting Right application over the Remaining Extent of Consolidated Farm Kappies Kareeboom 540, Portion 1 of Consolidated Farm Kappies Kareeboom 540, Remaining Extent of the Farm 544 and Portion 1 of the Farm 616, Hay District, Northern Cape Province

Prepared by Pulafel 4D Consulting (Pty) Ltd

Report prepared for Xhariep Plant and Mining (Pty) Ltd

3 October 2023

Author

Dr Joseph Chikumbirike Ph.D. (Wits). Professional Archaeologist and Heritage Management Specialist (ASAPA member)

Internal reviewer

Prof Jesmael Mataga Ph.D. (UCT), Associate Professor of Heritage Studies and Heritage Management Specialist

Executive Summary

Table 1: Project summary

Item	Description
Proposed development and location	Prospecting Right application over the Remaining Extent of Consolidated Farm Kappies Kareeboom 540, Portion 1 of Consolidated Farm Kappies Kareeboom 540, Remaining Extent of the Farm 544 and Portion 1 of the Farm 616, Hay District, Northern Cape Province
Purpose of study	To carry out a field-based Heritage Impact Assessment to determine the presence/absence of cultural heritage sites and the impact of the proposed project on heritage resources within the areas demarcated for the proposed prospecting.
Municipalities	Hay District
Predominant land use of surrounding area	Commercial mining and agriculture
Developer	Xhariep Plant and Mining (Pty) Ltd
Contact Details	Tanja Jooste
Heritage Consultant	Pulafel 4D Consultants (Pty) Ltd
Date of Report	3 October 2023

Pulafel 4D Consulting (Pty) Ltd. was commissioned by M & S Consulting to do a field based HIA for Prospecting Right application over the Remaining Extent of Consolidated Farm Kappies Kareeboom 540, Portion 1 of Consolidated Farm Kappies Kareeboom 540, Remaining Extent of the Farm 544 and Portion 1 of the Farm 616, Hay District, Northern Cape Province. The area is characterised by Ongeluk Formation that is probably more than 1 000m thick and is a monotonous succession of greyish-green andesitic lava, locally amygdaloidal, with lenses of tuff and agglomerate up to 15m thick. The study area also is characterised by Tertiary to Quaternary Deposits: Surface limestone covers large tracts of the area, especially on the Ghaap Plateau where it attains an appreciable thickness. Landscape surface visibility was relatively good at the time of the visit in terms of observing surface archaeological traces despite dense vegetation cover in some areas.

The study methods used a combination of drive-through and field walking was conducted in the Farms. In all the surveyed areas, the precolonial archaeology is represented by a mixture of MSA and LSA lithic scatters. Even so, the lithics are of **LOW** impact (negligible) rating because of their isolated context. Various historical structures also occur within the current footprint, but these are not threatened at all by the proposed development. It is considered unlikely that prospecting by way of core drilling, trenching and pitting will have a detrimental effect on the Stone Age archaeological component, and it is assigned a site rating of Generally Protected C (GP.C). There is a low to moderate chance that trenching and pitting into the sandy overburden especially within the vicinity of natural drainage areas may impact on intact Stone Age archaeological remains and should be

avoided where possible, whereas prospecting by way of core drilling is considered least likely to have a detrimental effect on potentially capped archaeological heritage resources. In this case, potential prospecting areas that are capped by well-developed wind-blown sand deposits are assigned a site rating of Generally Protected B (GP.B) and will require archaeological monitoring if trenching and pitting activities are to be conducted. Therefore, from a heritage perspective, the proposed development by Xhariep Plant and Mining (Pty) Ltd is supported, with full cognizance that buried archaeological remains may still occur and chance findings report procedures must be followed when encountered.

Table of Contents

<u>EXECUTIVE SUMMARY</u>	<u>3</u>
<u>ABREVIATIONS</u>	<u>6</u>
<u>DOCUMENT INFORMATION.....</u>	<u>7</u>
<u>INTRODUCTION AND BACKGROUND TO THE PROJECT.....</u>	<u>10</u>
<u>LEGISLATIVE REQUIREMENTS</u>	<u>12</u>
<u>METHODOLOGY</u>	<u>15</u>
<u>HERITAGE ASSESSMENT AND REPORT COMPILATION.....</u>	<u>18</u>
<u>BACKGROUND TO THE ARCHAEOLOGICAL AND HERITAGE HISTORY OF THE STUDY AREA.</u>	<u>20</u>
<u>DESCRIPTION OF THE AFFECTED ENVIRONMENT</u>	<u>21</u>
<u>THE FINDS.....</u>	<u>25</u>
<u>CONCLUSIONS.....</u>	<u>30</u>
<u>SELECTED REFERENCES</u>	<u>32</u>

ABREVIATIONS

AIA:	Archaeological Impact Assessment
ASAPA:	Association of South African Professional Archaeologists
EIA:	Environmental Impact Assessment
EIA:	Early Iron Age (EIA refers to both Environmental Impact Assessment and the Early Iron Age but in both cases the acronym is internationally accepted. This means that it must be read and interpreted within the context in which it is used.)
EIAR:	Environmental Impact Assessment Report
ESA:	Early Stone Age GPS Global Positioning System
HIA:	Heritage Impact Assessment
ICOMOS:	International Council of Monuments and Sites
LIA:	Late Iron Age
LFC:	Late Farming Community
LSA:	Late Stone Age
MAA:	Mineral Amendment Act, No 103 of 1993
MIA:	Middle Iron Age
MPRDA:	Mineral and Petroleum Resources Development Act 28 of 2002
MSA:	Middle Stone Age
NEMA:	National Environmental Management Act 107 of 1998 NHRA National Heritage Resources Act 25 of 1999
NID:	Notice of Intention to Develop
PHRA:	Provincial Heritage Resource Agency
SAHRA:	South African Heritage Resources Agency
TOR:	Terms of Reference

DOCUMENT INFORMATION

Periodisation

Archaeologists divide the different cultural epochs according to the dominant material finds for the different time periods. This periodization is usually region-specific, such that the same label can have different dates for different areas. This makes it important to clarify and declare the periodization of the area one is studying. These periods are nothing a little more than convenient time brackets because their terminal and commencement are not absolute and there are several instances of overlap. In the present study, relevant archaeological periods are given below (Table 2):

