

Heritage Impact Assessment (Walk-down) and Palaeontological Impact Assessment (Walk-down) for a Prospecting Right Application on Portion, Portion 4, Portion 5, Portion 7, Portion 9, Portion 13, and Remainder of the Farm Stofbakkies 31 near Prieska in the Siyathemba Local Municipality, Northern Cape Province



Prepared by

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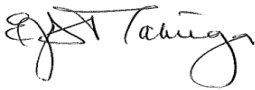
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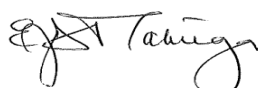
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DECLARATION OF INDEPENDENCE

AHSA Pty Ltd is an independent consultancy: I hereby declare that I have no interest, be it business, financial, personal, or other vested interest in the undertaking of the proposed activity, other than remuneration for work performed in terms of the National Heritage Resources Act (No 25 of 1999).

DISCLAIMER

All possible care was taken to identify and document heritage resources during the survey in accordance with best practices in archaeology and heritage management. However, it is always possible that some hidden or subterranean sites are overlooked during a survey. AHSA will not be held liable for such oversights and additional costs thereof.



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EXECUTIVE SUMMARY

1. This Heritage Impact Assessment (HIA) report has been prepared in support of a Prospecting Right Application on Portion, Portion 4, Portion 5, Portion 7, Portion 9, Portion 13, and Remainder of the Farm Stofbakkies 31 near Prieska in the Siyathemba Local Municipality, Northern Cape Province. A ground survey was undertaken on 29-30 July 2023 to assess the heritage sensitivity of the property, and potential adverse impacts of the proposed activities were evaluated.
2. The heritage sensitivity of the property is summarised as follows:
3. *The Stone Age*
Stone Age material is widely distributed on the spurs and valleys on the property. Thirty-one (31) occurrences were recorded in this instance. The Stone Age material comprises handaxes, cleavers, scrapers, blades, cores, and flakes typologically dating from the Early Stone Age through the Middle Stone Age to the Late Stone Age period. The scattered distribution pattern seems to indicate general hunter-gatherer activity in the area over time. None of the sites were found to warrant further action.
4. *The Early Iron Age*
No material dating to the Iron Age was found.
5. *The Later Iron Age*
The single occurrence of potsherds close to the riverbank may indicate a transitional precolonial mixed economy in the semi-arid karoo plains of the Northern Cape. The finds are not significant to warrant further action.
6. *Burial grounds*
There no burial grounds or graves on the property
7. *Historic Buildings*
The oldest building at the farmstead (SBK01) is a rectangular structure with a flat roof. A date of 1953 is inscribed on the wall indicating that it was completed in that

year. Although the architectural design is simple, it is nevertheless treasured. The building will not be affected by the proposed mining operations.

8. Ranking of sites and Risk Assessment

	Grading	Description	No of Sites
1a	National	Of high intrinsic, associational, and contextual heritage value within a national, provincial, and local context, i.e., formally declared or potential Grade 1, 2, or 3A heritage resources	0
1b		Burial Grounds and Graves. Public sensibilities about the sanctity of graves	0
2	Provincial	Of high intrinsic, associational, and contextual heritage value within a national, provincial, and local context, i.e., formally declared or potential Grade 2 heritage resources	0
3A	Local	Of high intrinsic, associational, and contextual heritage value within a national, provincial, and local context, i.e., formally declared or potential Grade 3A heritage resources	0
3B	Local	Of moderate to a high intrinsic, associational, and contextual value within a local context, i.e., potential Grade 3B heritage resources	1
3C	Local	Of medium to low intrinsic, associational, or contextual heritage value within a national, provincial and local context, i.e., potential Grade 3C heritage resources	31
		TOTAL	32

9. Inventory of heritage sites.

SITE NO	LATITUDE	LONGITUDE	PERIOD	DESCRIPTION	RANKING	MITIGATION
SBK01	29°39'9.43"S	22°46'1.04"E	20th Century	An old building that has been preserved on the farm with a date inscription – 1953. Another building with a multi-shaped hipped roof possibly older than 60 years.	3B	Protect
SBK02	29°38'11.50"S	29°38'11.50"S	MSA/LSA	On a riverbank. 1 scraper, 1 flake.	3C	No further action
SBK03	29°38'11.94"S	22°46'5.24"E	MSA/LSA	On the shoulder of a river, sandy deposit. 4 potsherds possibly from a single pot. Shallow horizontal lines imprinted on the rim.	3C	No further action
SBK04	29°37'41.90"S	22°46'11.40"E	MSA/LSA	On the top of a glacial tillite spur. 7 flake tools.	3C	No further action
SBK05	29°37'37.10"S	22°46'13.00"E	MSA/LSA	On the top of a glacial tillite spur. 2 lithics, a blade and scrapers made from a black rock.	3C	No further action
SBK06	29°37'42.06"S	22°46'23.42"E	MSA/LSA	On the top of a glacial tillite spur. 4 lithics: 1 scraper, 1 blade, 2 flakes.	3C	No further action
SBK07	29°37'26.70"S	22°46'21.80"E	MSA/LSA	DESCRIPTION: On the top of a glacial tillite spur. 4 lithics: 2 blades, 2 scrapers.	3C	No further action
SBK08	29°37'27.50"S	22°46'17.30"E	MSA/LSA	On the top of a glacial tillite spur. 3 scrapers	3C	No further action
SBK09	29°37'1.30"S	22°46'22.80"E	MSA/LSA	On the top of a glacial tillite spur. 2 scrapers, 1 blade.	3C	No further action
SBK10	29°36'54.30"S	22°46'25.20"E	MSA/LSA	On the shoulder of a river valley. 2 cleavers.	3C	No further action
SBK11	29°36'53.60"S	22°46'20.00"E	MSA/LSA	On the top of a glacial tillite spur. 1 handaxe, 2 blades.	3C	No further action
SBK12	29°36'56.50"S	22°46'18.60"E	MSA/LSA	On the top of a glacial tillite spur. 3 blades.	3C	No further action
SBK13	29°36'43.60"S	22°46'7.80"E	MSA/LSA	Riverbank, near vertical profile. 2 scrapers embedded at a depth of 80 cm.	3C	No further action
SBK14	29°36'43.40"S	22°46'8.10"E	MSA/LSA	On the shoulder of a river valley. 1 blade.	3C	No further action
SBK15	29°36'42.60"S	22°46'9.50"E	MSA/LSA	On the top of a glacial tillite spur. 1 scraper.	3C	No further action
SBK16	29°35'17.00"S	22°46'6.40"E	MSA/LSA	: Flat terrain with surface red gravel. 1 long blade 12 cm long.	3C	No further action
SBK17	29°36'21.74"S	22°46'2.99"E	MSA/LSA	Flat terrain with surface red gravel. 2 scrapers.	3C	No further action

SBK18	29°38'25.60"S	22°46'15.00"E	MSA/LSA	On the edge of a sand-filled riverbed. 1 handaxe, 1 blade.	3C	No further action
SBK19	29°37'51.70"S	22°45'49.20"E	MSA/LSA	A sand-filled basin through which a river flows. On the shoulders of a channel. 1 blade.	3C	No further action
SBK20	29°37'54.80"S	22°45'51.00"E	MSA/LSA	On the edge of a wide riverbed. 2 blades.	3C	No further action
SBK21	29°37'20.50"S	22°46'46.30"E	MSA/LSA	On the shoulder of a valley with a calcrete rim. 1 scraper.	3C	No further action
SBK22	29°37'16.00"S	22°46'52.70"E	MSA/LSA	On the edge of a riverbed. 1 scraper, 1 blade.	3C	No further action
SBK23	29°37'18.90"S	22°46'35.50"E	MSA/LSA	On the top of a glacial tillite spur. 1 handaxe.	3C	No further action
SBK24	29°36'9.00"S	22°46'26.70"E	MSA/LSA	On the top of a glacial tillite spur. An area with surface red gravels. 2 cleavers.	3C	No further action
SBK25	29°36'22.10"S	22°46'22.10"E	MSA/LSA	On the top of a glacial tillite spur. 1 handaxe, 1 scraper.	3C	No further action
SBK26	29°36'31.30"S	22°45'49.90"E	MSA/LSA	On the edge of a riverbed. 2 handaxes	3C	No further action
SBK27	29°36'43.20"S	22°47'1.20"E	MSA/LSA	In a stream valley in the central area of the property. 1 handaxe.	3C	No further action
SBK28	29°36'56.50"S	22°47'16.30"E	MSA/LSA	In a shallow basin in a central-eastern part of the property. 1 cleaver.	3C	No further action
SBK29	29°36'47.40"S	22°47'24.90"E	MSA/LSA	On the top of a glacial tillite spur. A large cleaver 20 cm x 10 cm.	3C	No further action
SBK30	29°36'55.20"S	22°47'55.40"E	MSA/LSA	: On the top of a glacial tillite spur. Extensive surface calcrete waste. 1 blade, 1 flake.	3C	No further action
SBK31	29°37'13.00"S	22°47'56.60"E	MSA/LSA	On the top of a glacial tillite spur. Extensive surface calcrete waste. 1 scraper.	3C	No further action
SBK32	29°37'21.00"S	22°47'54.30"E	MSA/LSA	On the top of a glacial tillite spur. Extensive surface calcrete waste. 1 scraper, 1 flake tool.	3C	No further action

10. Conclusion and recommendations

The Prospecting Right can be approved in light of the findings of the survey. Since archaeological deposits may be buried underground, should important artefacts or skeletal material be exposed in the area during operations, such activities should be halted, and the provincial heritage resources authority or SAHRA notified for an investigation and evaluation of the finds undertaken.

ABBREVIATIONS

CPA	Community Property Association
EIA	Environmental Impact Assessment
HIA	Heritage Impact Assessment
LSA	Late Stone Age
LIA	Later Iron Age
PHRA	Provincial Heritage Resources Authority
MSA	Middle Stone Age
NHRA	National Heritage Resources Act
SAHRA	South African Heritage Resources Agency

1. INTRODUCTION

This report is the outcome of a Heritage Impact Assessment (HIA) study (fieldwork) for a Prospecting Right Application on Portion, Portion 4, Portion 5, Portion 7, Portion 9, Portion 13, and Remainder of the Farm Stofbakkies 31 near Prieska in the Siyathemba Local Municipality, Northern Cape Province.

The nature and scale of the proposed mining triggers a Phase I HIA in terms of Section 38(8) of the National Heritage Resources Act (25/1999). A ground survey was on 29-30 June during which the heritage sensitivity and potential adverse impacts of the proposed activity were assessed.

