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Phase 1 AIA report on archaeological contexts and heritage resources on the farms Heuningkrans 364 and Langverwacht 432 in the Postmasburg District Municipality of the Northern Cape Province

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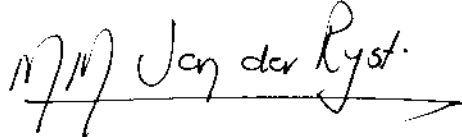
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Executive summary

Purpose

This report details the results of a Phase 1 Archaeological Impact Assessment (AIA) commissioned by **Sinergistics Environmental Services (Pty) Ltd.**

Terms of reference

African Heritage Resources was requested to conduct a heritage survey on the farms Heuningkrans 364 and Langverwacht 432 in the Postmasburg District in order to provide a report on possible areas of heritage significance in terms of the National Resources Heritage Act No. 25 of 1999. (Map Reference 1:50 000 2822BB Mamagodi). Drilling for haematite resources is currently in progress and it is the intention to conduct mining on the two properties should the ore deposits prove to be viable. Dr Maria van der Ryst of UNISA and Siegwalt Küsel of Habitat Landscape Architects were subsequently appointed by African Heritage Resources to undertake the survey of the predominant Stone Age localities and all other heritage occurrences including built structures older than 60 years. The survey was accordingly conducted to establish the range and importance of archaeological and heritage resources and features, the potential impact of the development and to make recommendations to minimize impact on recorded sites.

Assessment methodology

A number of research methods were used to assess the impact of the proposed mining on archaeological resources and the built environment. We firstly consulted a combination of Bing and Google Earth data sources of the area to provisionally locate structural features and/or any areas of potential heritage sensitivity. Prior to conducting the fieldwork a systematic desktop literature study was conducted that comprised an assessment of published and unpublished sources on the archaeology of the region and also consulting the SAHRIS data base for relevant heritage reports. From the literature review it was evident that the study area is of high cultural significance with numerous resources previously recorded.

The accompanying sensitivity map (Map 2) indicates the following:

Site numbers as described in the text, HKZ=Heuningkrans, LVW=Langverwacht.

Sensitivity rating on Map 2	
Polygon	Description
Red: High sensitivity	These are areas with confirmed archaeological features of significance and require specific management actions associated with each site as discussed in the text.
Orange: Medium sensitivity	The orange polygons represent areas with localized scatters of

	archaeological material or areas with a high probability of containing heritage resources.
Yellow: Low sensitivity	These are areas that may potentially contain archaeological or heritage resources. The Environmental Management Plan for the development should highlight this possibility and alert a suitable qualified heritage practitioner when resources are identified.

Based on our understanding of the archaeology and history of the broader region a survey and recording methodology was developed, adjusted and refined. A number of research methods were subsequently used (please refer to 2, p. 12).

Summary

During the survey of the study area localities with significant archaeological or cultural heritage resources were surveyed, recorded and photographed. The most significant heritage resources with a rating of high sensitivity relate to the Stone Age. The Later Stone Age (LSA) shelters in the Heuningkrans valley in particular are of high significance. Also important are the mostly Middle Stone Age (MSA) lithic production localities with a predominant focus on the extensive outcrops of Banded Ironstone Formations (BIFs) that underlie large tracts of in particular Heuningkrans. There is an ephemeral Earlier Stone Age (ESA) presence as evidenced by the low numbers of stone tool types of this period. These findings are deemed important in view of a lack of research data on the utilization of the vast number of open localities that document the utilization of local lithic resources within this landscape. There is such a proliferation of in particular BIFs as a major source for stone tool production that it was clear from our observations that the prehistoric stone knappers were highly selective in their choice of fine-grained blocks of BIF to manufacture the lithics. Of course they were also opportunistic in randomly selecting suitable stone for immediate requirements such as at a killing site. The expedient production of lithics as and when required is a feature of prehistoric stone tool use. Stone tool densities accordingly vary from low (<5/square meter) to medium (>5-15/square meter). However, systematic sampling is required to determine actual densities within different areas.

The farmsteads and associated features at both Heuningkrans and Langverwacht have been extensively renovated and altered over time so that only the core areas of earlier buildings remain. Several dams and windmills with horticultural gardens were recorded on both farms. These localities were assigned a medium archaeological value according to their relative age. Under the recommendations we provide more detail on mitigation measures that should be undertaken in the event that these are impacted upon by future development.

Archaeological deposits, prehistoric living sites and special activity areas frequently occur below ground level. Note that prehistoric sites and features are often only revealed when vegetation cover and soils have been removed during subsequent phases of development.

In the report we in addition contextualize the prehistory and recent history of the region to demonstrate that some important cultural resources have been previously recorded in the study area. Note that a copy of this report will be lodged with SAHRA as stipulated by the NHRA Act No. 25 of 1999, Section 38 (especially subsection 4).

Limitations

Dense growth of swarthaak (*Acacia mellifera*) that colonised some parts of Heuningkrans but in particularly Langverwacht, resulted in restricted access to some sections of the study area. Access at Heuningkrans and the southern section of Langverwacht was facilitated by the existing infrastructure and many roads that the drilling teams open up. The northern section of Langverwacht has not been subjected to the same intensive drilling so that access was often severely restricted (see Map 1).

Recommendations

A number of archaeological deposits and heritage features have been identified. No burial grounds or graves older than 60 years have been recorded during the AIA. From a heritage perspective the impacts associated with the proposed development are considered to range from **low, medium and high significance** on heritage resources identified during the Phase 1 AIA. There is also a relatively good probability of finding/exposing more heritage resources during the construction phase given the rich prehistorical archaeological contexts of the Northern Cape. Based on the extensive archaeological record that has been recorded for this region, the data gathered through our literature research and the results of the Phase 1 AIA we recommend mitigation measures as set out in Table 1. No immediate mitigation is proposed so that the development phase of the project could proceed subject to the following conditions:

Site	Feature	Recommendations
2822BB_HKZ_1 28°12'48.6"S; 22°52'48.5"E Heuningkrans 364 farmstead	Old house	Although the older house has been extensively altered the core of the structure is older than 60 years (cf. NHRA Act No. 25 of 1999, Section 36 (6) and requires a Phase 2 assessment if the structure is to be demolished.