Table 2: The periodization of the archaeology of southern Africa

Early Stone Age	(~ 2.6 million to 250 000 years ago)
Middle Stone Age	(~ 250 000 to 40-25 000 years ago)
Later Stone Age	(~ 40-25 000, to recently, 100 years ago)
Early Iron Age	(~ AD 200 to 1000)
Late Iron Age	(~ AD1100-1840)
Historic	(~ AD 1840 to 1950, but a Historic building is classified as over 60 years old)

Definitions

Just like periodisation, it is also critical to define key terms employed in this study. Most of these terms derive from South African heritage legislation and its ancillary laws, as well as international regulations and norms of best-practice. The following aspects have a direct bearing on the investigation and the resulting report:

Cultural (heritage) resources are all non-physical and physical human-made occurrences, and natural features that are associated with human activity. These can be singular or in groups and include significant sites, structures, features, ecofacts and artefacts of importance associated with the history, architecture, or archaeology of human development.

Cultural significance is determined means of aesthetic, historic, scientific, social or spiritual values for past, present or future generations.

Value is related to concepts such as worth, merit, attraction or appeal, concepts that are associated with the (current) usefulness and condition of a place or an object. Although significance and value are not mutually exclusive, in some cases the place may have a high level of significance but a lower level of value. Often, the evaluation of any feature is based on a combination or balance between the two.

Isolated finds are occurrences of artefacts or other remains that are not in-situ or are located apart from archaeological sites. Although these are noted and recorded, but do not usually constitute the core of an impact assessment, unless if they have intrinsic cultural significance and value.

In-situ refers to material culture and surrounding deposits in their original location and context, for example an archaeological site that has not been disturbed by farming.

Archaeological site/materials are remains or traces of human activity that are in a state of disuse and are in, on, land and which are older than 100 years, including artifacts, human and hominid remains, and artificial features and structures. According to the National Heritage Resources Act (NHRA) (Act No. 25 of 1999), no archaeological artefact, assemblage, or settlement (site) and no historical building or structure older than 60 years may be altered, moved or destroyed without the necessary authorization from the South African Heritage Resources Agency (SAHRA) or a provincial heritage resources authority.

Historic material are remains resulting from human activities, which are younger than 100 years, but no longer in use, including artefacts, human remains and artificial features and structures.

Chance finds means archaeological artefacts, features, structures or historical remains accidentally found during development.

A *grave* is a place of interment (variably referred to as burial) and includes the contents, headstone, or other marker of such a place, and any other structure on or associated with such place. A grave may occur in isolation or in association with others where upon it is referred to as being situated in a cemetery (contemporary) or burial ground (historic).

A *site* is a distinct spatial cluster of artefacts, structures, organic and environmental remains, as residues of past human activity.

Heritage Impact Assessment (HIA) refers to the process of identifying, predicting, and assessing the potential positive and negative cultural, social, economic and biophysical impacts of any proposed project which requires authorization of permission by law, and which may significantly affect the cultural and natural heritage resources. Accordingly, a HIA must include recommendations for appropriate mitigation measures for minimizing or circumventing negative impacts, measures enhancing the positive aspects of the proposal and heritage management and monitoring measures.

Impact is the positive or negative effects on human well-being and / or on the environment.

Mitigation is the implementation of practical measures to reduce and circumvent adverse impacts or enhance beneficial impacts of an action.

Mining heritage sites refer to old, abandoned mining activities, underground or on the surface, which may date from the prehistorical, historical or the relatively recent past.

Study area or 'project area' refers to the area where the developer wants to focus its development activities (refer to plan).

Phase I studies refer to surveys using various sources of data and limited field walking to establish the presence of all possible types of heritage resources in any given area.

Assumptions and disclaimer

The investigation has been influenced by the unpredictability of buried archaeological remains (absence of evidence does not mean evidence of absence) and the difficulty in

establishing intangible heritage values. It should be noted that human burials can occur in unpredictable locations. It should be remembered that archaeological deposits (including graves and paleontological remains) usually occur below the ground level. Should this material be revealed during construction, such activities should be halted immediately, and a competent heritage practitioner and SAHRA must be notified in order for an investigation and evaluation of the find(s) to take place [cf. NHRA (Act No. 25 of 1999), Section 36 (6)]. Recommendations contained in this document do not exempt the developer from complying with any national, provincial, and municipal legislation or other regulatory requirements, including any protection or management or general provision in terms of the NHRA. Pulafel 4D Consulting assumes no responsibility for compliance with conditions that may be required by the PHRA or SAHRA in terms of this report.

Terms of Reference (TOR)

Pulafel 4D Consulting Pty Ltd was engaged to do a field-based Heritage Impact Assessment. The objectives for doing a HIA are to:

- Review applicable legislative requirements, identify all objects, sites, occurrences, and structures of an archaeological or historical nature (cultural heritage sites) located on the property,
- Assess the significance of the cultural resources in terms of their archaeological, historical scientific, social religious, aesthetic, and tourism,
- Describe the possible impact of the proposed development on these cultural remains, according to standard set conventions,
- Where there is a need, recommend suitable mitigation measures and

INTRODUCTION AND BACKGROUND TO THE PROJECT

Pulafel 4D Consulting (Pty) Ltd was appointed by M & S Consulting to do a field based HIA for Prospecting Right application over the Remaining Extent of Consolidated Farm Kappies Kareeboom 540, Portion 1 of Consolidated Farm Kappies Kareeboom 540, Remaining Extent of the Farm 544 and Portion 1 of the Farm 616, Hay District, Northern Cape Province (Figure 1).