1.1. Location and physical setting

The Farm Stofbakkies 31 is located on the north bank of the Orange River. On the opposite side of the River is Prieska, one of the major towns in the Northern Cape Province situated at the junction of the R357 Road from Douglas and the N8 Road from Britstown to Upington. The Orange River is a central feature of the drainage system in the Karoo. In this region the it has a meandering course, and what is significant is that at Prieska the river dramatically turns from a southern course to face northwest in a U loop. The farm Stokbakkies is wedged in the loop, while Prieska is situated on the elbow of the bend. On the north side the Orange River has a wide floodplain that under pivot irrigation and on which the farmstead is located. The northern flank of the floodplain is high ground formed by glacial tillite deposits which accumulated during the last Ice Age. Millions of years before the present, the thick ice sheets that covered the earth started to melt leaving behind massive deposits of heterogenous material which became the Dwyka tillites which flank the mid-Orange River. On the Farm Stofbakkies two river systems running south in the Orange River fed by a next of streams descending the Dwyka tillites. One of the rivers flows in a wide shallow sand filled basin. West of the river and on the foot of a spur there is a line of sand dune. Rooikoppie gravels (sometimes mixed with calcrete waste) form a surface cover over summit and slopes of the spurs, representing derived or deflation deposits formed on top of the calcrete by the liberation of durable clasts from the calcrete during chemical weathering and deflation. They are stained red by oxidation which creates an iron oxide slip. Occasionally a calcrete hardpan usually buried beneath the gravels mixed with calcrete waste is exposed. It also forms cliff

edges of deeply incised streams (Figure 1-5). Banded ironstone occurs on the northern limits of the property as stratified beds and surface waste (Figure 6).

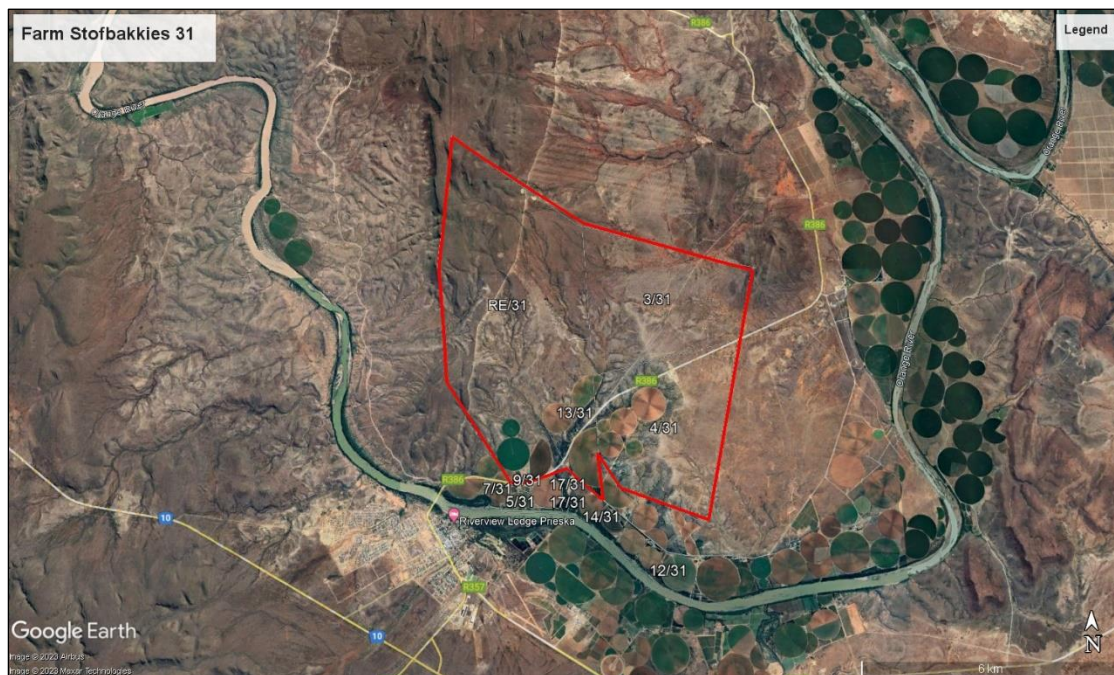


Figure 1: Google-Earth map shows the location of the Stofbakkies 31 on the north bank of the Orange River, near Prieska, Northern Cape Province



Figure 2: View east from a glacial tillite spur shows the course of a river (wooded band in the middle ground) and a sand-filled basin (grassy area) and shows a valley and stream cutting through the glacial deposits, and a spur beyond



Figure 3: A sand dune situated between a river and a glacial tillite spur

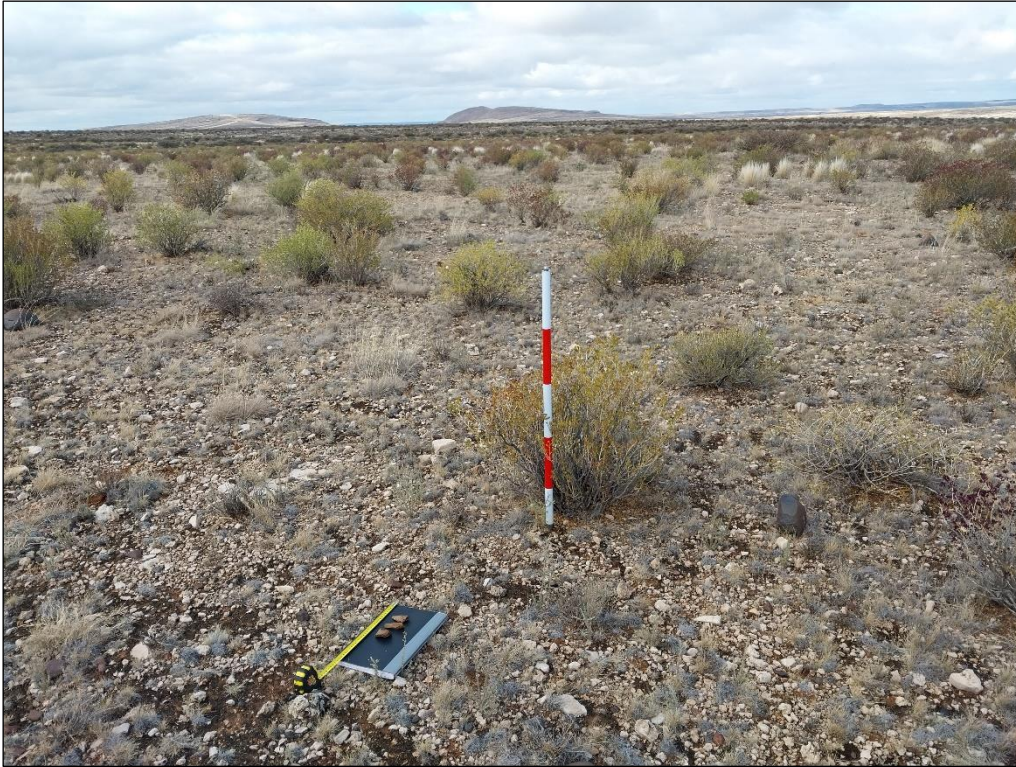


Figure 4: Flat terrain in the north-central part of the property



Figure 5: View of the fields on the floodplain, Prieska in the background and the Orange River in the middle ground



Figure 6: Banded ironstone beds on the edge of a stream

1.2. Nature of proposed development

Thunderflex Mining (Pty) Ltd intends to prospect for diamonds and targets the ancient gravels on the Farm Lanyon Vale 376. Ground-probing techniques such as pitting, and trenching aimed at recovering suitably representative samples to determine grade and quality, are typically invasive. Bulk sample test work will be undertaken to test the grade and quality, and the economic viability of the potential deposit. These activities may result in the damage or destruction of heritage resources if they occur in the footprint of the development.

2. LEGAL FRAMEWORK

This heritage impact assessment fulfils a responsibility placed on developers to safeguard heritage resources when they start new projects. This obligation is legislated with Sections 34, 35, 36, and 38 of the National Heritage Resources Act (No 25 of 1999) forming the legal framework in which this HIA report has been prepared.

2.1. Section 38 of the National Heritage Resources Act on Heritage Impact Assessments

Section 38 of the NHRA states the nature and scale of development that triggers an HIA:

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

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

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

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

(i) exceeding 5 000 m² in 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 costs of which will exceed a sum set in terms of regulations by

SAHRA or a provincial heritage resources authority;

(d) the re-zoning of a site exceeding 10 000 m² in extent; or

(e) any other category of development provided for in the regulations by SAHRA or a provincial heritage resources authority,

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.

2.2. Definition of heritage (National Estate)

Section 3 lists a wide range of cultural phenomena which could be defined as heritage, or the *National Estate* (3(2)). Section 3(3) outlines criteria upon which heritage value is ascribed. This Section is useful as a field checklist for the identification of heritage resources.

2.3. Protection of buildings and structures older than 60 years

Section 34 provides automatic protection for buildings and structures more than 60 years old until it can be proven that they do not have heritage value:

(1) No person may alter or demolish any structure or part of a structure that is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

2.4. Protection of archaeological sites

Section 35 (4) of the NHRA prohibits the destruction of archaeological, palaeontological, and meteorite sites:

No person may, without a permit issued by the responsible heritage resources authority—

(a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;

(b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;

(c) trade-in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or

(d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assists in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

2.5. Graves and burial grounds

Section 36 of the NHRA provides for the protection of certain graves and burial grounds.

Graves are generally classified under the following categories:

- Graves younger than 60 years;
- Graves older than 60 years, but younger than 100 years;
- Graves older than 100 years; and
- Graves of victims of conflict
- Graves of individuals of royal descent
- Graves that have been specified as important by the Ministers of Arts and Culture.

We are mindful of the fact that graves and burial grounds are held sacred whether they are protected by the law or not.

2.6. The National Environmental Management Act (No 107 of 1998)

This act states that a survey and evaluation of cultural resources must be done in areas where development projects that will affect the environment will be undertaken. The impact of the development on these resources should be determined and proposals for the mitigation thereof are made. Environmental management is a much broader undertaking to cater to the

cultural and social needs of people. Any disturbance of landscapes and sites that constitute the nation's cultural heritage should be avoided as far as possible and where this is not possible the disturbance should be minimized and remedied.

2.7. The Burra Charter on Conservation of Places of Cultural Significance

Generic principles and standards for the protection of heritage resources in South Africa are drawn from international charters and conventions. In particular, South Africa has adopted the ICOMOS Australia Charter for the Conservation of Places of Cultural Significance (the Burra Charter 1999) as a benchmark for best practices in heritage management.

3. METHODOLOGY AND THEORETICAL APPROACHES

3.1. Literature survey

A literature survey is a study of all documents about the project and the archaeological and historical context of the broader area in which the project is situated. Reports of previous HIAs conducted in the area are of particular interest. Over time a vast amount of data has been collected to provide general knowledge on the Stone Age in the Orange – Vaal basin. This author has carried out several heritage impact assessment studies north and south of the Orange River in this area (Figure 7).

Matenga, E. 2017. *Phase I Heritage Impact Assessment (including Palaeontological Assessment) requested in terms of Section 38 of the National Heritage Resources Act (No 25/1999) for the proposed Mine Prospecting on the Remaining Extent of Portion 1 of the Farm Viegulands Put 42, Prieska District, Northern Cape Province.* The Farm Viegulands Put is located on the south bank of the Orange River 36 km east of Stofbakkies. One of the significant finds was an ESA hand-axe among the finds predominated by chert scrapers, blades, and flakes.