	Main house	The house is not deemed significant and does not require mitigation as no historical features have been preserved. It is also not an example of a regionally-important structure.
	Dam	Better examples exist elsewhere and because this particular dam has been extensively altered no mitigation is required. However, a destruction permit is required from SAHRA if the feature will be demolished as the main part is older than 60 years.
	Garden, midden and workers' midden	Should a core shed be erected within the garden area that is bordered by the blue gum lane, a contained Phase 2 assessment of the midden is recommended. In the event of a Phase 2 assessment of this midden, the collection of a control sample at the workers' midden is proposed.
	Tree lanes	The tree lanes are older than 60 years and also require that a destruction permit should be obtained in the event that these are impacted on by future development.
	Widely dispersed lithics around homestead	No mitigation is recommended for these areas.
2822BB_HKZ_2 28°12'35.2"S; 22°54'14.8"E	Banded Ironstone Formations (BIFs) used for the manufacture of mainly MSA and some ESA lithic tool types	Localities within BIFs with evidence of stone tool production are assigned a high archaeological value. Should any of these be impacted on by the proposed mine development it is recommended that a surface collection/sample of stone tools be made. It is proposed that an accredited Stone Age archaeologist undertakes the Phase 2 sampling.
2822BB_HKZ_3 28°13'36.5"S; 22°54'46.2"E		
2822BB_HKZ_4 28°12'51.1"S; 22°54'40.9"E		
2822BB_HKZ_5 8°12'45.0"S; 22°54'15.2"E		
2822BB_HKZ_6 28°13'31.1"S; 22°54'31.8"E		
2822BB_HKZ_7 28°13'29.8"S; 22°54'33.1"E	Heuningkrans valley with shelters	High significance. The valley is regarded as the most significant heritage feature at Heuningkrans. Should any mining, and specifically blasting activities, take place within a range of 5 km from the valley a Phase 2 mitigation is recommended to record the shelters at Heuningkrans in more detail with a focus on a contained excavation at SITE 2822BB_HKZ_9.
2822BB_HKZ_8 28°13'29.3"S; 22°54'33.6"E		
2822BB_HKZ_9 28°13'30"S; 22°54'28.5"E		
S2822BB_HKZ_10 28°13'23.8"S; 22°54'39.9"E		
2822BB_HKZ_11 28°13'24.7"S; 22°54'36.1"E		
2822BB_HKZ_12 28°13'10.8"S; 22°53.23.8"E	Quartz pebble layer with LSA lithics	Low to medium significance. No mitigation is required.
2822BB_HKZ_13 28°11'54.2"S; 22°52'19.0"E	MSA and LSA lithics in low densities	
2822BB_HKZ_14 28°11'25.1"S; 22°52'9.4"E	MSA and LSA lithics in low densities	
2822BB_HKZ_15 28°11'3.2"S; 22°52'1.3"E	MSA and LSA lithics in low densities	

SITE 2822BB_LVW_1 28°11'2.6"S; 22°55'23.4"E	MSA/transitional ESA/MSA	High significance. This is the only area where handaxes/proto-points of the transitional industries between the ESA and MSA have been recorded. A Phase 2 sampling should be undertaken if this section is impacted by future mining and infrastructural development.
2822BB_LVW_2 28°11'10.7"S; 22°55'33.3"E	BIFs with low densities of mostly MSA lithics	Low to medium significance. No mitigation is recommended.
2822BB_LVW_3 28°12'9.4"S; 22°55'15.7"E	Rubble of structure, walls built of old car doors in drainage line	Low significance. No mitigation is recommended.
SITE 2822BB_LVW_4 28°13'24.7"S; 22°54'36.1"E	Dam, windmill, garden, outbuilding	Low to medium significance. The outbuilding is older than 60 years and requires a destruction permit if it is targeted for demolition.
2822BB_LVW_5 28°9'59.0"S; 22°57'32.31"E	Dam, windmill, garden	Low to medium significance. The rectangular dam is older than 60 years and require sa destruction permit if it is targeted for demolition.
2822BB_LVW_6 28°9'58.5"S; 22°57'24.73"E	Langverwacht homestead	Low to medium significance. The house is older than 60 years and a destruction permit is required if it is targeted for demolition.
2822BB_LVW_7a 28°9'41.3"S; 22°57'15.2"E	Dip, holding pen, well	Low significance. The structures are older than 60 years and requires a destruction permit if targeted for demolition.
2822BB_LVW_7b 28°9'43.7"S; 22°57'16.0"E		
2822BB_LVW_8a 28°9'48.5"S; 22°57'9.07"E	Labourer cottages	Low significance. No mitigation is proposed as the buildings are less than 60 years old.
2822BB_LVW_8b 28°9'51.6"S; 22°57'8.9"E		
2822BB_LVW_9a 28°9'55.2"S; 22°57'7.5"E	Remains of structure	Low significance. These features at LVW_9a-9c are deemed insignificant in view of the state of preservation but are older than 60 years and will require a destruction permit if targeted for demolition.
SITE 2822BB_LVW_9b 28°9'56.7"S; 22°57'7.1"E	Remains of structure	
2822BB_LVW_9c 28°9'57.4"S; 22°57'3.6"E	Remains of kraal	
2822BB_LVW_10 28°9'55.2"S; 22°57'7.5"E	Remains of dam	Low significance. The remains are insignificant in view of the state of preservation but being older than 60 years will require a destruction permit if targeted for demolition.

Glossary and acronyms

AIA Archaeological Impact Assessment
EIA's Environmental Impact Assessments
HIA Heritage Impact Assessment

Archaeological remains can be defined as any features or objects resulting from human activities, which have been deposited on or in the ground, reflecting past ways of life and are older than 100 years.

Conservation as used in this report in relation to heritage resources 'includes protection, maintenance, preservation and sustainable use of places or objects so as to safeguard their cultural significance' (NHRA 1999: Act 25:2iii).

Cultural significance means 'aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance' (NHRA 1999: Act 25:2(vi)).

Development means any 'physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of a heritage authority in any way result in a change to the nature, appearance or physical nature of a place, or influence its stability and future well-being' (NHRA 1999: Act 25:2(viii)).

Heritage. Heritage resources have lasting value in their own right and provide evidence of the origins of South African society. They are limited and non-renewable. The National Heritage Resources Act section 32, p. 55 defines these as an 'object or collection of objects, or a type of object or list of objects, whether specific or generic, that is part of the national estate and the export of which SAHRA deems it necessary to control, may be declared a heritage object'.

These include historical places, objects of archaeological, cultural or historical significance; objects to which oral traditions are attached and which are associated with living heritage; objects of scientific value, fossils, etc.

NHRA. National Heritage Resources Act.

SAHRA. South African Heritage Resources Agency.

The Act means the National Heritage Resources Act, 1999 (Act No. 25 of 1999).

The Stone Age: ESA (Earlier Stone Age), **MSA** (Middle Stone Age), **LSA** (Later Stone Age).

LIST OF ABBREVIATIONS

ASAPA	Association for South African Professional Archaeologists
AIA	Archaeological Impact Assessment
BP	Before Present
EIA	Environmental Impact Assessment
ESA	Earlier Stone Age
HIA	Heritage Impact Assessment
LSA	Later Stone Age
MSA	Middle Stone Age
NHRA	National Heritage Resources Act No.25 of 1999, Section 35
SAHRA	South African Heritage Resources Association

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1 The Phase 1 AIA

The heritage practitioners were contracted to conduct a heritage survey and provide a report on any possible archaeological occurrences, built structures older than 60 years, burial grounds and graves, graves of victims of conflict and landscapes with cultural and intangible on the Heuningkrans 364 and Langverwacht 432 farms, hereafter referred to as the study area. The two farms are situated approximately 20 km to the north west of the town of Postmasburg within the Northern Cape Province and occupy an area of around 5000 ha in extent. Archaeological Impact Assessments (AIAs) are required by the National Heritage Resources Act (NHRA) (Act No. 25 of 1999) and conducted in terms of the SAHRA APM Guidelines: Minimum Standards: Archaeological and Palaeontological Components of Impact Assessment Reports (2007).