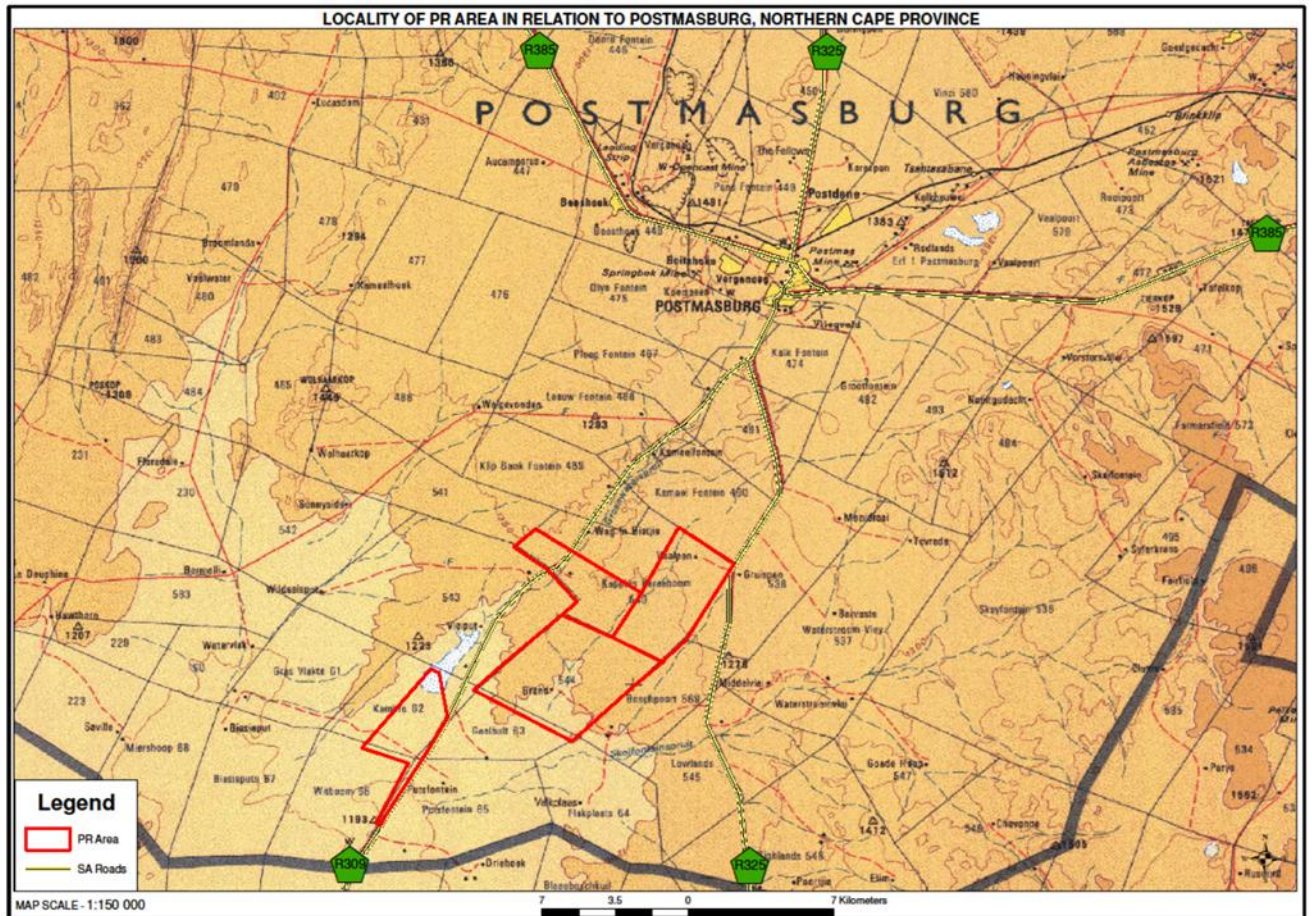


Fig.1. Extract from the 1:250 000 map: 2822 Postmasburg showing the approximate location of the mining rights study area on the Remaining Extent of Consolidated Farm Kappies Kareeboom 540, Portion 1 of Consolidated Farm Kappies Kareeboom 540, Remaining Extent of the Farm 544 and portion 1 of the Farm 616, located approximately 2km south-west of the town of Postmasburg in the Northern Cape Province.

Figure 1: Prospecting area (Topographic map)