Matenga, E. 2018. *Phase I Heritage Impact Assessment (including Palaeontological Assessment) requested in terms of Section 38 of the National Heritage Resources Act No 25/1999 for the proposed mine prospecting and application for a mining right on a portion of the remaining extent of the Farm Kransfontein 19 & portion 2 (de rust) of the Farm Kransfontein 19, Prieska District, northern cape province*

Kransfontein 19 is on the south bank of the Orange River 63 km northeast of Stofbakkies 31. MSA/LSA lithics were found to be widely distributed indicating general hunter-gatherer foraging activities. There were buildings and burial grounds on the property both associated with pioneer commercial farmers.

Matenga, E. 2019. *Phase I Heritage impact assessment (including palaeontological assessment) requested in terms of Section 38 of the National Heritage Resources Act No 25/1999 for the proposed Mine Prospecting on a Portion of the Remaining Extent of the Farm Remhoogte 152 Prieska, Northern Cape.* On the farm Remhoogte 152 located on the south bank of the Orange River c 40 km to the southwest of Lanyon Vale, MSA/LSA lithics were found to be widely distributed indicating general hunter-gatherer foraging activities.

Matenga, E. 2019. *Phase I Heritage impact assessment (including palaeontological assessment) in terms of Section 38 of the National Heritage Resources Act No 25/1999 for the proposed Mine Prospecting on the Farm Katlani 236 near Douglas, Northern Cape.* On the farm Katlani, situated on the north bank of the Orange River 90 km upstream from Stofbakkies 31, Stone Age finds, ancient rock engravings, and burials were recorded.

Matenga, E. 2021. *Phase I Heritage Impact Assessment (including Palaeontological Desktop Assessment) for a Prospecting Right Application on the Remaining Extent of portion 1 (Oranje Oord) of the Farm Brakkies 384, and Portion 2 (Portion of Portion 1) of the Farm Brakkies 384 near Douglas, Northern Cape.* The farm Brakkies 384 lies 70 km NE of Stofbakkies 31, and is located on the north side of the Orange River. Stone Age material is widely distributed on the property with 38 occurrences having been recorded. The material comprises scrapers, blades, cores, and flakes typologically dating to the Middle Stone Age/Late Stone Age period. The occasional finding of small hand-axes and cleavers may represent a transitional period from the Early Stone Age to the Middle Stone Age.

Matenga, E. 2022. *Heritage Impact Assessment (including Palaeontological Desk Assessment) for a Mining Right Application on the Remaining Extent of Portion 1 (Paals Werf) of the farm Saxendrift 20, near Prieska, Northern Cape.* Saxendrift is located on the south bank of the

Orange River, 60 km NE of Stofbakkies 31. Stone Age tools occurred in all but four of the 24 recorded instances. Scrapers and blades were in the majority, and handaxes were recorded in two instances.

Matenga E. 2019. *Phase I Heritage Impact Assessment (including Palaeontological Assessment) in terms of section 38 of the National Heritage Resources Act (No 25/1999) for the proposed Mine Prospecting on the Remaining extent of Portions 13 and 9 of the of the Farm Rietfontein 11, Prieska District, Northern Cape Province.*

Rietfontein is located on the south bank of the Orange River, 45 km NW of Stofbakkies 31. Stone tools and associated waste material in varying densities were recorded. The stone tools comprise mainly scrapers, points and flakes while a few blades and cores also occur. A pear-shaped hand-axe confirmed the presence of ESA material.

Other researchers have been involved in the area:

Webley, L. 2016. *Archaeological Impact Assessment: Proposed Construction of Humansrus Solar 3 on a Portion of the Farm Humansrus 147 near Copperton, Northern Cape.*

The farm Humansrus 147 is situated 53 km SW of Stofbakkies 31. Occasional scatters of Early Stone Age (ESA) material and widespread, but dispersed scatters of Middle Stone Age (MSA) artefacts across the property. No later Stone Age (LSA) artefacts were found (page 13). No buildings or graves were found (pages 2, 13)

Van Der Walt, J. 2014. *Archaeological Impact Assessment for the proposed Bosjesmansberg PV Center Solar Energy Facility, Located Close to Copperton in the Northern Cape. Prepared for Savannah Environmental (Pty) Ltd*

The farm Bosjesmansberg 67 is situated 42 km SW of Stofbakkies 31. Low density of artefacts dating to the MSA especially around pans. They comprised large flakes, radial and bipolar cores, points, end scrapers, large utilized and retouched blade tools, and utilized and retouched flakes. MSA quarries (manufacturing sites) exploiting quartz outcrops, quartzite

ridges, bedrock and boulders were also found. LSA tools (scrapers, retouched and utilised flakes, blades and small round cores) were found in comparatively low density. Several isolated hand axes were recorded suggesting an ESA date (pages 21-22).

Orton, J. 2013. *Heritage Impact Assessment for Multiple Proposed Solar Energy Facilities on Farm Hoekplaas 146, Copperton, Northern Cape*

The farm Hoekplaas is situated 55 km SW of Stofbakkies 31. Material dates to all three epochs, ESA, MSA and LSA with the first two being represented more by “background scatters” of artefacts commonly found in gravel areas. Most LSA scatters were found to be located around pans occurring throughout the landscape. Manufacturing sites were found on quartzite outcrops with evidence of flaking (pages 11-12).

Van Der Walt J. 2012. *Archaeological Impact Assessment for the Revised Garob Wind Energy Facility Project [on the Farm Nelspoortje 103] Located Close to Copperton, Northern Cape.*

Garob is located on the farm Nelspoortje 5/103, 40 km SW of Stofbakkies 31. Low densities of ESA, MSA, LSA scatters were found throughout the study area. MSA material consisted of large flakes, radial and bipolar, points and end scrapers, large utilised and retouched blade tools, and utilised and retouched flakes. LSA tools (scrapers, retouched and utilised flakes, blades and small round cores) were found in comparatively low density (page 3).

Orton, J. 2016. *Heritage Impact Assessment For Four Proposed Borrow Pits On Remainder Of Farm Vogelstruisbult 104/1, Prieska Magisterial District, Northern Cape.*

The Farm Vogelstruisbult 104/1 is situated 57 km SW of Stofbakkies 31.

Stone Age quarries (stone tool manufacturing sites), a knapping site (where stone tools were made) and artefact scatters from ESA, MSA. Found in the same context suggests downward deflation (page 66). Stone kraals for penning sheep are in current usage (page 66).

Orton, J & Parsons. 2018. *Looking Beneath the Surface: Later Stone Age Remains at Klipgats Pan, Bushmanland, South Africa.*

The farm Klipgats is situated 62 km SW of Stofbakkies 3153. Background-scatter of artefacts dating to the MSA, but are mixed with Early Stone Age (ESA) hand-axes. Excavations revealed a higher density of LSA artefacts (page 194). Engraved ostrich egg sherds (page 187).

De Cock, S & G Narainne. 2016. *Integrated Heritage Impact Assessment in terms of section 38(8) of the National Heritage Resources Act, 1999 (Act 25 of 1999) for the proposed development of Humansrus Solar PV Facility 3 on the Farm Humansrus 147, Prieska District and Pixley Ka Seme District.* The study reported a diffuse spread of ESA and MSA stone artefacts across the study area for Humansrus Solar PV Facility 3. There are no buildings or graveyards on the property (page 12);

Mlilo, T. 2018. *Phase I Archaeological Impact Assessment for the proposed 958m 22kv De-Villiers Powerline in the Douglas Area within Siyancuma Local Municipality in the Northern Cape Province.* The study identified sparse scatters of stone tools occurring as isolated finds mostly along streams. These included cores, scrapers, flakes, and flake blades (page 30).

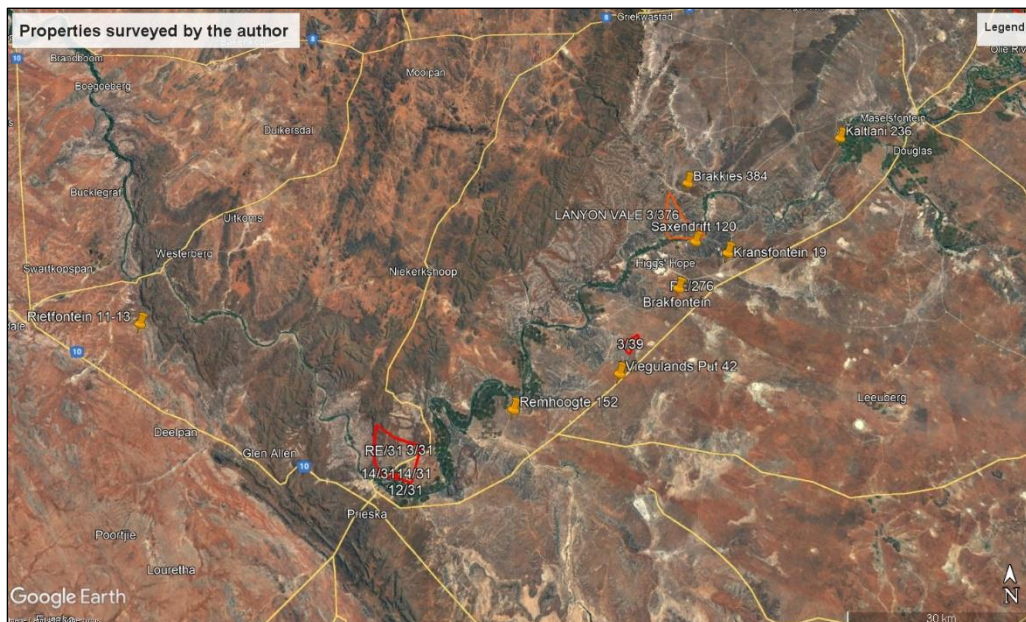


Figure 7: Google Earth map shows the location of farms on which heritage impact assessment studies have been conducted by this author

3.2. Fieldwork

A ground survey was undertaken on 29 and 30 June 2023. Walking and vehicles surveys were combined. A vehicle was used to move from one area to the next to ensure reasonable coverage and a good sample survey given the large size of the property. Photographs taken show the general character of the landscape as well as artefacts and features. A Catalogue of the findings is presented in Appendix I of this Report.

3.3. Limitations

A western portion of the property (blue circle) was considered not safe as there are old asbestos workings and pose a health hazard. A northwest portion marked in blue is broken landscape with steep-sided stream valleys and was also considered not safe. A significant portion of the floodplain in the south close to the Orange River is under irrigation. No archaeological artifices could be expected to be found in their original context (Figure 8).