2 Methodology

Prior to conducting the fieldwork a detailed desktop assessment and a literature study of sources on the archaeology of the region were conducted. Based on our understanding of the archaeology and history of the broader region as well as our experience from numerous previous surveys in the region we developed a methodology that was adjusted and refined during the subsequent AIA. A number of research methods were used:

- Before the site visit we obtained copies of recent applicable heritage studies via the SAHRIS 2013 electronic database. This was followed by an extensive literature study of the archaeological contexts of the Northern Cape and the Postmasburg area in particular.
- A combination of Bing and Google Earth imagery was used to interpret the landscape and provisionally map any deviations, disturbances and landscape structural features that may potentially contain heritage resources. Typically these features included pan localities, drainage lines, erosion gullies, and also anomalies and conspicuous geological features that may signal exploitable landscape ecotones. All visible farm and farming-related infrastructure including animal pens, watering points, water infrastructure, houses and outbuildings were mapped for investigation during the AIA.
- During the first stage a general landscape appraisal was undertaken to ground-truth the signature of various vegetation and geological features mapped from the aerial photography and to determine the boundaries of the area to be surveyed.
- Historical place names were searched and scrutinized for historical significance.
- The subsequent survey comprised driving and walking the study area as well as inspecting previously mapped features.

- Areas with attributes that signal possible heritage remains were intensively searched, and geological outcrops of stone were surveyed for Stone Age lithics. Outcrops of BIFs and jaspillite were fieldwalked and appraised to establish the nature and extent as well as the likelihood of subsurface deposits.
- The actual recording of lithics was undertaken *in situ*. A 1-meter drawing frame was used to provide density distributions of all knapped lithic elements. Examples of stone tools were photographed.
- Pans were investigated for evidence of prehistoric utilization.
- The farm name Heuningkrans prompted a survey of the kloof and cliffs.
- Farmsteads, associated outbuildings and other infrastructural features were recorded and photographed.
- Labourer housing units were recorded and photographed.
- Water sources such as wells, dams and windmills with associated features such as watering troughs and horticultural gardens were visited and appraised.
- All localities with heritage resources were recorded with the aid of a hand-held GPS system.
- Discussions were held with the former owners and a labourer at Langverwacht. A neighbouring farm was briefly visited.
- A systematic literature search of relevant published and unpublished sources was undertaken before and following on the AIA.

3 Legislative framework

3.1 Archaeological resources

The National Heritage Resources Act (NHRA) (Act No. 25 of 1999, section 35) details the assessment and management of all heritage resources, including intangible heritage, in southern Africa. All archaeological remains, artificial features and structures older than 100 years and historic structures older than 60 years are protected by this Act. The legislation requires that all heritage resources, that is, all places or objects of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance are protected (SAHRA2007:2). No archaeological artefact, assemblage or settlement (site) may be moved or destroyed without the necessary approval from the SAHRA.

Human remains older than 60 years are protected by NHRA Section 36. Human remains that are less than 60 years old are protected by the Human Tissue Act (Act 65 of 1983 as amended).

The following sections of NHRA (Act 25 of 1999) must be noted:

Structures

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

Archaeology, palaeontology and meteorite

35.(4) 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 assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.*

Burial grounds and graves

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

- (a) *destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;*
- (b) *destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or*
- (c) *bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.*

4 Findings and recommendations

4.1 General

A number of archaeological deposits, heritage features and structures older than 60 years have been recorded during the AIA. Stone tools represent the main category of finds. The presence of tool manufacturing debris reflects some measure of on-site knapping of tools required for subsistence tasks and tool resharpening during what were probably cyclic occupations. A very limited number of ESA tool types were identified within the general area during the preliminary investigation of surface localities. MSA lithics are ubiquitous. The preferred toolstone during the MSA was clearly Banded Ironstone Formations (BIFs) with lesser frequencies of other rock types such as quartzite being used. At LSA lithic scatters a range of materials was evidently utilized that include jaspillite, BIFs and cryptocrystalline silicas (CCS).

The very dense growth of swarthaak (*Acacia mellifera*) that colonised some parts of Heuningkrans but in particularly large sections of Langverwacht impacted on the survey of some sections. Access at Heuningkrans and the southern section of Langverwacht was facilitated by existing infrastructure

and the many roads that drilling teams open up. The northern section of Langverwacht has not been subjected to the same intensive drilling at this stage so that access routes were often not available or severely overgrown with *Acacia mellifera* and other pioneer vegetation. This fortunately did not have a major impact on our survey on an account of a generally low level of archaeological features in the central section of Langverwacht, an area that in the main lack resources favoured by prehistoric groups. The main archaeological remains present in the central section are low densities of lithics around outcrops and screes of BIFs. Although no specific knapping localities with relatively high densities of lithics have been located in the central part of Langverwacht any BIF or CCS outcrops have to be treated as potential archaeological sites.

All natural and man-made water sources have been investigated. Localities with dams, wells, boreholes and windmills were explored for structures that fall under the protection of the NHRA No. 25 of 1999. An investigation of the pans at Heuningkrans demonstrated that the exposed calcrete floors have very little, or no, evidence for prehistoric utilization in the form of lithics. Where stone tools do occur the lithic densities are generally <5 tools per square meter. Pans and associated resources would certainly have been used seasonally, in particular when the deflated areas filled with water. Harvesting of geophytes, and in particular the bulbs of Liliaceae that flourish around pans, would also form an important component of the seasonal movement of hunting and gathering groups across the landscape.

4.2 Heritage sites identified during the Phase 1 AIA **MAP REFERENCE 1:50 000 2822BB MAMAGODI**

SITE 2822BB_HKZ_1
28°12'48.6"S; 22°52'48.5"E
Heuningkrans 364 farmstead

The farmstead and outbuildings comprise a number of buildings. These include the main dwelling, an older house, a laundry, general workroom, shed, a meat processing room, pump rooms and a number of other loose-standing smaller structures. Sensitive areas include the older house, dam, the historical lanes of trees and a domestic midden area (see Map 2 for sensitive features).

The old house is a typical farmhouse with a number of historical additions and structural changes to the core building. The most recent renovations date to the 1960s to 1970s when a face brick outer skin was added to the perimeter of the building. The original building comprised an elementary structure with lean-to verandas. These were subsequently enclosed to form stoepkamers. In its

current form the dwelling consists of a central saddle/saddle roof (Fisher 1992) with a lean-to on each side (Fig. 1).