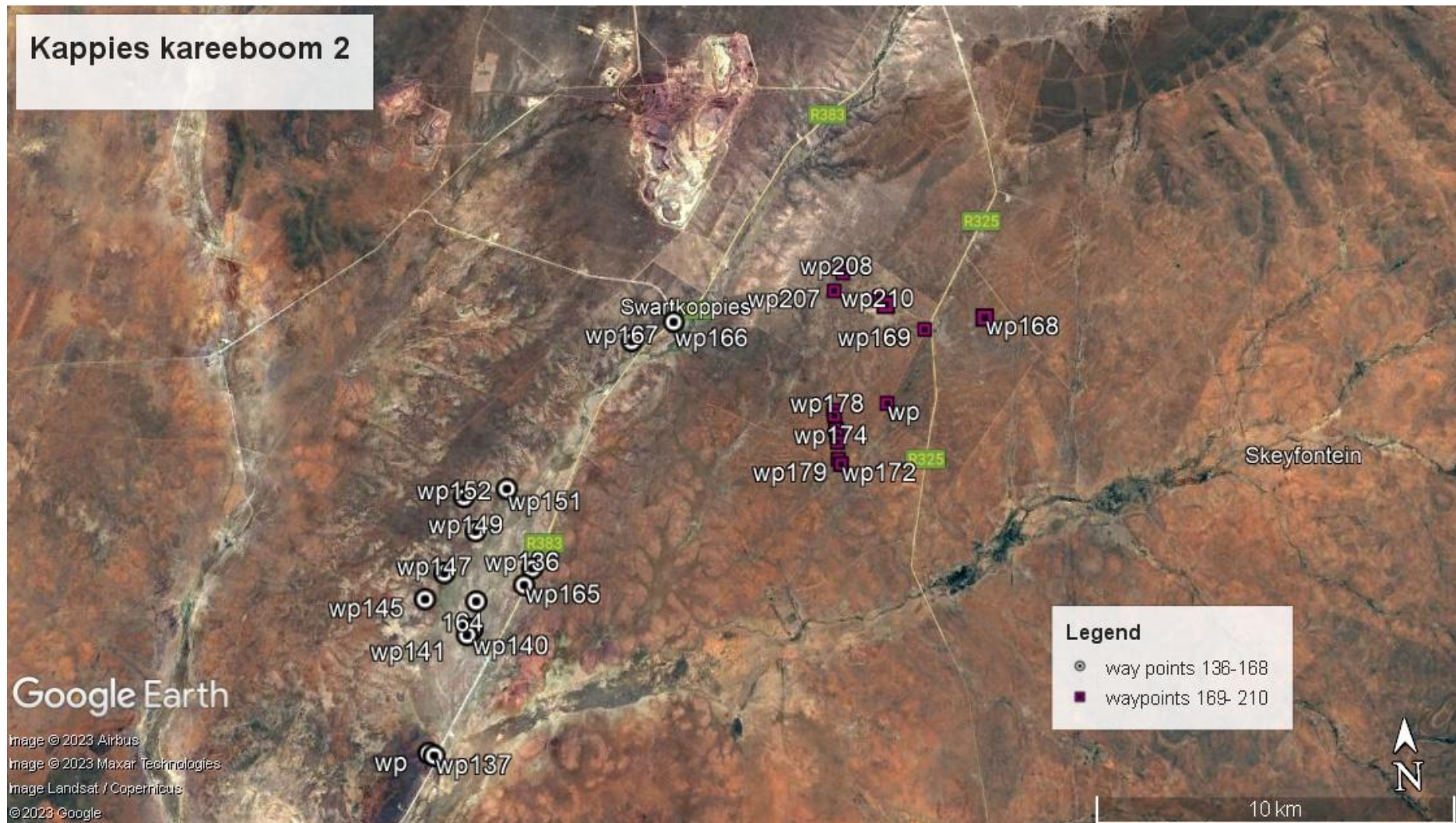


Figure 2: Garmin GPS Map 64s8 track for study area

LEGISLATIVE REQUIREMENTS

Archaeological patrimony is finite as it is non-renewable and hence it needs to be sustainably utilized. This ensured by putting in place protective legislations. Numerous Acts are incorporated into legislation to provide for the protection of archaeological and heritage resources in South Africa. Overarching these is the Constitution of South Africa Act No 108 of 1996. The National Heritage Resources Act (NHRA), Act 25 of 1999, the Mineral and Petroleum Resources Development Act 28 of 2002 (MPRDA), the National Environmental Management Act (NEMA) 107 of 1998 section 39 (3) (b) (iii) the National Environment Management Protected Areas Act No 57 of 2003 (NEMPAA), and the Human Tissues Act (HTA) 65 of 1983 as amended. The Environment Management Biodiversity Act of 2004, Act No 10 of 2004, is one of the pieces of legislation that help in the protection of the various forms of the South African heritage. The National Heritage Resources Act (NHRA) no 25 of 1999 is the most relevant of these as it provides for the protection of the following resources:

- a) palaeontological and archaeological deposits, objects and sites,
- b) built structures older than 60 years,
- c) burial grounds and graves which include graves younger than 60 years; graves older than 60 years; graves of victims of conflict and or graves of individuals of royal descent, as well as
- d) cultural landscapes.

The NHRA (No. 25 of 1999) is a piece of legislation that defines heritage resources of cultural significance or other special value for the present community and for the posterity that are considered part of the national estate such as “places, buildings, structures and equipment of cultural significance; places that are associated with oral traditions are attached, historical settlements, and townships landscapes and natural features of cultural significance; geological sites of scientific or cultural importance; archaeological and palaeontological sites; or graves and burial grounds, including ancestral graves; royal graves and graves of traditional leaders; graves of victims of conflict; graves of individuals designated by the Minister by notice in the Gazette; historical graves and cemeteries; and other human remains which are not covered in terms of the Human Tissue Act,1983 (Act No. 65 of 1983); sites of significance relating to the history of slavery in South Africa; movable objects, including objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens; objects to which oral traditions are attached or which are associated with living heritage; ethnographic art and objects”

According to NHRA Act 1999, developments which alter the character of a site, and, which exceed prescribed limitations require specialist assessment. These activities trigger the need for Heritage Impact Assessments (HIA) and are listed in sections 34, 35 and 38. The limitations are listed below:

Section 34(1) No person may alter or demolish any structure or part of a structure which is more than 60 years old without permission by the relevant provincial heritage resources authority.

Section 35(4) No person may, without a permit issued by the responsible heritage resources authority, destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site.

Section 36(3) No person may, without a permit issued by SAHRA or the responsible provincial heritage resources authority, 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 bring onto or use at a burial ground or grave any excavation equipment or any equipment which assists in detection or recovery of metals.

Section 38 (1) of the National Heritage Resources Act, 1999: Requirements of heritage impact assessment nature, to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as – (a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length; (b) the construction of a bridge or similar structure exceeding 50m in length; (c) any development or other activity which will change the character of a site (i) exceeding 5 000 m² extent; or (ii) involving three or more existing erven or subdivisions thereof; or (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or (iv) the cost of which exceed a sum set in terms of regulations b SAHRA or a provincial heritage resources agency; (d) the re-zoning of a site exceeding 10 000 m² in extent; or (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources agency, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.”

Details and Relevance of the proposed development

The proposed prospecting at the Remaining Extent of Consolidated Farm Kappies Kareeboom 540, Portion 1 of Consolidated Farm Kappies Kareeboom 540, Remaining Extent of the Farm 544 and Portion 1 of the Farm 616, Hay District, Northern Cape Province has an impact on the archaeology, cultural heritage, and natural heritage of the area, therefore the need for an Archaeological and Heritage Impact Study. The proposed project has phases that include preliminary exploration work, exploratory drilling, based on the results of the geophysics and loam sampling. Currently a number of existing roads and tracks traverse the proposed project area and where practicable, these roads will be used. It is envisaged that more temporary access roads will be established for repeated access to the drilling sites if the identified drill sites cannot be access via existing roads and tracks. Thirty boreholes, approximately 50m deep each are planned. All drilling will be short term and undertaken by a contractor using truck-mounted equipment.

Table 3: Evaluation of the proposed development as guided by the criteria in NHRA, MPRDA and NEMA.