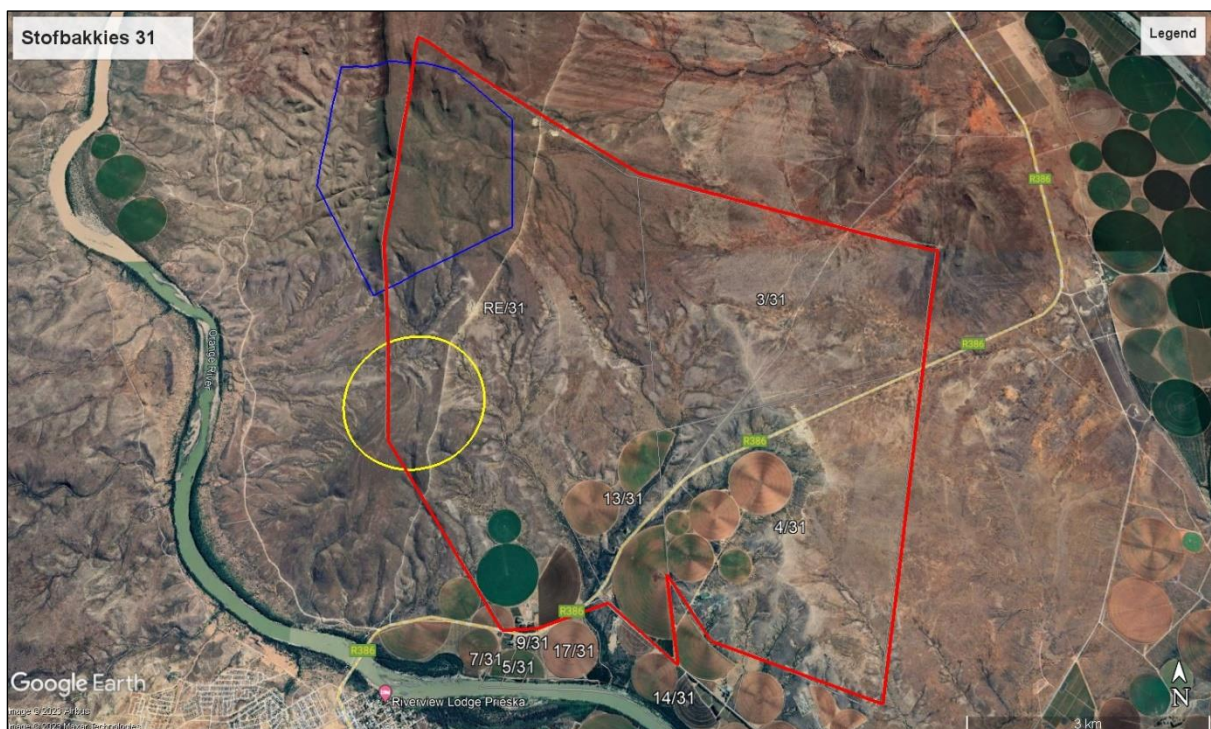


Figure 8: The yellow circle marks old asbestos workings. The blue polygon is a broken landscape of steep-sided stream valleys.

3.4. Ranking of Sites

The ranking system has been adapted from Guidelines for involving Heritage Specialists in EIA processes by Winter S and & N. Baumann (2005: 19).

Table 1: Ranking of sites and risk assessment

	Grading	Description	No of Sites
1a	National	Of high intrinsic, associational, and contextual heritage value within a national, provincial, and local context, i.e. formally declared or potential Grade 1, 2, or 3A heritage resources	
1b		Burial Grounds and Graves. Public sensibilities about the sanctity of graves	
2	Provincial	Of high intrinsic, associational and contextual heritage value within a national, provincial and local context, i.e. formally declared or potential Grade 2 heritage resources	
3A	Local	Of high intrinsic, associational and contextual heritage value within a national, provincial and local context, i.e. formally declared or potential Grade 3A heritage resources	
3B	Local	Of moderate to high intrinsic, associational and contextual value within a local context, i.e. potential Grade 3B heritage resources	
3C	Local	Of medium to low intrinsic, associational or contextual heritage value within a national, provincial and local context, i.e. potential Grade 3C heritage resources	
		TOTAL	

3.5. Maps of tracklog

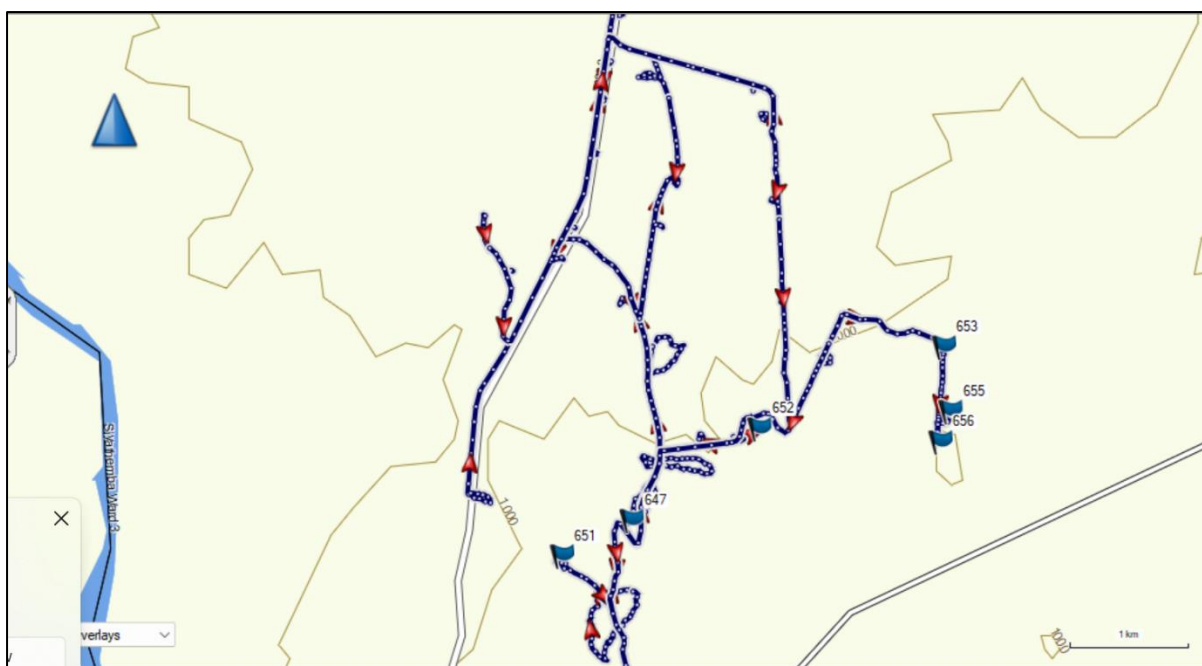


Figure 9: Map of the tracklog

3.6. HIA Report and Chance Finds Procedure

An Archaeological and Heritage Chance Finds Procedure (CFP) is annexed to this Report.

4. ARCHAEOLOGICAL AND HISTORICAL CONTEXT

An outline of the cultural sequence in South Africa provides a theoretical framework for the identification of features / structures and objects of archaeological, historical, and cultural interest. A summary of the reconstructed cultural sequence is given below:

4.1. Cultural sequence summary¹

Table 2: Cultural sequence Summary

PERIOD	EPOCH	ASSOCIATED CULTURAL GROUPS	TYPICAL MATERIAL EXPRESSIONS
Early Stone Age 2.5m – 250 000 YCE	Pleistocene	Early Hominids: <i>Australopithecines</i> <i>Homo habilis</i> <i>Homo erectus</i>	Typically large stone tools such as hand axes, choppers, and cleavers.

¹ Adapted from Exigo Consultancy. 2015. Frances Baard District Municipality: Proposed Nkandla Extension 2 Township Establishment, Erf 258 Nkandla, Hartswater, Northern Cape Province.

Middle Stone Age 250 000 – 25 000 YCE	Pleistocene	First <i>Homo sapiens</i> species	Typically smaller stone tools such as scrapers, blades, and points.
Late Stone Age 20 000 BC – present	Pleistocene / Holocene	<i>Homo sapiens</i> including San people	Typically small to minute stone tools such as arrowheads, points, and bladelets.
Early Iron Age / Early Farmer Period c300 – 900 AD (or earlier)	Holocene	Iron Age Farmers	Typically distinct ceramics, bead ware, iron objects, grinding stones.
Later Iron Age 900ADff	Holocene	Iron Age Farmers, the emergence of complex state systems	Typically distinct ceramics, evidence of long-distance trade, and contacts
(ii) Mapungubwe (K2)	1350AD		Metals including gold, long- distance exchanges
(ii) Historical period	Tswana / Sotho, Nguni people	Iron Age Farmers	Stone walls Mfecane / Difaqane
(iii) Colonial period	19 th Century	European settlers / farmers / missionaries/ industrialisation	Buildings, Missions, Mines, metals, glass, ceramics

4.2. Appearance of hominids

South Africa has yielded a very good record of fossil hominids; proto-humans that appeared in South Africa more than 3 million years ago. Three famous sites in Gauteng, Limpopo, and Northwest Provinces have been collectively named the Cradle of Humankind and inscribed as a serial UNESCO World Heritage Site.² One of these sites Taung near Vryburg in the North West Province. To my knowledge, although vertebrate fossils are known in this area, no hominid sites have been reported in the vicinity of the study area.

4.3. The Early Stone Age

4.3.1. The Early Stone Age (2 million to 250 000 years BP)

The Stone Age dates back more than 2 million years and is divided into three epochs, the Early, Middle, and Late Stone Ages. These early humans made pear-shaped handaxe, cleavers, and core tools (Deacon & Deacon, 1999). Material evidence is found in caves, rock shelters,

² Deacon, J. and N. Lancaster. 1986. *Later Quaternary Palaeoenvironments of Southern Africa*. Oxford: Oxford University Press.

and on river sides and edges of streams, and is very rarely seen in open country.³ The stone tool industries have been called Oldowan and Acheulean and were probably used to butcher large animals such as elephants, rhinoceros, and hippopotamus.

A good profile of the Stone Age in the Northern Cape has been reconstructed from many heritage impact assessments that have been conducted in recent years. Locales along and adjacent to the Orange – Vaal River systems have yielded evidence of great interest.⁴ Further north the Wonderwerk Cave has become a benchmark for the characterisation of the Stone Age. Excavations reveal a long sequence of occupations spanning the Early (ESA), Middle (MSA), and Later Stone Ages.⁵

4.3.2. Middle Stone Age (MSA) [250 000 yrs – 30 000 yrs BP]

The Middle Stone Age (MSA), dates from 250 000 years to 40 000 years ago, marked by the introduction of a new tool kit that included prepared cores, parallel-sided blades, and triangular points hafted to make spears. By then humans had become skilful hunters, especially of large grazers such as wildebeest, hartebeest, and eland. By then, humans had evolved significantly to become anatomically modern and the toolkit reflected significant developments in cognitive capacity. Caves were used for shelter suggesting permanent or semi-permanent settlement. These people had mastered the art of making fire.⁶ Several field surveys have been carried out on the Ghaap Plateau and the Orange-Vaal River basin confirming significant hunter-gatherer activity in the area from the MSA onwards.