Figure 1 Older house at Heuningkrans

On the inside of the large space that has been converted to a garage some of the original bricks have been exposed. The brick coursing is typical English stretcher bond (Fisher 1992), indicating that the building was probably constructed prior to the availability of brick force (Fig. 2).



Figure 2 Detail of bricks in old house

Towards the west of the house is a small outbuilding that at some stage was probably used as a pump room (Fig. 3).



Figure 3 Outbuilding at Heuningkrans

Although the house has been extensively altered the core of the structure is older than 60 years (cf. NHRA Act No. 25 of 1999, Section 36 (6) and requires a Phase 2 assessment if the structure is to be demolished.

In close proximity to this building is an example of hand-operated diamond equipment with the words “Heuningkrans Special” painted on the side of the grease pan (Fig. 4).



Figure 4 Machine used in diamond-mining activities.

This piece of equipment reflects the former small diamond workings commonly undertaken

throughout the region and it is worth conserving.

The relative position of the main house in the context of the historical tree lanes, a historical water well, and also a dressed-stone reservoir, suggest that the main dwelling is built on top of or around another historical structure. The extensive renovations and re-building of this house with yellow travertine bricks has resulted in no visible evidence of a former structure. This particular structure dates to the 1960/1970s onwards. The substantial trunk of the grape vine of a pergola structure to the back of the house suggests that it probably relates to an earlier phase.

The house is not deemed significant and does not require mitigation as no historical features have been preserved. It is also not an example of a regionally-important structure. The mining company is moreover investigating the viability of using the farmhouse at Heuningkrans for office space.

To the back of the main house and near the dam is a hand-dug well approximately 10 to 15 m deep. The structure probable dates to pre-1930, after which such wells were frequently replaced with boreholes. The well has been closed up and substituted with a windmill. In close proximity to this feature is a 40 foot-square x 4 foot high dressed-stone dam with pointed mortar joints. The walls have been raised to change it into a swimming pool, with stairs giving access to and descending into the water. These square hand-dressed dams/reservoirs that occur all over the Northern Cape are characteristic of the region (Küsel & Küsel 2011; Miller 2011; Van der Ryst & Küsel 2011).

Better examples exist elsewhere and because this particular dam has been extensively altered no mitigation is required. However, a destruction permit is required from SAHRA if the feature will be demolished as the main part is older than 60 years.

There are several lanes with large trees, respectively of syringa (*Melia azedarach*), blue gum (*Eucalyptus* spp.), cypress (*Wideringtonia* spp) and karee (*Sercea lancea*). With the exception of the blue gum lane the others currently run in random directions without clear indications of former function. The blue gum lane demarcates one side of a former household garden. This general area also contains some widely-dispersed domestic midden material. Note that this area is potentially earmarked for the location of a core shed.

Various other modern structures comprise farm sheds, animal pens, aviaries, a dam and others. The current extent of the Heuningkrans farmstead and outbuildings suggests a relative prosperous and

well-maintained property compared to Langverwacht. This is also reflected by the contents of the midden.

Only a modern graveyard has been recorded at Heuningkrans during the survey. It is inferred that older graves or a formal graveyard should have been present but an intensive search yielded nothing.

Should the core shed be erected within the garden area that is bordered by the blue gum lane, a contained Phase 2 assessment of the midden is recommended. In the event of a Phase 2 assessment of this midden, the collection of a control sample at the workers' midden is recommended.

The tree lanes are older than 60 years and also require that a destruction permit should be obtained in the event that these are impacted on by future development.

Housing for labourers is located around two hundred meters northeast of the Heuningkrans farmstead. These were evidently relatively recent occupied. There are also midden materials over a large area with modern and historical glass and other refuse (Fig. 5).

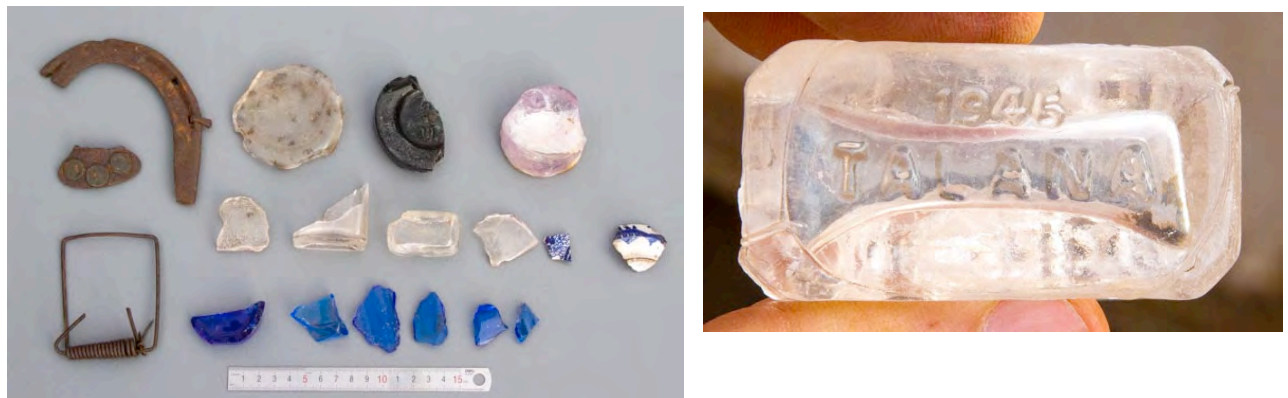


Figure 5 Examples of material from middens. Note date of 1945 on the Talana bottle.



Figure 6 Examples of lithics around homestead.

Within the broader area around the homestead a background noise of lithics typical of the Northern Cape region has been recorded. No mitigation is recommended for these areas (Fig. 6).

SITE 2822BB_HKZ_2

28°12'35.2"S; 22°54'14.8"E

Heuningkrans in particular have numerous outcrops and sheets of BIFs of the Transvaal Supergroup in the Griqualand West Basin, underlying the Makganyene Formation that forms the base of the Postmasburg Group (Polteau et al 2006). 2822BB_HKZ_2 is situated at a contact zone between the red Kalahari sands and the BIFs on the foot slope of a low koppie. This served as a procurement area for good sources of banded ironstone. Consistent with previous findings within the region the area between the sand and the BIFs usually contains higher densities of lithics. In this specific instance densities vary from <10 pieces per square meter to between 15/25 lithics per square meter. Although this raw material is distributed over a large area, the relative density of lithics is low compared to other localities known for the large-scale utilization of banded ironstone, such as Kathu Townlands and Bestwood (Beaumont 1990, 2004; Chazan et al 2012; Wilkins & Chazan 2012).