ACT	Stipulations of development	Requirement details
NHRA Section 38	Construction of road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length	No
	Construction of bridge or similar structure exceeding 50m in length	No

	Development exceeding 5000 sq. m	Yes
	Development involving three or more existing erven or subdivisions	No
	Development involving three or more erven or divisions that have been consolidated within past five years	No
	Rezoning of site exceeding 10 000 sq. m	No
	Any other development category, public open space, squares, parks, recreation ground	No
NHRA Section 34	Impacts on buildings and structures older than 60 years	No
NHRA Section 35	Impacts on archaeological and paleontological heritage resources	Subject to identification during the Phase 1
NHRA Section 36	Impacts on graves	No
NHRA Section 37	Impacts on public monuments	No
Chapter 5 (21/04/2006) NEMA	HIA is required as part of an EIA	Yes
Section 39(3)(b) (iii) of the MPRDA	AIA/HIA is required as part of an EIA	Yes

METHODOLOGY

Desktop Assessment

The HIA study for the proposed project area was implemented through the various methods. Firstly a desktop study was conducted to gain access to the following literature sources: academic literature, South African Heritage Resources Authority (SAHRA) impact assessment reports on the region, South African Heritage Resources Information System (SAHRIS) map, Genealogical society database, South African archives database, McGregor, Africana libraries, digital collections, as well as previous HIA reports in the Northern Cape and specifically in the Postmasburg area in the Hay District. The second method involved a field survey.

Field Survey

The field study was undertaken on 02-03 September 2023. The field study entailed a combination of foot survey and by drive through by a car. Environmental parameters such as geology, soils, and types of vegetation, river valleys and hills / mountains were taken into consideration when deciding the areas to investigate for archaeological and heritage sites. On the day of the survey, the weather was bright and sunny, with clear visibility. Relative to desktop predictions it was found that the area had no potentially significant archaeological exposure. Artefact assemblages consisting of mostly cores and flakes were in sporadic and isolated occurrences, most occurring at the surface exposures. The hilly areas were bereft of any artefacts meaning that the scatters are isolated to the area below the hills. The rock outcrops and exposures yielded no traces of engravings or past inhabitation. Overall, it was found that the prospecting area has a generally low surface density of isolated Stone Age artefacts ranging from Pleistocene but mainly Holocene. The artefact scatters are of low archaeological integrity and therefore have limited significance.

The Built Environment, Cultural and Historical Landscapes

Within the project area, though the existence of such important historical and cultural sites, the likely impacts in and adjacent to the development area can be managed by avoidance, and /or possibly preservation. These remnant sites related to human, historical and symbolic attachments within, or adjacent to the proposed development area are highlighted in the following narrative. Generally, the identified properties are protected by section 34 of *the National Heritage Resources Act* (NHRA) which states that ‘No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority’.

1. Built Environment

Limited remnants of old buildings were recorded within the proposed project footprint. These included loosely broken concrete blocks from building structures that had been completely dilapidated. An intact farmhouse was recorded by Mr du Plooy’s farm. The farmhouse is more than 60 years old and is protected by law.

2. Graves

A modern cemetery (Figure 3) located in Mr JP du Plooy Farm 540/Vaalport was recorded. contemporary section, where burials re still done.



Figure 3: Cemetery at (Farm 540/Vaalport).

3. Contemporary Human Activity

The major contemporary human activities are related to the agricultural activities, mainly animal husbandry within the 3 portions. Most infrastructure related to this include farmsteads and water provisions infrastructure such as boreholes. The current land use in the project footprint is cattle, sheep, goats and game farming.

4. Impacts

The “cultural significance” of the identified structures in and adjacent to the project area are Built Environment, Historical sites and burial grounds and graves.

Burial grounds and graves

The SAHRA Act also offer general protection to sites such as this- declared or not thus as per 34. (1) covering all structures/grave older than 60 years without a permit issued by the

relevant provincial heritage resources authority. As per the SAHACT 3.2.1 (e) The range Burial grounds and graves include—

- (i) ancestral graves;
- (ii) royal graves and graves of traditional leaders;
- (iii) graves of victims of conflict;
- (iv) graves of individuals designated by the Minister by notice in the *Gazette*;
- (v) historical graves and cemeteries; and
- (vi) other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);

Given the history of settlement in the area, there is a possibility of discovering more burials in or adjacent to the project area, and in this case as per made a concerted effort to contact and consult communities and individuals. In such cases and as for the identified gravesite, and as per SAHRA 36.5A, 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 ...

4.1. Built Environment

- The farmstead contains a mixture of old and modern structures, with a possibility of a few of them being older than 60years.
- No other protected historic buildings or related structures were discovered within the project area.

HERITAGE ASSESSMENT AND REPORT COMPILATION

Assessing significance

The assessment of the heritage significance is the measure of value that the heritage carries to various stake holders. It is based on the importance that people attach to a physical object, or abstract concept attached to an event, landscape, or people. The heritage significance is its worthiness to different stake holders. The intrinsic worth of cultural, or natural patrimony (sites and object) is linked to various sectors of the local, national, and global population. The types of significances or values below are in accordance with SAHRA which is the national heritage authority in South Africa (Table 4)

Table 4: Type of Significance and definition

<i>Aesthetic:</i>	the site or object are significant in exhibiting particular aesthetic characteristics valued by a community or cultural group.
<i>Historical</i>	Is its importance in the community, or pattern of history. It also reflects a strong or special association with the life or work of a person, group or organisation of importance in history. According to SAHRA heritage may demonstrate significances relating to the history of slavery
<i>Rarity:</i>	is when heritage possess uncommon, rare, or endangered aspects of natural or cultural heritage
<i>Representivity:</i>	shows the principal characteristics of a particular class of natural or cultural places or objects, whether they indicate a range of landscapes or environments, the attributes of which identify it as being characteristic of its class. The other factor is that is whether it shows principal characteristics of human activities that include the way of life, philosophy, custom, process, land-use, function, design, or technique in the environment of the nation, province, region, or locality.
<i>Scientific/Technical:</i>	is the potential to yield information that will contribute to an understanding of natural or cultural heritage. It shows a high level of creative or technical achievement at a particular time period.
<i>Social:</i>	this when the heritage has a strong or special association with a particular community or cultural group for social, cultural, or spiritual purposes
<i>Tourism:</i>	this when the site or object carries a commercial value that is associated with tourism, thus the heritage does possess the potential to be used for education/economic benefits. Site Grading Assessment for heritage significances paves way for site grading.