4.3.3. Later Stone Age (LSA)[40 000 yrs to ca2000 yrs BP]

By the beginning of the LSA, humans are classified as *Homo sapiens* which refers to the modern physical form and thinking capabilities. Several behavioural traits are exhibited, such as rock art and purposeful burials with ornaments, which became a regular practice. LSA technology is characterised by microlithic scrapers and segments made from very fine-grained rock. Spear hunting continued, but LSA people also hunted small game with bows and

³ <http://archaeology.about/od/bterms/g/bordercave.htm>

⁴ Morris, D. 2009. Phase 1 Archaeological Impact Assessment at Bucklands Settlement near Douglas, Northern Cape, p3.

⁵ <http://www.southafrica.net/za/en/articles/entry/article-southafrica.net-the-wonderwerk-cave>.

⁶ Deacon, J & H. Deacon. 1999. *Human Beginnings in South Africa*. Cape Town: David Philip.

poisoned arrows. Because of poor preservation, open sites become of less value compared to rock shelters.

4.4. The Iron Age Culture [ca. 2000 years BP]

The Iron Age culture supplanted the Stone Age at least 2000 years ago, associated with the introduction of farming and the use of several metals and pottery. Iron Age communities are associated with speakers of Bantu languages who were farmers keeping domestic animals such as cattle, sheep, goats, and chickens. There is however increasing evidence that sheep and probably cattle as well might have moved into the area much earlier than the Iron Age.⁷

4.4.1. Early Iron Age

According to Huffman (2007), there were two migration streams of Early Iron Age (EIA) communities converging in South Africa, one originating in eastern Africa which has been called the *Urewe-Kwale Tradition* (or the eastern stream), and another from the west, spreading through Zambia and Angola, which he termed the *Kalundu Tradition* (or western stream). An alternative is that the IA was the result of a gradual spread or expansion of settlement of different groups of people indigenous to the continent which took place over a long period. There are few if any sites attributed to the EIA in the western parts of the country. Most IA settlements are concentrated in the eastern part of South Africa.

4.4.2. The Later Iron Age

The LIA is marked by the presence of extensive stonewalled settlements such as the Tlhaping capital at Dithakong near Kuruman.⁸

4.5. Historical Context

On the eve of colonial occupation, the Tlhaping, a segment of the Tswana lived in the area. The Tswana belong to the Bantu family probably descending from the Iron Age people and may be connected with the Stone Age predecessors. The early 19th century was a political

⁸ De Jong 2010: De Jong, R.C. 2010. Heritage impact assessment report: proposed manganese and iron ore mining right application in respect of the remainder of the farm Paling 434, Hay Registration Division, Northern Cape. Unpublished report prepared for Kai Batla Minerals Industry Consultants. Pretoria: Cultmatrix, p 36

turning point with an increasingly precarious security situation developing and causing internal displacements. The first of these episodes was the Difaqane characterised by inter-tribal raids.

Then came the Griqua to occupy the area at the confluence of the Vaal and Orange in the 19th century. Historically their cradle was in the north-eastern Cape Colony being predominantly of Khoi-Khoi stock with an infusion through marriage with other groups in the area from the 19th century. Adam Kok 1 is considered the founding leader. He moved his people north from the Cape Colony as the colonial frontier was expanding northward. His successor, Andries Waterboer settled with his people in what became Griqualand West, and therein comes the historical connection between the Tlhaping and the Griqua. The Griqua established a town called Klaarwater and subsequently renamed Griquatown. Meanwhile, white hunters, traders, and missionaries also entered the area. A little later the Afrikaners arrived bringing their stock as part of a mass exodus from the Cape called the Great Trek. The discovery of diamonds at Kimberley sparked the “rush”. The area which became known as Griqualand West was subsequently incorporated into the Cape Colony in the 1880s.

4.6. Early Contact with the Boers

In the early 19th century, several traders, hunters, explorers, and missionaries transited the area. A few can be named here - PJ Truter's and William Somerville (arriving in 1801), Donovan, Burchell and Campbell, and James Read (arriving around 1870). Subsequently, the arrival of large numbers of Great Trek Boers from the Cape Colony and the borders of Bechuanaland and Griqualand West in 1836 caused conflict with many Tswana groups. The conflict escalated when the Korana and Griqua communities and the British government got involved. In 1872, the British proclaimed Griqualand West as a crown state (i.e. including the area around present-day Griekwastad). It was subsequently incorporated into the Cape Colony in 1880. The annexation of Bechuanaland by the British in 1885 imposed further territorial restrictions on native groups (Engelbrecht & Fivaz, 2018: 17-18, 19).

4.7. Orange and Vaal Rivers alluvial diamond diggings

The first diamonds were discovered in 1867 near Hopetown close to the Orange River in what was then the Cape Colony. Another find was made on a farm called Paarde Kloof on the

Orange River, also in the locality of Hopetown (Payton 1872, p1). Thereafter, alluvial diamonds gained the spotlight starting in 1869 when a party of prospectors from Natal organised by the British Army started exploration and diggings along the Vaal River Valley. The finds at Klipdrift (Barkly West) sparked South Africa's first diamond rush. Following the news, men began to flock from Britain and elsewhere to the new diggings. By April 1871 c. 5000 men had swarmed the Vaal, Modder, and Orange Rivers. The alluvial stones from the region proved to be of high quality. The miners staked claims while the local Griqua chiefs and the Boer Republics of the Transvaal and Orange Free State also joined in the fray. Ownership rights were initially given to local chiefs and Boer Trekkers. But the diggers proclaimed the Klipdrift Republic on 30th July 1870 with Stafford Parker as its elected president. In 1872, the British annexed the diamond fields and proclaimed Griqualand West as a crown state. It was subsequently incorporated into the Cape Colony in 1880. The majority of the prospectors abandoned the various Vaal River claims in the wake of richer finds at Kimberley in 1871. Mining of the river gravels has been going on sparking sporadic rushes over the last nearly one and half centuries.⁹

4.8. A brief History of Prieska

Prieska was established in 1878. It developed from a place to which farmers migrated when the pans were full, after rains. It was administered by a village management board from 1882 and attained municipal status in 1892. Situated on the south bank of the Orange River at the foot of the Doringberg, it was originally named Prieschap, a Khoisan word meaning "place of the lost she-goat". It is 130 km north-west of Britstown and 75 km south-east of Marydale.¹⁰

The above forms the archaeological and historical context for the identification of heritage resources in the study area.

5. FINDINGS OF THE HERITAGE SURVEY

The heritage sensitivity of the property is summarised as follows:

⁹ The Barkly West & Vaal River Diggings. Found at: <http://www.on-the-rand.co.uk/Diamond%20Grounds/Barkly%20West.htm>

¹⁰ Prieska. Found at: <https://www.karoo-information.co.za/routes/town/506/prieska#:~:text=Prieska%20was%20established%20in%201878,the%20lost%20she%20goat%22>.

5.1. The Stone Age

Stone Age material is widely distributed on the spurs and valleys on the property. Thirty-one (31) occurrences were recorded in this instance. The Stone Age material comprises handaxes, cleavers, scrapers, blades, cores, and flakes typologically dating from the Early Stone Age through the Middle Stone Age to the Late Stone Age period. The scattered distribution pattern seems to indicate general hunter-gatherer activity in the area over time. None of the sites were found to warrant further action.

5.2. The Early Iron Age

No material dating to the Iron Age was found.

5.3. The Later Iron Age

The single occurrence of potsherds close to the riverbank may indicate a transitional precolonial mixed economy in the semi-arid karoo plains of the Northern Cape. The finds are not significant to warrant further action.

5.3. Burial grounds

There no burial grounds or graves on the property

5.4. Historic Buildings

The oldest building at the farmstead (SBK01) is a rectangular structure with a flat roof. A date – 1953 – is inscribed on the wall implying it was completed then. Although the architectural design is simple, it is nevertheless treasured. The building will not be affected by the proposed mining operations.

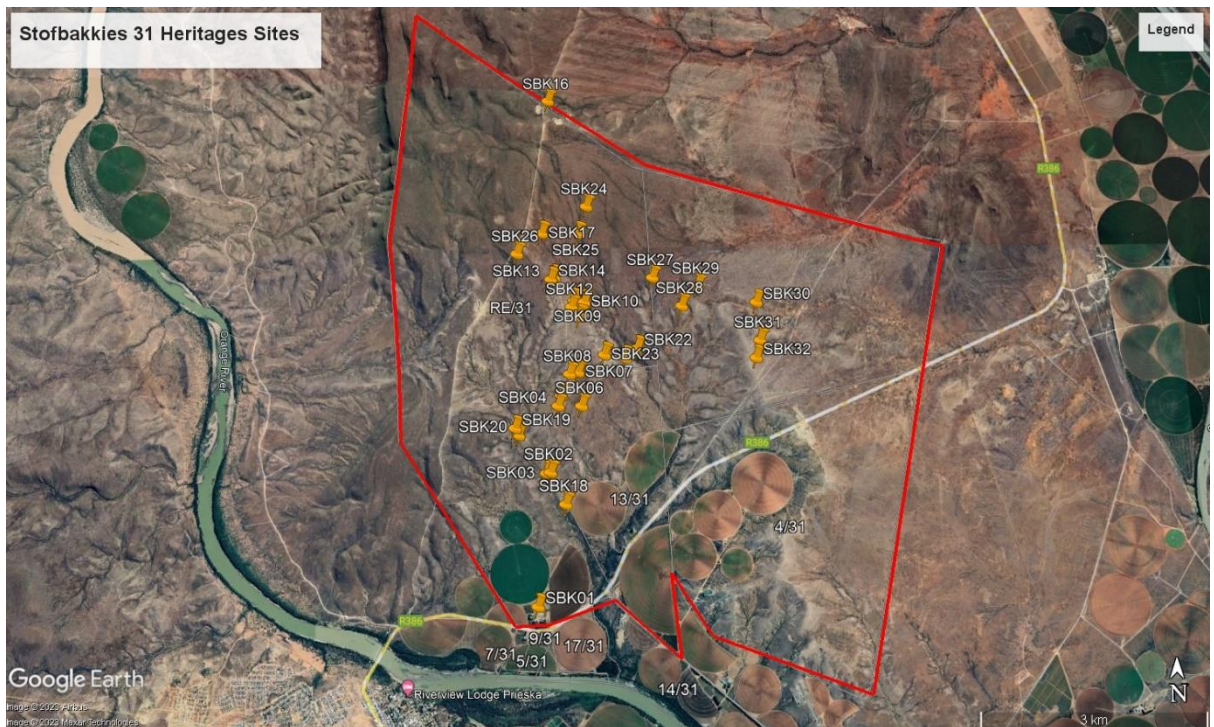


Figure 9: Google Earth map shows the location of heritage sites recorded

Table 2: Ranking of sites and Risk Assessment

	Grading	Description	No of Sites
1a	National	Of high intrinsic, associational, and contextual heritage value within a national, provincial, and local context, i.e., formally declared or potential Grade 1, 2, or 3A heritage resources	0
1b		Burial Grounds and Graves. Public sensibilities about the sanctity of graves	0
2	Provincial	Of high intrinsic, associational, and contextual heritage value within a national, provincial, and local context, i.e., formally declared or potential Grade 2 heritage resources	0
3A	Local	Of high intrinsic, associational, and contextual heritage value within a national, provincial, and local context, i.e., formally declared or potential Grade 3A heritage resources	0

3B	Local	Of moderate to a high intrinsic, associational, and contextual value within a local context, i.e., potential Grade 3B heritage resources	1
3C	Local	Of medium to low intrinsic, associational, or contextual heritage value within a national, provincial and local context, i.e., potential Grade 3C heritage resources	31
		TOTAL	32

Table 3: Inventory of heritage sites.