The entire koppie is dominated by dense stands of *Acacia mellifera* that substantially impact on accessibility and archaeological visibility. The site is approximately 100 m across. At this locality the BIFs have been used over time to manufacture stone tools. Large Cutting Tools (LCT's) of the ESA, such as a small handaxe, were recorded. However, the bulk of the lithics consists of MSA triangular flakes, several other classes of flaked pieces that include large sidestruck flakes and blades. Several cores were noted. Formal stone tools comprise points with secondary retouch, scrapers and awls while some blades exhibit utilization (Fig. 7). Further away to the eastern section of the denser lithic distribution are areas with good quality material as evidenced by worked stone and discards of the

manufacturing process (Fig. 8).



Figure 7 HKZ_2. Examples of lithics on BIFs.



Figure 8 Assessing lithic densities at HKZ_2.

As early as 1872 GW Stow commented on the BIFs, jaspillite and asbestos formations as follows: *'Beyond the Plateau at Griquatown, a long parallel range of jaspideous rocks comes out from beneath the Campbell Plateau, presenting a wonderful group of yellow, brown, chocolate, and red jaspers, with magnetic and other ironstone, and beautiful seams of blue and yellow crocidolite'* (notes of the Geological Society 1873:314 on Stow's 1872 *Geological notes on Griqualand West*).

Several other localities on Heuningkrans, numbered in the chronological order that follows from our investigation, exhibit vast deposits of BIFs used to produce Stone Age lithics and are discussed in the following section.

SITE 2822BB_HKZ_3

28°13'36.5"S; 22°54'46.2"E

This site is very close to the crest of Van Drutenkop near the survey beacon where an extensive area of banded ironstone was recorded. The majority of the formal tools recorded are MSA points, blades and typical prepared cores (Fig. 9). In addition there is clearly an ESA element as evidenced by some examples of LCT's (Fig. 9).



Figure 9 HKZ_3. ESA (left) and MSA lithics.

SITE 2822BB_HKZ_4

28°12'51.1"S; 22°54'40.9"E

Heuningkrans 364

This site is associated with a small drainage line on the side of van Drutenkop.

SITE 2822BB_HKZ_5

28°12'45.0"S; 22°54'15.2"E

At this particular outcrop BIFs daylight *in situ*. It contains high-grade chunks and blocks at a possible metamorphic contact zone. Flakes and stone tool debris are scattered over a large area.

Should any of these be impacted on by the proposed mine development it is recommended that a surface collection/sample of stone tools is made. Localities within BIFs with evidence of stonetool production are assigned a high archaeological value. It is recommended that a collection of the MSA lithics is made by an accredited Stone Age archaeologist in order to analyze and document a representative sample to gain more insight on open-air MSA sites (and on the more ephemeral ESA occupation) of the Postmasburg region in view of the importance and significance of the MSA of the Northern Cape and in particular around Kathu.

SITES 2822BB_HKZ6-HKZ11

Heuningkrans 364

We recorded several sites that cluster within a small valley close to the southern boundary of the farm Heuningkrans. The toponym Heuningkrans prompted our investigation of this valley with a range of low cliffs. Powicke (1954: 311-313) said of place-name study that it 'uses, enriches and tests the discoveries of archaeology and history'. This landscape feature consists of a relatively deep incision into the BIFs of the hill and is associated with a small drainage line (Fig. 11). Four adjacent rock shelters were recorded on the mid-slope. The shelters face north-east and north-west (Fig. 10).



Figure 10 View of LSA shelters from below.



Figure 11 View of valley from the shelter sites.

SITE 2822BB_HKZ_6

28°13'31.1"S; 22°54'31.8"E

The first shelter exhibits an ephemeral LSA deposit, with some fragments of Ostrich Eggshell (OES). The deposit is relatively shallow but significant nonetheless (Fig. 12).



Figure 12 Shelter HKZ_6.



Surface cultural material.

SITE 2822BB_HKZ_7

28°13'29.8"S; 22°54'33.1"E

From an inspection of the surface deposit it seems that the second shelter contains a larger complement of LSA lithics, including cores, which suggests some *in situ* manufacture of lithics, and again OES fragments (Fig. 13). The presence of ochre and minor quantities of specularite also suggests possible utilization/extraction activities at this locality. There is also a shallow tunnel (Fig. 13).



Figure 13 Shelter HKZ_7 Tunnel likely associated with the extraction of specularite. Surface lithics.

SITE 2822BB_HKZ_8

28°13'29.3"S; 22°54'33.6"E

The third shelter contains a whet-stone, at least two undecorated ceramic fragments (one with a lip), OES fragments and microliths (Fig. 14).



Figure 14 HKZ_8

SITE 2822BB_HKZ_9

28°13'30"S; 22°54'28.5"E

The fourth shelter was considered to contain the most significant deposit. Cultural material includes LSA bladelets and other tool types, a specularite crushing stone and OES fragments. The archaeological deposit is contained with limited erosion/migration from water, animal activities or any other disturbance (Fig. 15).



Figure 15 HKZ_9.

Surface lithics.

Core.

SITE 2822BB_HKZ_10

28°13'23.8"S; 22°54'39.9"E

Two small shelter hollows, in both cases the entrances have been blocked off with large rocks, were recorded (Fig. 16).



Figure 16 HKZ_10. One of the blocked-up hollows.

SITE 2822BB_HKZ_11

28°13'24.7"S; 22°54'36.1"E

The small overhang contains a number of hollows, some of which harbour bee colonies. These are significant in the context of the farm name referring to Heuningkrans.

The entire valley holds significance on account of the scale and importance of water resources in close proximity to shelters that have been occupied during the LSA. From several rock cisterns it is evident that the small valley holds water following wet spells. After rains the small stream in the

valley bed also carries water. Within the context of this arid landscape all localities that contain water resources, shelters and good toolstone, are rare and would be significant in the worldview of the former inhabitants.

This is a contained valley and cultural landscape that exhibit all the elements and resources required by a hunter-gatherer lifestyle. The valley is accordingly regarded as the most significant heritage feature at Heuningkrans. Should any mining, and specifically blasting activities, take place within a range of 5 km from the valley a Phase 2 mitigation is recommended to record the shelters at Heuningkrans in more detail with a focus on a contained excavation at **SITE 2822BB_HKZ_9**.

This is recommended in view of the exponential mining activities and infrastructural development in the region that result in the destruction of significant archaeological resources. In addition, a lack of scientific data on small shelter sites within the study area and on settlement patterns of LSA hunting and gathering groups within the broader cultural landscape need to be addressed.

SITE 2822BB_HKZ_12

28°13'10.8"S; 22°53.23.8"E

This locality contains an extensive floor of quartz pebbles and jaspillite that were utilized to manufacture mainly LSA microliths (Fig. 17). No specific high-density concentrations of microliths could be located and the locality is therefore of medium significance.



Figure 17 HKZ_12. Quartz pebbles with LSA microliths.