Site Grading

Assessment for heritage significances paves way for site grading. Site grading or weighting is contingent on the geographical extent (local/provincial/national) and the importance

(low/medium/high) of the value. Based on these two elements, possible recommendations on future action on the sites are prescribed. These recommendations may include no further action, mitigation measures or destruction of a site. It is important to note that SAHRA is the one that approves to developers or any other interested and or affected parties the destruction of any heritage site. This may only take place upon SAHRA issuing a permit. The permit may also be issued by a provincial heritage resources authority (PHRA).

Table 5: Recommended grading as well as associated recommendation measures. In all the scenarios approval will be required from SAHRA.

South African Legislation (National Heritage Resources Act) Ranking	Sites within the study area	Sites immediately outside study area
National Heritage Sites (Grade 1)	None	None
National Heritage Sites (Grade 1), Grade 2 (Provincial Heritage Sites), burials	None	None
Grade 3a	None	None
Grade 3b	None	None
Grade 3c	None	None

Report compilation

The desktop analysis and physical surveys were employed identify and locate possible heritage sites and their associated significance and impacts.

BACKGROUND TO THE ARCHAEOLOGICAL AND HERITAGE HISTORY OF THE STUDY AREA.

The South African pre-history follows a complex sequence of stratigraphic deposition, which is preserved in the deep layers underground. There are three progressive phases, namely the Palaeontological phase, the Archaeological phase and the Colonial/historical periods. The present study deals with the last two.

Stone Age

The Northern Cape is endowed with rich archaeological resources that relate to the Stone Age (Morris 2006). The archaeological signature in the project footprint area includes Stone Age, Iron Age and Historical periods. The archaeological landscape contains such sites such as Wonderwerck Cave, Gamo Hana, Kathu Pan and Dithakong. The Wonderwerk Cave located in the Kuruman Hills-Asbestos Mountains (Curnoe et al. 2006; Herries et al. 2007, Chazan and Horwitz 2009). Chazan and Horwitz (2009) state that Wonderwerk Cave serves as a unique and extensive diachronic record of milestones in the development of symbolic behaviour. According to Chazan and Horwitz (ibid), local communities associate the cave with a snake spirit, and the rock art executed on the cave walls provide the evidence on how special the cave was during the Later Stone Age. In addition, manuports with sensory properties were introduced into the back of the cave during the terminal Acheulean (over 180,000 years ago) (Chazan and Horwitz 2009).

Beaumont and Vogel (1989) dated rock art sites in the Northern Cape Province, particularly in the landscape within which the project area is located. Some the sites that were dated are Melkboom which is pecked and dated to 330 +/-45, Batlharos dated to 210+/-30, Meidekop finder paintings dated to 180+/-, Nchwaneng pecked and dated to 190+/-40 (Beaumont and Vogel 1989). Within the same project area just close to Postmasburg is located an ancient mine. The ancient mine was excavated by Beaumont and Boshier (1974). According to the description by Beaumont and Boshier (1974), the ancient working site is located on an elevated rise on the farm Doornfontein M82, roughly 12 km north-north-west of Postmasburg. Excavated materials from Strata 1 and 2 produced similar amorphous 'Pre- Iron Age' aggregates (Beaumont & Vogel 1972). They also yielded abundance of stone mining tools Iron Age and modern objects Beaumont and Boshier 1974). Another important site within the archaeological landscape in which the project is locate is Kathu Pan. It is located north of the actual project area. Kathu Pan forms a complex with other sites known as Kathu Complex. Walker et al. (2014) argue that the Kathu Complex includes Kathu Pan1 (KP1) and Bestwood 1 (BW 1). Kathu Complex is one of the richest early prehistoric archaeological sites in South Africa. Excavations conducted at Kathu archaeological site have produced tens of thousands of Earlier Stone Age artifacts. They assemblage consists of hand axes and other tools. With an estimated date between 700,000 and one million years old. Kathu Pan presents evidence of early hominin occupation in multiple locations within the pan; however, ESA deposits have only been excavated at KP 1 (Walker et al. 2014).