SITE NO	LATITUDE	LONGITUDE	PERIOD	DESCRIPTION	RANKING	MITIGATION
SBK01	29°39'9.43"S	22°46'1.04"E	20th Century	An old building that has been preserved on the farm with a date inscription – 1953. Another building with a multi-shaped hipped roof possibly older than 60 years.	3B	Protect
SBK02	29°38'11.50"S	29°38'11.50"E	MSA/LSA	On a riverbank. 1 scraper, 1 flake.	3C	No further action
SBK03	29°38'11.94"S	22°46'5.24"E	MSA/LSA	On the shoulder of a river, sandy deposit. 4 potsherds possibly from a single pot. Shallow horizontal lines imprinted on the rim.	3C	No further action
SBK04	29°37'41.90"S	22°46'11.40"E	MSA/LSA	On the top of a glacial tillite spur. 7 flake tools.	3C	No further action
SBK05	29°37'37.10"S	22°46'13.00"E	MSA/LSA	On the top of a glacial tillite spur. 2 lithics, a blade and scrapers made from a black rock.	3C	No further action
SBK06	29°37'42.06"S	22°46'23.42"E	MSA/LSA	On the top of a glacial tillite spur. 4 lithics: 1 scraper, 1 blade, 2 flakes.	3C	No further action
SBK07	29°37'26.70"S	22°46'21.80"E	MSA/LSA	DESCRIPTION: On the top of a glacial tillite spur. 4 lithics: 2 blades, 2 scrapers.	3C	No further action
SBK08	29°37'27.50"S	22°46'17.30"E	MSA/LSA	On the top of a glacial tillite spur. 3 scrapers	3C	No further action
SBK09	29°37'1.30"S	22°46'22.80"E	MSA/LSA	On the top of a glacial tillite spur. 2 scrapers, 1 blade.	3C	No further action
SBK10	29°36'54.30"S	22°46'25.20"E	MSA/LSA	On the shoulder of a river valley. 2 cleavers.	3C	No further action
SBK11	29°36'53.60"S	22°46'20.00"E	MSA/LSA	On the top of a glacial tillite spur. 1 handaxe, 2 blades.	3C	No further action
SBK12	29°36'56.50"S	22°46'18.60"E	MSA/LSA	On the top of a glacial tillite spur. 3 blades.	3C	No further action
SBK13	29°36'43.60"S	22°46'7.80"E	MSA/LSA	Riverbank, near vertical profile. 2 scrapers embedded at a depth of 80 cm.	3C	No further action
SBK14	29°36'43.40"S	22°46'8.10"E	MSA/LSA	On the shoulder of a river valley. 1 blade.	3C	No further action
SBK15	29°36'42.60"S	22°46'9.50"E	MSA/LSA	On the top of a glacial tillite spur. 1 scraper.	3C	No further action
SBK16	29°35'17.00"S	22°46'6.40"E	MSA/LSA	: Flat terrain with surface red gravel. 1 long blade 12 cm long.	3C	No further action
SBK17	29°36'21.74"S	22°46'2.99"E	MSA/LSA	Flat terrain with surface red gravel. 2 scrapers.	3C	No further action

SBK18	29°38'25.60"S	22°46'15.00"E	MSA/LSA	On the edge of a sand-filled riverbed. 1 handaxe, 1 blade.	3C	No further action
SBK19	29°37'51.70"S	22°45'49.20"E	MSA/LSA	A sand-filled basin through which a river flows. On the shoulders of a channel. 1 blade.	3C	No further action
SBK20	29°37'54.80"S	22°45'51.00"E	MSA/LSA	On the edge of a wide riverbed. 2 blades.	3C	No further action
SBK21	29°37'20.50"S	22°46'46.30"E	MSA/LSA	On the shoulder of a valley with a calcrete rim. 1 scraper.	3C	No further action
SBK22	29°37'16.00"S	22°46'52.70"E	MSA/LSA	On the edge of a riverbed. 1 scraper, 1 blade.	3C	No further action
SBK23	29°37'18.90"S	22°46'35.50"E	MSA/LSA	On the top of a glacial tillite spur. 1 handaxe.	3C	No further action
SBK24	29°36'9.00"S	22°46'26.70"E	MSA/LSA	On the top of a glacial tillite spur. An area with surface red gravels. 2 cleavers.	3C	No further action
SBK25	29°36'22.10"S	22°46'22.10"E	MSA/LSA	On the top of a glacial tillite spur. 1 handaxe, 1 scraper.	3C	No further action
SBK26	29°36'31.30"S	22°45'49.90"E	MSA/LSA	On the edge of a riverbed. 2 handaxes	3C	No further action
SBK27	29°36'43.20"S	22°47'1.20"E	MSA/LSA	In a stream valley in the central area of the property. 1 handaxe.	3C	No further action
SBK28	29°36'56.50"S	22°47'16.30"E	MSA/LSA	In a shallow basin in a central-eastern part of the property. 1 cleaver.	3C	No further action
SBK29	29°36'47.40"S	22°47'24.90"E	MSA/LSA	On the top of a glacial tillite spur. A large cleaver 20 cm x 10 cm.	3C	No further action
SBK30	29°36'55.20"S	22°47'55.40"E	MSA/LSA	: On the top of a glacial tillite spur. Extensive surface calcrete waste. 1 blade, 1 flake.	3C	No further action
SBK31	29°37'13.00"S	22°47'56.60"E	MSA/LSA	On the top of a glacial tillite spur. Extensive surface calcrete waste. 1 scraper.	3C	No further action
SBK32	29°37'21.00"S	22°47'54.30"E	MSA/LSA	On the top of a glacial tillite spur. Extensive surface calcrete waste. 1 scraper, 1 flake tool.	3C	No further action

5.5. Desk assessment of the likely heritage sensitivity of Portion 4 of the Farm Stofbakkies 31.

Access had not been granted to Portion 4 of the Farm Stofbakkies 31 at the time when the ground survey was undertaken. This area forms a southeastern portion of the footprint of the proposed prospecting. The terrain features and surface conditions are similar. A significant portion is the Orange River floodplain which also under irrigation and no archaeological artifacts can be expected to be found undisturbed by cultivation. In light of this the findings of a ground survey were not likely to turn out to be fundamentally different from what was encountered on the north-western and northern portion of the footprint, which was surveyed.

On a more general note, it is established that Stone Age material is widely distributed on the plains, ridges and valleys of the upper Karoo area north and south of the Orange-Vaal basin. The material comprises scrapers, blades, cores and flakes typologically dating to the Middle Stone Age/Late Stone Age period. Early Stone Age material has been encountered in places with occasional occurrence of hand-axes and cleavers. The scattered distribution pattern seems to suggest general hunter-gatherer activity. Rarely have the findings warranted further action such as professional excavations or the issue of a destruction permit from SAHRA. These finds have therefore not warranted further action after documentation.

It can therefore be reasonably concluded that the outcome of a survey on Portion 4 is likely to be anything different from what has been encountered on these two neighbouring properties. This is a sound premise from which it is recommended that the mine prospecting should go ahead.

The Table 4 below therefore provides a summary of the probability of occurrence of different typologies of heritage and a confidence rating of the predictions:

	HERITAGE TYPOLOGY	PROBABILITY OF OCCURRENCE	CONFIDENCE RATING
1	MSA/LSA	99.99%	High
2	Rock engravings	30%	High
3	Rock paintings	0%	High
4	Early Iron Age / Later Iron Age	25%	High
5	Burial grounds	0%	Medium
6	Farm buildings and structures	75%	High

The ranking system in the Table is adapted from Guidelines for involving Heritage Specialists in EIA processes by Winter S and & N. Baumann (2005, p19). Graves are given a high priority due to growing public concern about the negative impacts of modern development projects on sacred places.

Table 4: Grading of sites

GRADE	RANKING	SIGNIFICANCE	PROBABILITY OF OCCURRENCE	CONFIDENCE RATING
1a	National	Of high intrinsic, associational and contextual heritage value within a national, provincial and local context, i.e. formally declared or potential Grade 1, 2 or 3A heritage resources,	0%	High
1b	Burial grounds	Graves are sacred and their treatment is a sensitive issue.	0%	High
2	Provincial	Of high intrinsic, associational and contextual heritage value within a national, provincial and local context, i.e. formally declared or potential 2 heritage resources	0%	High
3A	Local	Of high intrinsic, associational and contextual heritage value within a national, provincial and local context, i.e. formally declared or potential Grade 3A heritage resources	10%	Medium
3B	Local	Of moderate to high intrinsic, associational and contextual value within a local context, i.e. potential Grade 3B heritage resources	10%	High
3C	Local	Of medium to low intrinsic, associational or contextual heritage value within a national, provincial and local context, i.e. potential Grade 3C heritage resources	99,99%	High

5.6. Assessment of Impacts using the Heritage Impact Assessment Statutory Framework

Section 38 of the NHRA

Section 38 (Subsection 3) of the National Heritage Resources Act also provides a schedule of tasks to be undertaken in an HIA process:

Section 38(3) The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): Provided that the following must be included:

(a) The identification and mapping of all heritage resources in the area affected

32 Sites were recorded. 31 sites are considered of low significance and no further action is warranted. A historic building on the property will not be affected by the prospecting activities.

(b) An assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7

N/A

(c) An assessment of the impact of the development on such heritage resources

No heritage resources of high significance will be affected.

(i) 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

Mining in the Northern Cape is poised for remarkable growth, and the forecast is that it will make a significant contribution to the South African economy in the medium to long-term. Mineral wealth can provide a stimulus for rapid socio-economic development in the province in particular and the country as a whole. Mining is labour intensive and can contribute immensely to alleviating the current high rate of unemployment. General improvement in the quality of livelihoods in local communities is expected.

(e) The results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources

Public participation was undertaken within the ambit of the broader environmental impact assessment process, a basic assessment report (BAR) which will be submitted with this HIA Report.

(f) If heritage resources will be adversely affected by the proposed development, the consideration of alternatives

N/A

(g) Plans for mitigation of any adverse effects during and after the completion of the proposed development.

In the event of the discovery of other heritage resources deemed of significance during site preparation and mining phase, the Provincial Heritage Resources Authority or SAHRA will be informed and an archaeologist or heritage expert called to attend.

5.7. Risk Assessment of the findings

EVALUATION CRITERIA	RISK ASSESSMENT
Description of the potential impact	Negative impacts range from partial to total destruction of surface and under-surface movable/immovable relics.
Nature of Impact	Negative impacts can both be direct and indirect.
Legal Requirements	Sections 34, 35, 36, 38 of National Heritage Resources Act No. 25 (1999).
Stage/Phase	Prospecting Phase
Extent of Impact	Open cast mining, the opening of roads, and the emplacement of mine infrastructure may result in damage and destruction of important archaeological resources above and below the surface not seen during the survey.
Duration of Impact	Any accidental destruction of surface or subsurface relics is not reversible but can be mitigated.