SITE 2822BB_HKZ_13

28°11'54.2"S; 22°52'19.0"E

Within this area the toolstone and knapped lithics are markedly larger, most likely because of the availability of large chunks of jaspillite and other types of raw material. The toolstone in a layer approximately 200 mm below the sand cover and is mostly exposed in areas where roads have been

scraped or where minor erosion gulleys occur. No specific high-density concentrations of stone tools were evident. The locality (Fig. 18) is therefore of low to medium significance.



Figure 18 View of locality HKZ_13

SITE 2822BB_HKZ_14

28°11'25.1"S; 22°52'9.4"E

The lithics and toolstone occur over an extensive area where there is clearly knapping activities as evidenced by cores and hammer stones. No specific high-density concentrations of lithics could be located (Fig. 19) and the locality is therefore of low to medium significance.



Figure 19 HKZ_14 with close-up of low-density lithics

SITE 2822BB_HKZ_15

28°11'3.2"S; 22°52'1.3"E

In the area surrounding HKZ_5 exposed pebble floors exhibit lithics with low densities. Please refer to Figure 20 below illustrating the low densities of knapped material, namely usually <5 per square meter.



Figure 20 HKZ_16. Low density of <5 lithics per square meter.

SITE 2822BB_LVW_1

28°11'2.6"S; 22°55'23.4"E

This locality at Langverwacht is of high significance (Fig. 21). The area where knapped lithics occur is approximately 35 x 20 meters in extent. Most of the lithics are MSA tools on quartzite, of which good sources within the study area seem to be relatively limited (Fig. 21). The prehistoric hunting and gathering groups were clearly masters at exploiting ecotone variation in the landscape. What is of particular interest is the presence of several small handaxes/proto-points of less than 100 mm (Fig. 22). This may reflect the transition between the LCT's of the ESA and the characteristic lithics of the MSA (Herries 2011). The archaeological site extends north and south of the railway line. The most significant part of the site was accessed from Heuningkrans as there are no physical barriers between the two farms at this end. The northern portion was only accessible from Langverwacht by fieldwalking from the R385 (see Map 1).



Figure 21 LVW_1.

Examples of MSA and transitional ESA/MSA tool types.

Cores



Figure 22 Small handaxe/proto-points on quartzite.

This locality is also a good source of red, yellow, green and brown jaspillite. The presence of cortex on several of the flakes and other tool types suggest primary production and therefore *in situ* manufacturing during the LSA (Fig. 23).



Figure 23 LSA lithics on jaspillite.

The pan northwest of the site was extensively fieldwalked but only a couple of isolated stone tools were found.

Locality LVW_1 at Langverwacht is of high significance. This is the only area where handaxes, the characteristic tool type of the ESA and transitional industries between the ESA and MSA have been recorded. A Phase 2 sampling should be undertaken if this section is impacted by future mining and infrastructural development.

SITE 2822BB_LVW_2

28°11'10.7"S; 22°55'33.3"E

This is clearly a procurement area for good sources of BIF's. No specific concentrations were recorded and no mitigation is recommended.

SITE 2822BB_LVW_3

28°12'9.4"S; 22°55'15.7"E

At this locality there are remains of a historic structure as evidenced by building rubble and glass. This feature is not identifiable and is of no significance.

At some distance from this feature is a wall built of old car doors, evidently placed to form an impoundment within the drainage line (Fig. 24). At least three other similar car door structures occur at several other points along the same drainage line. No mitigation is recommended.



Figure 23 Wall in drainage line constructed of old car doors.

SITE 2822BB_LVW_4

28°13'24.7"S; 22°54'36.1"E

WINDMILL AND DAM WITH REMAINS OF GARDEN AND MODERN ANIMAL PENS

An outbuilding near the dam has been constructed of unfired bricks. These have been placed in old English bond. The building has a stable door and single shutter window with a mortice lock. The building is older than 60 years and a destruction permit will have to be obtained if it should be demolished. A nearby very large grape vine suggests that this locality has been in use for an extensive period of time.



Figure 24 LVW_4 Windmill, dam and outbuilding.

Structure LVW_4 at Langverwacht is older than 60 years and will require obtaining a destruction permit if it is targeted for demolition.

SITE 2822BB_LVW_5

28°9'59.0"S; 22°57'32.31"E

WINDMILL, DAM, REMAINS OF GARDEN AT LANGVERWACHT

The rectangular dam of approximately 30 x 40 feet has walls of .8 m thick built up to about 1 m with local stone. The dimensions of the formal prickly pear (*Opuntia* spp.) plantings, pomegranates and fig trees suggest that the garden and dam have been in use for some time. At this dam and at the farmstead the remains of grape vines and several types of fruits trees demonstrate the characteristic lifestyle of farmers in rural areas who were self-reliant in producing most of their own produce. The dam lies on the outer perimeter of the farmstead (Fig. 26). The dam and the remains of the garden represent a good example of an early subsistence garden and associated infrastructure. The elevation of this feature above the farmstead may suggest the use of a gravity-fed water system.

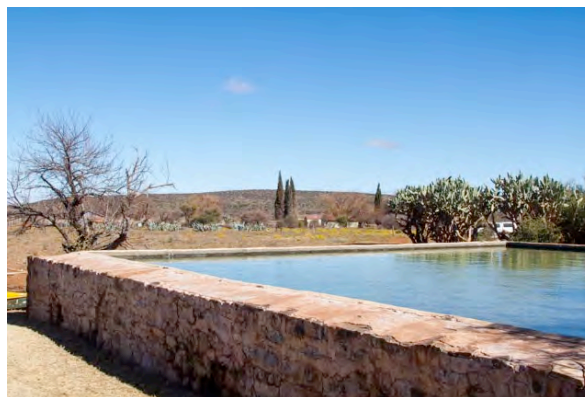


Figure 25 LVW_5. Dam with garden

The dam at LVW_5 at Langverwacht is older than 60 years and a destruction permit will have to be obtained if it is targeted for demolition.

SITE 2822BB_LVW_6

28°9'58.5"S; 22°57'24.73"E

LANGVERWACHT HOMESTEAD

The facade and front garden of the Langverwacht homestead exhibit the characteristics of a typical late 1950s to early 1960s relatively modern structure. The garden is laid out with brick-built formal walkways and flower beds. The front facade and veranda are symmetrical mirrored around the front door, and mirrored in the placement of the chimneys. The roof is a combination of a hipped corrugated sheet roof with the veranda forming a typical leanto (Fisher 1992). This 1960s facade is clearly a retrofit on a much older structure. This is further supported by the presence of slash window weights found in the extensive midden towards the back of the house. The doors of the house were locked and the house could accordingly not be inspected in detail. The farmhouse at Langverwacht will soon be occupied by tenants (personal communication, Louis and Antoinette Claassens, former owners). The farmyard also includes a number of other structures including several outbuildings and a hand-dug well. Animal bioturbation in the household midden has exposed some of the underlying older layers as evidenced by bottle types and ceramics (Fig. 27).



Figure 26 LVW_6. Homestead and midden.