DESCRIPTION OF THE AFFECTED ENVIRONMENT

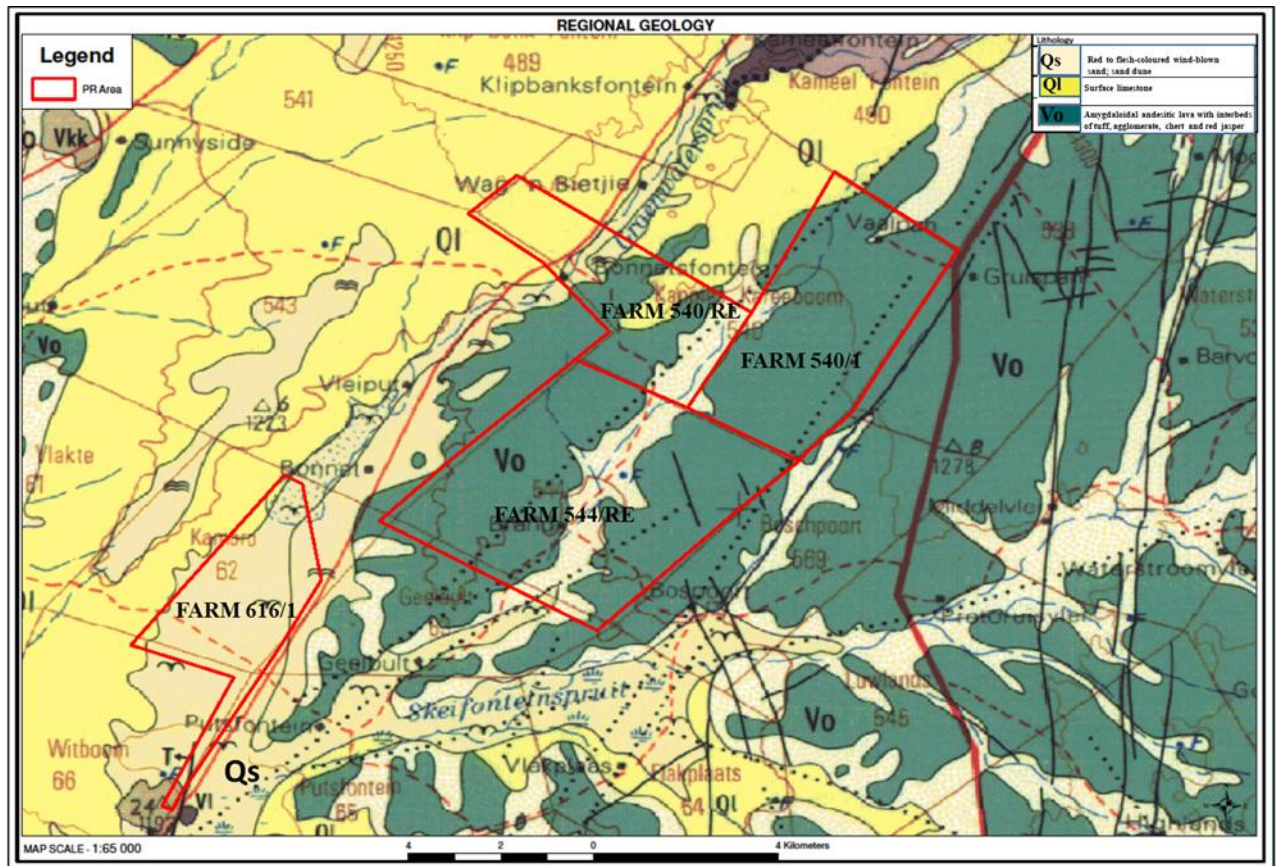


Fig.2. Detail of the geological map (taken from the 1:250 000 map: 2822; Postmasburg) to show the main rock units mapped on the Remaining Extent of Consolidated Farm Kappies Kareeboom 540, Portion 1 of Consolidated Farm Kappies Kareeboom 540, Remaining Extent of the Farm 544 and portion 1 of the Farm 616. Main rock units: Vo (dark green) = Ongeluk Formation (Amygdaloidal andesitic lava with interbeds of tuff, agglomerate, chert and red jasper); Ql (bright yellow) = surface limestone; Qs (pale yellow) = reddish brown wind blown sand.

Figure 2: Geology of the project footprint area

The Ongeluk Formation is one of the geological formations found in the project area. The Ongeluk Formation is thick and is a monotonous succession of greyish-green andesitic lava, locally amygdaloidal, with lenses of tuff and agglomerate up to 15m thick. The Tertiary to Quaternary Deposits are also found in the project area. These consist of surface limestone that stretch for into the Ghaap Cliff limestone is found along the escarpment, while diatomaceous limestone and kieselguhr occur in depressions in the central and western portions of the area. Reddish-brown wind-blown sand is found mainly in the west where it builds seif dunes striking north-northwest. Iron ore (hematite) is mined at Beeshoek and Manganore from ferruginous subsidence breccia (blinkclip breccia) which caps some of the hills north of Postmasburg, as well as an eluvial detrital ore from scree on the hillsides. The basal shale of the Gamagara Formation is locally ferruginised where it overlies banded ironstone, and is also mined at Beeshoek and Manganore, while the banded ironstone itself has in places also been enriched to high-grade ore. Manganese ore is recovered from the basal shale of the Gamagara Formation where it overlies dolomite. The most important mines are at Glosam, Lohatla and Beeshoek. Manganiferous chert breccia, also known as the ‘silica breccia’ or ‘manganese marker’, found at the top of the Ghaaplatto dolomite, is exploited on a small scale at Manganore.



Figure 4: Landscape of study area (bare rock and highly weathered)



Figure 5: Calcrete formations



Figure 6: General landscape view

Vegetation

Vegetation in the project area is influenced by the semi-arid climatic conditions. The climate in the project area supports a continuous scrub cover, largely vaalbos (*Tarchonanthus camphoratus*), interspersed with sparse, mainly thorn-bearing bush which varies locally and includes swarthaak (*Acacia detinens*), kameeldoring (*Acacia giraffae*), soetdoring (*Acacia karroo*), witgat-boom (*Boshcia albitrunca*), and kareeboom (*Rhus lancea*) (Nel 1929: 15-16). Sparsely distributed clusters of *Z. mucronata* and *A. karroo* were observed.



Figure 7: Low bushes mixed with grass



Figure 8: *Accacia Mellifera* bushes on the foot of the hill



Figure 9: *Z. mucronate* bushes

THE FINDS

Archaeological : Stone tools

A deficit of significant archaeological sites particularly those that are still well preserved and undisturbed in their primary contexts was observed. However, isolated scatters of Stone Age material culture of **LOW** significance were observed which were highly weathered with probably secondary context. Some of the Stone Age material culture recorded include stone tool scrapers, flakes and cores. Historical structures that include an old farmhouse and cemetery were recorded. These, however, are of **LOW** significance, and mining or prospecting activities can avoid areas where these structures are sited. It is recommended that development goes ahead. The notable observations made are tabulated below.

Table 4: plotted observations made.

Site	Latitude (S)	Longitude (E)	Comment	Significance
1	28 ° 33, 663'	022 ° 53, 430'	flakes are scattered	LOW
2	28 ° 30, 268'	022 ° 54, 183'	Scatter concentration on the boundary/ track	LOW
3	28 ° 26.880'	023 ° 01.665'	Modern cemetery	HIGH

4	28° 26,880'	023° 01, 665'	Old structure farmhouse 60 years old	MODERATE
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Figure 10: MSA flake (observation at Site 1)



Figure 11: Lithic scatter (observation at Site 2)



Figure 12: Stone Age lithic materials (observation at Site 3)



Figure 13: Stone Age lithic materials (observation at Site 3)

Graves/ burials

Historical structures that include an old farmhouse and cemetery (Farm 540/Vaalport), were recorded.