Intensity	Uncertain.
Probability of occurrence	Medium.
Confidence of assessment	High.
Level of significance of impacts before mitigation	Medium.
Mitigation measures	If archaeological or other heritage relics deemed of high significance are found during the construction phase, heritage authorities will be advised and a heritage specialist will be called to attend.
Level of significance of impacts after mitigation	Low.
Cumulative Impacts	None.
Comments or Discussion	None.

6. CONCLUSION AND RECOMMENDATIONS

The Prospecting Right application can be approved in light of the findings of the survey. Since archaeological deposits may be buried underground, should important artefacts or skeletal material be exposed in the area during operations, such activities should be halted, and the provincial heritage resources authority or SAHRA notified for an investigation and evaluation of the finds undertaken.

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8. GLOSSARY

Archaeological material: remains older than 100 years, resulting from human activities left as evidence of their presence, which are in the form of structure, artefacts, food remains, and other traces such as rock paintings or engravings, burials, fireplaces, etc.

Artefact: Any movable object that has been used modified or manufactured by humans.

Catalogue: An inventory or register of artefacts and / or sites.

Conservation: All the processes of looking after a site or place including maintenance, preservation, restoration, reconstruction, and adaptation.

Cultural Heritage Resources: refers to physical cultural properties such as archaeological sites, palaeontological sites, historic and prehistoric places, buildings, structures, and material remains, cultural sites such as places of rituals, burial sites or graves and their associated materials, geological or natural features of cultural importance or scientific significance. These include intangible resources such as religious practices, ritual ceremonies, oral histories, memories, and indigenous knowledge.

Cultural landscape: a stretch of land that reflects “the combined works of nature and man” and demonstrates “the evolution of human society and settlement over time, under the influence of the physical constraints and / or opportunities presented by their natural environment and of successive social, economic and cultural forces, both internal and external”.¹¹

Cultural Resources Management (CRM): the conservation of cultural heritage resources, management, and sustainable utilization for present and future generations.

Cultural Significance is the aesthetic, the historical, scientific, and social value of the past, present, and future generations.

Early Iron Age refers to cultural remains dating to the first millennium AD associated with the introduction of metallurgy and agriculture.

Early Stone Age: a long and broad period of stone tool cultures with chronology ranging from around 3 million years ago up to the transition to the Middle Stone Age around 250 000 years ago.

Excavation: a method in which archaeological materials are extracted from the ground, which involves the systematic recovery of archaeological remains and their context by removing soil and any other material covering them.

¹¹ This definition is taken from current terminology as listed on the World Heritage Convention website, URL: <http://whc.unesco.org/en/culturallandscape/#1> accessed 17 March 2016.

Historic material: means remains resulting from human activities, which are younger than 100 years and no longer in use; that include artefacts, human remains, and artificial features and structures.

Historical: means belonging to the past, but often specifically the more recent past, and often used to refer to the period beginning with the appearance of written texts.

Intangible heritage: something of cultural value that is not primarily expressed in material form e.g. rituals, knowledge systems, oral traditions, or memories, transmitted between people and within communities.

In situ material: means material culture and surrounding deposits in their original location and context, for instance, archaeological remains that have not been disturbed.

Later Iron Age: The period from the beginning of the 2nd millennium AD was marked by the emergence of complex state society and long-distance trade contacts.

Late Stone Age: The period from ± 30 000 years ago up until the introduction of metals and farming technology around 2000 years ago, but overlapping with the Iron Age in many areas up until the historical period.

Middle Stone Age: a period of stone tool cultures with complex chronologies marked by a shift towards lighter, more mobile toolkit, following the Early Stone Age and preceding the Late Stone Age; the transition from the Early Stone Age was a long process rather than a specific event, and the Middle Stone Age is considered to have begun around 250 000 years ago, seeing the emergence of anatomically modern humans from about 150 000 years ago, and lasting until around 30 000 years ago.

Monuments: architectural works, buildings, sites, sculptures, elements, structures, inscriptions, or cave dwellings of an archaeological nature, which are outstanding from the point of view of history, art, and science.

Place: means site, area, building, or other work, group of buildings, or other works, together with pertinent contents, surroundings, and historical and archaeological deposits.

Preservation: means the protection and maintenance of the fabric of a place in its existing state and retarding deterioration or change, and may include stabilization where necessary.

Rock Art: various patterned practices of placing markings on rock surfaces, ranging in Southern Africa from engravings to finger paintings to brush-painted imagery.

Sherds: ceramic fragments.

Significance grading: Grading of sites or artefacts according to their historical, cultural, or scientific value.

Site: a spatial cluster of artefacts, structures, and organic and environmental remains, as residues of past human activity.

Site Recording Template: a standard document format for site recording.

9. APPENDIX I: STOFFBAKKIES 31 - CATALOGUE OF HERITAGE SITES

SITE NO	COORDINATES		PERIOD
SBK01	29°39'9.43"S	22°46'1.04"E	20 th Century





DESCRIPTION: An old building that has been preserved on the farm with a date inscription – 1953. Another building with a multi-shaped hipped roof possibly older than 60 years.

HERITAGE SIGNIFICANCE

Association with modern commercial farming.

MITIGATION

Buildings older than 60 years protected in terms of Section 34 of NHRA.

SITE NO	COORDINATES		PERIOD
SBK02	29°38'11.50"S	29°38'11.50"S	MSA/LSA



DESCRIPTION: On a riverbank. 1 scraper, 1 flake.	
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action required.

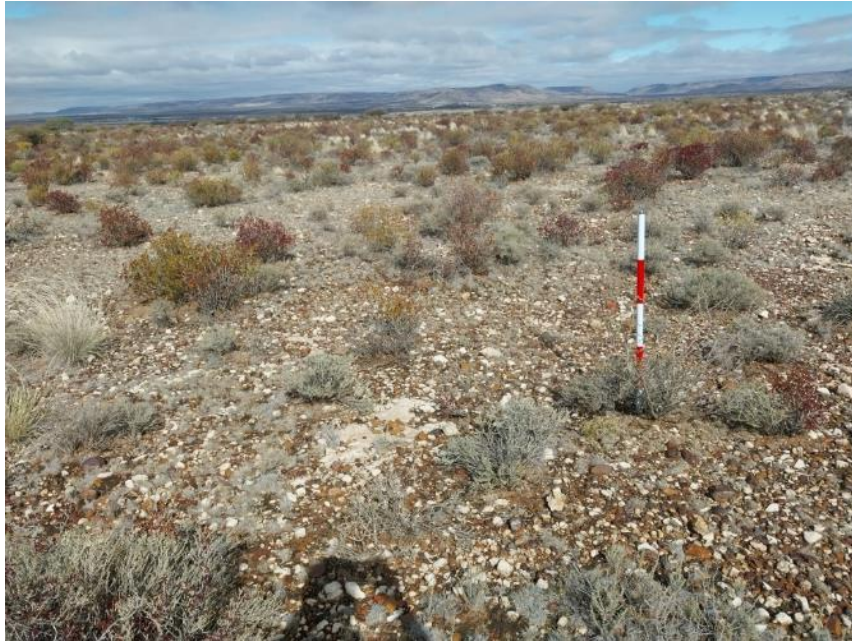
SITE NO	COORDINATES		PERIOD
SBK03	29°38'11.94"S	22°46'5.24"E	MSA/LSA



DESCRIPTION: On the shoulder of a river, sandy deposit. 4 potsherds possibly from a single pot. Shallow horizontal lines imprinted on the rim.

HERITAGE SIGNIFICANCE	Possibly associated with Late Stone Age communities in the transition period between the Stone and Iron Age.
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
SBK04	29°37'41.90"S	22°46'11.40"E	MSA/LSA



DESCRIPTION: On the top of a glacial tillite spur. 7 flake tools.	
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
SBK05	29°37'37.10"S	22°46'13.00"E	MSA/LSA



DESCRIPTION: On the top of a glacial tillite spur. 2 lithics, a blade and scrapers made from a black rock.

HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
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MITIGATION	No further action required.
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SITE NO	COORDINATES		PERIOD
SBK06	29°37'42.06"S	22°46'23.42"E	MSA/LSA



DESCRIPTION: On the top of a glacial tillite spur. 4 lithics: 1 scraper, 1 blade, 2 flakes.

HERITAGE SIGNIFICANCE

Evidence of hunter-gatherer activities during the MSA/LSA

MITIGATION

No further action required.

SITE NO	COORDINATES		PERIOD
SBK07	29°37'26.70"S	22°46'21.80"E	MSA/LSA



DESCRIPTION: On the top of a glacial tillite spur. 4 lithics: 2 blades, 2 scrapers.	
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
SBK08	29°37'27.50"S	22°46'17.30"E	MSA/LSA



DESCRIPTION: On the top of a glacial tillite spur. 3 scrapers.

HERITAGE SIGNIFICANCE

Evidence of hunter-gatherer activities during the MSA/LSA

MITIGATION

No further action required.

SITE NO	COORDINATES		PERIOD
SBK09	29°37'1.30"S	22°46'22.80"E	MSA/LSA



DESCRIPTION: On the top of a glacial tillite spur. 2 scrapers, 1 blade.

HERITAGE SIGNIFICANCE

Evidence of hunter-gatherer activities during the MSA/LSA

MITIGATION

No further action required.

SITE NO	COORDINATES		PERIOD
SBK10	29°36'54.30"S	22°46'25.20"E	MSA/LSA



DESCRIPTION: On the shoulder of a river valley. 2 cleavers.

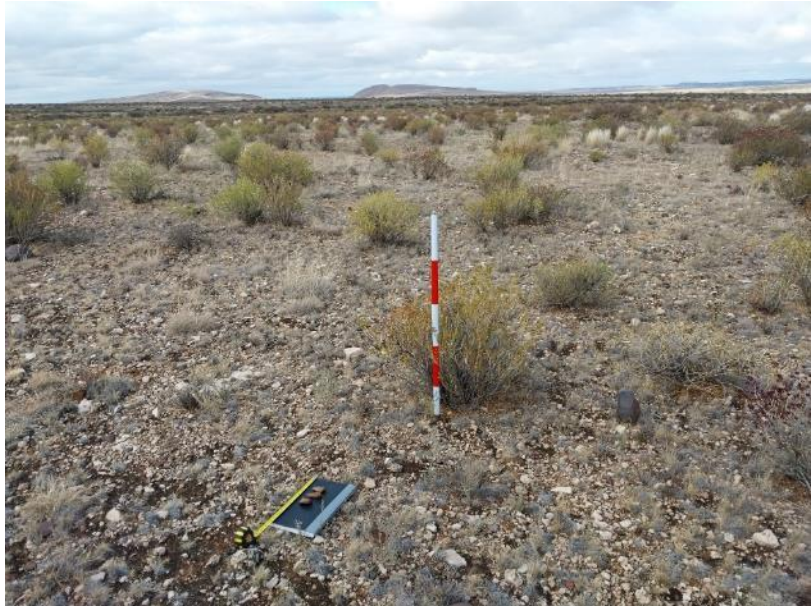
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
SBK11	29°36'53.60"S	22°46'20.00"E	MSA/LSA



DESCRIPTION: On the top of a glacial tillite spur. 1 handaxe, 2 blades.	
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
SBK12	29°36'56.50"S	22°46'18.60"E	MSA/LSA



DESCRIPTION: On the top of a glacial tillite spur. 3 blades.

HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
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MITIGATION	No further action required.
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SITE NO	COORDINATES		PERIOD
SBK13	29°36'43.60"S	22°46'7.80"E	MSA/LSA



DESCRIPTION: Riverbank, near vertical profile. 2 scrapers embedded at a depth of 80 cm.

HERITAGE SIGNIFICANCE

Evidence of hunter-gatherer activities during the MSA/LSA

MITIGATION

No further action required.

SITE NO	COORDINATES		PERIOD
SBK14	29°36'43.40"S	22°46'8.10"E	MSA/LSA



DESCRIPTION: On the shoulder of a river valley. 1 blade.

HERITAGE SIGNIFICANCE

Evidence of hunter-gatherer activities during the MSA/LSA

MITIGATION

No further action required.

SITE NO	COORDINATES		PERIOD
SBK15	29°36'42.60"S	22°46'9.50"E	MSA/LSA



DESCRIPTION: On the top of a glacial tillite spur. 1 scraper.

HERITAGE SIGNIFICANCE

Evidence of hunter-gatherer activities during the MSA/LSA

MITIGATION

No further action required.

SITE NO	COORDINATES		PERIOD
SBK16	29°35'17.00"S	22°46'6.40"E	MSA/LSA



DESCRIPTION: Flat terrain with surface red gravel. 1 long blade 12 cm long.

HERITAGE SIGNIFICANCE

Evidence of hunter-gatherer activities during the MSA/LSA

MITIGATION

No further action required.

SITE NO	COORDINATES		PERIOD
SBK17	29°36'21.74"S	22°46'2.99"E	MSA/LSA



DESCRIPTION: Flat terrain with surface red gravel. 2 scrapers.

HERITAGE SIGNIFICANCE

Evidence of hunter-gatherer activities during the MSA/LSA

MITIGATION

No further action required.

SITE NO	COORDINATES		PERIOD
SBK18	29°38'25.60"S	22°46'15.00"E	MSA/LSA



DESCRIPTION: On the edge of a sand-filled riverbed. 1 handaxe, 1 blade.

HERITAGE SIGNIFICANCE

Evidence of hunter-gatherer activities during the ESA-MSA.

MITIGATION

No further action required.

SITE NO	COORDINATES		PERIOD
SBK19	29°37'51.70"S	22°45'49.20"E	MSA/LSA



DESCRIPTION: A sand-filled basin through which a river flows. On the shoulders of a channel. 1 blade.

HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
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MITIGATION	No further action required.
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SITE NO	COORDINATES		PERIOD
SBK20	29°37'54.80"S	22°45'51.00"E	MSA/LSA



DESCRIPTION: On the edge of a wide riverbed. 2 blades.

HERITAGE SIGNIFICANCE

Evidence of hunter-gatherer activities during the MSA/LSA

MITIGATION

No further action required.

SITE NO	COORDINATES		PERIOD
SBK21	29°37'20.50"S	22°46'46.30"E	MSA/LSA



DESCRIPTION: On the shoulder of a valley with a calcrete rim. 1 scraper.

HERITAGE SIGNIFICANCE

Evidence of hunter-gatherer activities during the MSA/LSA

MITIGATION

No further action required.

SITE NO	COORDINATES		PERIOD
SBK22	29°37'16.00"S	22°46'52.70"E	MSA/LSA



DESCRIPTION: On the edge of a riverbed. 1 scraper, 1 blade.

HERITAGE SIGNIFICANCE

Evidence of hunter-gatherer activities during the MSA/LSA

MITIGATION

No further action required.

SITE NO	COORDINATES		PERIOD
SBK23	29°37'18.90"S	22°46'35.50"E	MSA/LSA



DESCRIPTION: On the top of a glacial tillite spur. 1 handaxe.

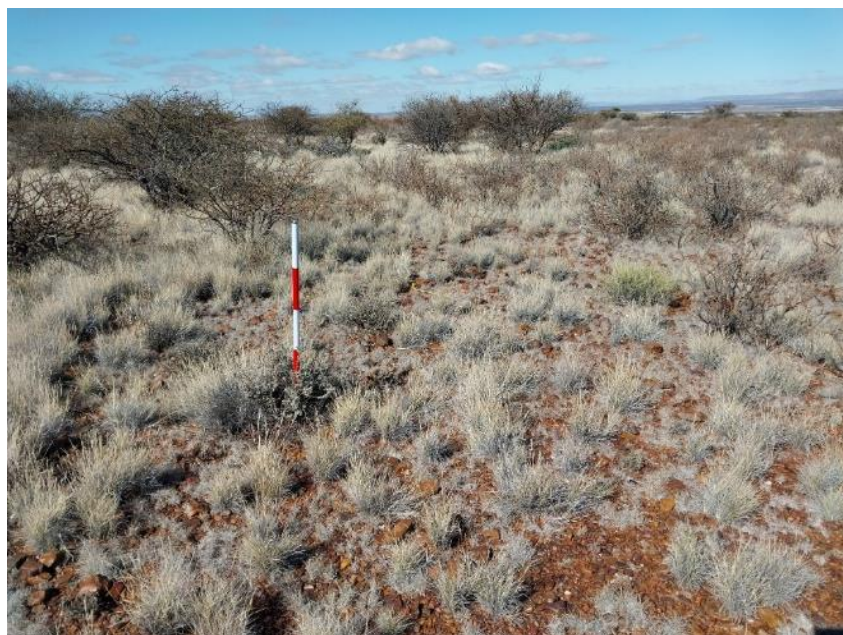
HERITAGE SIGNIFICANCE

Evidence of hunter-gatherer activities during the ESA.

MITIGATION

No further action required.

SITE NO	COORDINATES		PERIOD
SBK24	29°36'9.00"S	22°46'26.70"E	MSA/LSA



DESCRIPTION: On the top of a glacial tillite spur. An area with surface red gravels. 2 cleavers.

HERITAGE SIGNIFICANCE

Evidence of hunter-gatherer activities during the MSA/LSA

MITIGATION

No further action required.

SITE NO	COORDINATES		PERIOD
SBK25	29°36'22.10"S	22°46'22.10"E	MSA/LSA



DESCRIPTION: On the top of a glacial tillite spur. 1 handaxe, 1 scraper.	
HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
SBK26	29°36'31.30"S	22°45'49.90"E	MSA/LSA



DESCRIPTION: On the edge of a riverbed. 2 handaxes.

HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
SBK27	29°36'43.20"S	22°47'1.20"E	MSA/LSA



DESCRIPTION: In a stream valley in the central area of the property. 1 handaxe.

HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
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MITIGATION	No further action required.
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SITE NO	COORDINATES		PERIOD
SBK28	29°36'56.50"S	22°47'16.30"E	MSA/LSA



DESCRIPTION: In a shallow basin in a central-eastern part of the property. 1 cleaver.

HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
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MITIGATION	No further action required.
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SITE NO	COORDINATES		PERIOD
SBK29	29°36'47.40"S	22°47'24.90"E	MSA/LSA



DESCRIPTION: On the top of a glacial tillite spur. A large cleaver 20 cm x 10 cm.

HERITAGE SIGNIFICANCE

Evidence of hunter-gatherer activities during the MSA/LSA

MITIGATION

No further action required.

SITE NO	COORDINATES		PERIOD
SBK30	29°36'55.20"S	22°47'55.40"E	MSA/LSA



DESCRIPTION: On the top of a glacial tillite spur. Extensive surface calcrete waste. 1 blade, 1 flake.

HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
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MITIGATION	No further action required.
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SITE NO	COORDINATES		PERIOD
SBK31	29°37'13.00"S	22°47'56.60"E	MSA/LSA



DESCRIPTION: On the top of a glacial tillite spur. Extensive surface calcrete waste. 1 scraper.

HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
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MITIGATION	No further action required.
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SITE NO	COORDINATES		PERIOD
SBK32	29°37'21.00"S	22°47'54.30"E	MSA/LSA



DESCRIPTION: On the top of a glacial tillite spur. Extensive surface calcrete waste. 1 scraper, 1 flake tool.

HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
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MITIGATION	No further action required.
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10. DETAILS OF SPECIALIST

Surname : Matenga
First names : Edward
Position : Director & Principal Researcher, AHSA Archaeological and Heritage Services Africa (Pty) Ltd, Centurion, Pretoria
Cell : 073 981 0637
E-mail : e.matenga598@gmail.com

(i) Academic qualifications

2011: Ph.D. in Archaeology & Heritage (Uppsala University, Sweden) with a published Thesis
2002. Certificate in the Integrated Conservation of Territories and Landscapes of Heritage Value (ICCROM, Rome)
1993: MPhil in Archaeology (Uppsala University, Sweden) with a published Thesis

(ii) Professional experience

1988-1993: Curator of Archaeology, Museum of Human Sciences, Harare
1994-1997: Senior Curator / Conservator, Great Zimbabwe World Heritage Site
1997-2004: Director, Great Zimbabwe World Heritage Site
2005 – 2016: Heritage Management Consultant (associateship with various other specialists), South Africa
2016 – present. Director & Principal Researcher, AHSA Archaeological and Heritage Services Africa (Pty) Ltd

(iii) Membership in professional bodies/associations

ASAPA – Association of Southern African Professional Archaeologists
ICOMOS – International Council of Monuments and Sites
WAC – World Archaeological Congress

(iv) Heritage Impact Assessments

Edward Matenga has undertaken more than 100 Heritage Impact Assessments and written as many reports submitted to regulating authorities including the South African Heritage

Resources Agency (SAHRA). The reports were to enable various development projects including mining, public infrastructure development (e.g. agriculture, water reticulation) and power distribution. Matenga has a significant footprint in the Northern Cape, Northwest and Limpopo Provinces. He has also undertaken similar work in Mauritius.

Matenga has been involved in the preparation of Heritage Management Plans, otherwise called Conservation Management Plans for high-profile sites, e.g. the ten sites in the World Heritage Nomination Dossier for the Nelson Mandela Legacy Sites, which was submitted to UNESCO in 2021.

Matenga has undertaken exhumations and relocations of graves and has considerable experience in handling community issues relating to the treatment of human remains.

Matenga is a former Director of a World Heritage Site. UNESCO and its affiliated bodies (ICOMOS and ICCROM) sent him on World Heritage advisory missions to Cameroon (2002), Malawi (2005), Kenya (2006), Mauritius (2007), Ghana (2008) and Angola 2007 and 2010.