The homestead LVW_6 at Langverwacht is older than 60 years and if targeted for demolition will require a destruction permit.

In the proximity of the farmstead the remains of several structures and associated farm infrastructure were recorded. These structures are mostly overgrown and partially demolished, with a resultant low visibility.

SITE 2822BB_LVW_7a

28°9'41.3"S; 22°57'15.2"E

DIP, HOLDING PEN AND WELL

It comprises a typical stone-built sheep dip with a holding pen. There is also a well across the road.



Figure 27 LVW_7a Sheep dip with detail of stone and plaster.

SITE 2822BB_ LVW_7b
28°9'43.7"S; 22°57'16.0"E
UNIDENTIFIABLE STRUCTURE

LVW_7a and LVW_7b are older than 60 years and will require a destruction permit if targeted for demolition. LVW_7b is deemed insignificant in view of the state of preservation.

SITE 2822BB_ LVW_8a
28°9'48.5"S; 22°57'9.07"E
LABOURER COTTAGE
and
SITE 2822BB_ LVW_8b
28°9'51.6"S; 22°57'8.9"E
LABOURER COTTAGE

These are relatively modern structures built in the regional style. There are also associated middens.
No mitigation is required.

SITE 2822BB_ LVW_9a
28°9'55.2"S; 22°57'7.5"E
REMAINS OF STRUCTURE
and
SITE 2822BB_ LVW_9b
28°9'56.7"S; 22°57'7.1"E
REMAINS OF STRUCTURE
and
SITE 2822BB_ LVW_9c
28°9'57.4"S; 22°57'3.6"E
REMAINS OF KRAAL

LVW_9a and 9b presumably represent earlier outbuildings or labourer cottages but limited remains are visible. Structure LVW_9c consists of large shaped rectangular blocks of stone. Most of the original structure has been robbed. No mitigation is required in view of the poor state of preservation.

These features at LVW_9a-9c are deemed insignificant in view of the state of preservation but are older than 60 years and will require a destruction permit if targeted for demolition.

SITE 2822BB_LVW_10

28°9'55.2"S; 22°57'7.5"E

RECTANGULAR DAM AND ASSOCIATED INFRASTRUCTURE

The dam was subsequently converted to a kraal.

LVW_10 is deemed insignificant in view of the state of preservation but is older than 60 years and will require a destruction permit if targeted for demolition.

4.3 Recommendations

The Phase 1 has identified areas of sensitivity. While development may proceed as planned, the following recommendations must be considered:

- The small valley at Heuningkrans situated above a stream bed contains four shelters with Later Stone Age deposits. This is a contained valley and cultural landscape that exhibit all the resources required by a hunter-gatherer lifestyle. The entire valley holds significance on account of the scale and importance of water resources in close proximity to the shelter sites. Several rock cisterns (erosional hollows) hold water for extended periods following wet spells. Within the context of this arid landscape localities that contain water resources, shelters and good toolstone, are rare.

The valley is accordingly regarded as the most significant heritage feature recorded during the heritage survey. Should any mining and specifically blasting activities take place within a range of 5 km from the valley a Phase 2 mitigation is recommended where the shelters at Heuningkrans should be recorded in more detail with a focus on a contained excavation at SITE 2822BB_HKZ_09.

- Localities within Banded Ironstone Formations (BIFs) with evidence of stone tool production have been assigned a high archaeological value. It is recommended that a collection of the

MSA lithics is made by an accredited Stone Age archaeologist in order to analyze and document a representative sample to gain more insight on open-air MSA sites, and on the more ephemeral ESA occupation, of the Postmasburg region in view of the importance and significance of the MSA of the Northern Cape and in particular around Kathu.

- The core of the oldest house at Heuningkrans is older than 60 years (cf. NHRA Act No. 25 of 1999, Section 36 (6)) and requires a Phase 2 assessment if the structure is to be demolished.
- Should the proposed core shed be erected at Heuningkrans within the garden area that is bordered by the blue gum lane, a contained Phase 2 assessment of the midden is recommended. In the event that a Phase 2 of the midden is undertaken we propose that sampling should include the collection of a control sample from the midden at the workers' houses.
- The various tree lanes are older than 60 years and also require that a destruction permit should be obtained in the event that these are impacted on by future development.
- No mitigation is required for the stone-built dam at Heuningkrans. However, a destruction permit is required from SAHRA if the feature will be demolished as the main part is older than 60 years.
- Locality LVW_1 at Langverwacht is of high significance. This is the only area where handaxes, (the characteristic tool type of the ESA), and in this instance smaller handaxes that characterize transitional industries between the ESA and MSA, have been recorded. A Phase 2 sampling should be undertaken if this section is impacted by future mining and infrastructural development.
- The outbuilding at the dam and garden at LVW_4 at Langverwacht is older than 60 years and will require a destruction permit if the structure is targeted for demolition.
- The rectangular dam at LVW_5 at Langverwacht is older than 60 years and will require a destruction permit if it is targeted for demolition.

- The homestead LVW_6 at Langverwacht is older than 60 years and will require a destruction permit if it is targeted for demolition.
- The farm-related structures at LVW_7a and 7b are deemed insignificant in view of the state of preservation but are older than 60 years and will require a destruction permit if targeted for demolition.
- The remains of built features at LVW_9a-9c are deemed insignificant in view of the state of preservation but are older than 60 years and will require a destruction permit if targeted for demolition.
- LVW_10 is deemed insignificant in view of the state of preservation but being older than 60 years will require a destruction permit if targeted for demolition.
- In the event that future construction activities reveal any buried sites or skeletal material, development activities should be halted and SAHRA or a university or museum notified in order for an investigation and assessment of the find(s) to take place (cf. National Heritage Resources Act (NHRA) Act No. 25 of 1999, Section 36(6)).

5 The archaeological contexts of the study area around Postmasburg with reference to published sources and Phase 1 AIAs and EIAs that relate to the study area

5.1 Stone Age

Stone Age hunting and gathering groups traversed and utilized the resources of the area currently known as Griqualand for millions of years. Occupation of the interior during the historic past has been well-documented by travellers, missionaries and researchers (Dunn 1931; Campbell 1815, 1822; Burchell 1967; Arbousset & Daumas 1968; Humphreys 1975; Humphreys & Thackeray 1983; Henderson 2000; Webley 2010).

Archaeological remains within this generally arid region are commonly found near water sources (see also Morris 2005, 2012; PGS 2010, 2012a; Kiberd 2006; Webley 2010; Van der Ryst & Küsel 2011). Sensitive areas where heritage resources may be present would be in these environments,

around low koppies and, importantly, also at outcrops of raw stone materials suitable for the production of stone tools. ESA, MSA and LSA lithics are commonly found in calcrete deposits around pans and springs (Webley 2010; Webley et al 2010; Webley & Halkett 2010).