Of note is the recorded contemporary family cemetery. The cemetery is located adjacent to the farmhouse (Figure 14), with 7 graves. The cemetery, with family members of the current farm owners has oldest burial being in/about 1963.

As indicated in the preceding sections, these are of **LOW** significance, and mining or prospecting activities can avoid areas where these structures are sited.



Figure 14: Family Cemetery at Farm/Portion 540/Vaalport

SITE SIGNIFICANCE

GRADING

The significance rating for the historical buildings is HIGH, however, they are not going to be directly affected by the project development. Due to this no mitigation is required.

RECOMMENDATIONS

The stone tools discovered in the study area require no further action, as they mostly occur in secondary contexts such as roads or tracks. The historical structure and cemetery are found on current homestead and are not directly threatened by the prospecting activities.

Therefore, based on the study presented in this assessment, the proposed prospecting is supported.

CHANCE FINDINGS PROCEDURE

It has already been highlighted that sub-surface materials may still be lying hidden from surface surveys. Therefore, absence (during surface survey) is not evidence of absence all together. The following monitoring and reporting procedures must be followed in the event of a chance find, in order to ensure compliance with heritage laws and policies for best practice. This procedure applies to the developer's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. Accordingly, all construction crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds.

- If during the drilling operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance, work must cease at the site of the find and this person must report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
- The senior on-site Manager must then make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area before informing SAHRA/PHRA (Natasha Higgins).
- If a human grave/burial is encountered, the remains must be left as undisturbed as possible before the local police and SAHRA or PHRA are informed. If the burial is deemed to be over 60 years old and no foul play is suspected, an emergency exhumation permit may be issued by SAHRA for an archaeologist to exhume the remains.

CONCLUSIONS

Pulafel 4D Consulting Pty Ltd was commissioned to undertake a field-based Heritage Impact assessment on Remaining Extent of Consolidated Farm Kappies Kareeboom 540, Portion 1 of Consolidated Farm Kappies Kareeboom 540, Remaining Extent of the Farm 544 and Portion 1 of the Farm 616, Hay District, Northern Cape Province. No significant cultural material was found on the development footprint, except for historical structures that lie outside the prospecting activities. Without identifiable cultural material, there is therefore, no heritage grounds to halt the prospecting activities. Chance findings are still possible and reporting procedures have been outlined to the developer.

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SELECTED REFERENCES

- Avery, D. M. 1995. Southern savannas and Pleistocene hominid adaptations: the micromammalian perspective. In *Palaeoclimate and Evolution with Emphasis on Human Origins* (eds E. S. Vrba, S. H. Denton, T. C. Partidge and L. M. Burckle). New Haven, CT: Yale Univ Press, pp. 459–78.
- Barham, L. S. 2002. Systematic pigment use in the Middle Pleistocene of south-central Africa. *Current Anthropology*, 31: 181–90.
- Beaumont, P. 1982. Aspects of the Northern Cape Pleistocene project. In *Palaeoecology of Africa and the Surrounding Islands* (eds J. A. Coetzee and E. M. van Zinderen Bakker). Rotterdam: Balkema, pp. 41–4.
- Beaumont, P.B., and Vogel, J. C. 1989. Patterns in age and context of rock art in the Northern Cape. *South African Archaeological Bulletin*, Dec, Vol.44, No. 150:73-81.
- Beaumont, P. 1990. Wonderwerk Cave. In *Guide to Archaeological Sites in the Northern Cape* (eds P. Beaumont and D. Morris). Kimberley: McGregor Museum, pp. 101–34.
- Beaumont, P. 2004. Wonderwerk Cave. In *Archaeology in the Northern Cape: Some Key Sites* (eds D. Morris and P. Beaumont). Kimberley: McGregor Museum. pp. 31–6.
- Beaumont, P. and Vogel, J. C. 2006. On a timescale for the past million years of human history in central South Africa. *South African Journal of Science*, 102: 217–28.
- Beaumont, P. B. and Boshier, A.K. 1974. Report on Test Excavations in a Prehistoric Pigment Mine near Postmasburg, Northern Cape. *South African Archaeological Bulletin*, Jun. 1974, Vol. 29, No. 113/114 (Jun. 1974), pp. 41-59.
- Bednarik, R. G. 2003. The earliest evidence of palaeoart. *Rock Art Research*, 20(2): 3–22.
- Bernard, P. S. 2003. Ecological implications of water spirit beliefs in southern Africa: the need to protect knowledge, nature, and resource rights. *USDA Forest Service Proceedings RMRS-P-27*: 148–54.
- Brook, G., Scott, L., Railsback, L. B. and Goddard, E. A. in press. A 35-ka pollen and isotope record of environmental change along the southern margin of the Kalahari from a stalagmite in Wonderwerk Cave, South Africa. *Journal of Arid Environments*.
- Chazan, M., Ron, H., Matmon, A., Porat, N., Goldberg, P., Yates, R., Avery, D. M., Sumner, A. and Horwitz, L. K. 2008. First radiometric dates for the Earlier Stone Age sequence in Wonderwerk Cave, South Africa. *Journal of Human Evolution*, 55: 1–11.
- Chazan, M., Avery, D. M., Goldberg, P., Matmon, A., Porat, N., Ron, H., Ruther, H., Sumner, A., Yates, R. and Horwitz, L. K. in press. The Earlier Stone Age sequence in the

Northern Cape Province, South Africa: new research at Wonderwerk Cave. In *Les Cultures a Bifaces* (ed. H. de Lumley).

Clottes, J. 2004. Hallucinations in caves. *Cambridge Archaeological Journal*, 14(1): 81.

Curnoe, D., Herries, A. I. R., Brink, J., Hopley, P., Van Reynveld, K., Henderson, Z. and Morris D. 2006. Discovery of Middle Pleistocene fossil and stone tool-bearing deposits at Groot Kloof, Ghaap Escarpment, Northern Cape Province. *South African Journal of Science*, 102: 180–4.

Goren-Inbar, N and Peltz, S, 1995. Additional remarks on the Berekhat Ram figure. *Rock Art Research*, 12: 131–2.