Morris (2001) in a survey of the farm Morokwa west of the Postmasburg-Kathu road, (27°59'48"S; 23°02'36"E) found no archaeological remains. In a survey at Idwala mine (Morris 2009) only isolated flakes were recorded. Webley and Halkett (2010) in a survey of Bleskop Hill on the farm Doornpan 445 between Olifantshoek and Postmasburg, found only one ESA core and a single MSA flake. Whereas specularite breccias were abundant there was no evidence of prehistoric mining (Webley & Halkett 2010).

In a survey conducted at Humansrus (Farm 469), where a northern portion of the farm borders on the Postmasburg/Lime Acres R385 road, Webley (2010) recorded farmsteads, cemeteries and ephemeral traces of lithics that consisted of ESA and MSA tool scatters. PGS (2011) likewise conducted an EIA at the Humansrus locality. They recommended sampling of Stone Age lithics with a dense concentration and the fencing of cemeteries (PGS 2011:23-34). Beaumont (2011) in a survey of the 6404 ha farm Lomoteng 669 about 30 km north of Postmasburg established very low densities of lithics.

Envass Environmental (2011) in an HIA at the farms Skeyfontein near the Skeifontein Villiage, Postmasburg, recorded several stone-built structures. Most of these are associated with farming and farmsteads. It was also recommended that a site of high significance should be protected by a 40 m buffer zone on account of the size of the settlement, various types of built environment features and the presence of a possible grave site.

Following on heritage investigations (De Jongh 2010), surface sampling made on the farm Paling 434 Hay Magisterial District, near Postmasburg during a Phase 2 (Pelser & van Vollenhoven 2010; Pelser 2012, 2012/2013) delivered mainly LSA lithics, less representation of MSA and an ephemeral ESA. Excavations at a historical site at Paling also yielded some LSA lithics (Pelser 2012/2013).

PGS (2012a) during a recent HIA near Lime Acres conducted prior to the proposed construction of 132kv power line and switchyard associated with the Redstone Solar Thermal Energy Plant in the Northern Cape Province, recorded a number of heritage resources. These include 17 heritage-related sites, eight Stone Age archaeological find spots, and various other historical sites that include

formal cemeteries, possible grave sites and other historical sites. At Arriesfontein PGS (2012b) recorded three heritage sites of historical significance that do not require mitigation as they fall outside the footprint of the proposed development. PGS (2013a) in a Heritage Scoping of the remainder of the farm Driehoekspan 435 and Portion 1 of the farm Doringpan 445, north of Postmasburg, provide an overview of the history and archaeological heritage of the immediate region. PGS (2013b) in a survey of the Hotazel and Blackrock area recorded 13 MSA as well as some LSA lithic sites. Mitigation was recommended if the sites were to be impacted by the proposed development.

Beaumont (2013) found no heritage sites during his investigation of Middelploas 140 at about 45 km ENE of Daniëlskuil.

5.2 Rock Art

Rock art in the form of paintings, but in particularly the many and diverse categories of engravings of the Northern Cape, is extensive and well-documented (Morris 2012). There are several engraving sites close to the study area near Daniëlskuil and Lime Acres at Beestehoek, Daniëlskuil Townlands, Ouplaas, Boplaas, Klipvlei and Carter Block (Wilman 1933; Collins 1973; Morris 1988, 2001, 2002, 2007, 2008, 2009, 2012; Morris & Beaumont 1994; Beaumont 1998; McGregor Museum records) and undocumented at various other localities within the region (Webley 2010).

Morris (2001) commented on the presence of rock engravings within the general area around Postmasburg. In a survey for Idwala mine near Daniëlskuil, Morris (2009) references engravings that are now covered by a mine dump at about 28°12'38" S 23°31'40"E. According to Morris (2009: no page numbers) these were of historic images from the 19th century that 'seemingly depicted farmers, perhaps Griqua, wearing broad-brimmed hats (Morris & Beaumont 1994)'. He also points out that similar imagery has been recorded north of Daniëlskuil (Morris 2009).

5.3 Prehistoric and historic mining of the specularite sources

During the current survey we also visited Tsantsabane that lies about 5km north-east of the town of Postmasburg. The other major source of specularite is Doornfontein 446, approximately 7 km north-west of Postmasburg (Beaumont & Boshier 1974).

The well-known specularite mines of Tsantsabane/Blinkklipkop/Gatkoppies and Doornfontein 1 (Dunn 1931; Campbell 1822:Vol II; Burchell 1967; Arbousset & Dumas 1968) near Postmasburg that

were quarried extensively over a long period of time have been archaeologically investigated (Beaumont & Boshier 1974; Beaumont & Thackeray 1981; Thackeray et al 1983; Beaumont & Morris 1990; Mitchell 2002). The Tsantsabane mine constitutes the most important prehistoric specularite mines in southern Africa. This locality was visited by a number of well-known travellers and missionaries, including John Campbell (1815).

Dunn (1931:110) was told that 'it was from here that the Bushmen and other natives for hundreds of miles obtained their supplies of specular iron ore, which becomes red when burnt'. The pigment was bartered and exchanged for goods such as iron knives, assegais, axes, tobacco, copper and iron and copper ornaments and beads (Campbell 1822:Vol II; Burchell 1967; Arbousset & Daumas 1968). Investigations at Blinkklipkop established a date of AD 800 for the utilization of this particular rich source (Thackeray et al 1983; Beaumont & Morris 1990).

The mainly late Holocene lithic sequences at the mining localities are characterised by informal tool types with low frequencies of formal tools. Some of these were most likely to have been used in the mining and processing of the pigments. Pottery and items of European origin have also been recovered (Morris 1990: 67-70). Whereas Tsantsabane was briefly occupied by the German deserter, Jan Bloem, it was only settled after 1820 by the Griqua (Legassick 2010:67, 89).

The Tsantsabane mine has been declared a National Monument (Declaration No. 562 of 21 February 1992; SAHRIS 2013). Radiocarbon dates obtained demonstrate mining activities over millennia and up to the historic period. Mining was undertaken by hunting and gathering groups, pastoralists and Tswana farming communities (Thackeray et al 1983). There is currently renewed research interest in this locality that include investigating and analyses of ore bodies (Kiehn 2004; SAHRIS 2013).

5.4 Settlement by African farmers

It was only during the second millennium at around AD 1600 that African communities settled the region, and these were mainly Tswana groups (Breutz 1963; Humphreys & Thackeray 1983; Legassick 2010; Webley 2010.) Writings by travellers and missionaries that visited Tswana groups at Dithakong and Kuruman provide valuable data on these groups (e.g. Campbell 1822:Vol II; Burchell 1967; Arbousset & Daumas 1968). Deteriorating relationships with the Griqua in the late 1700s, who had access to firearms, contributed to the gradual displacement of Thlaping and Thlaro groups from the area (PGS 2013a). Webley (2010:9) references Mitchell (2002) in writing 'that drier conditions and Korana expansion pushed them back to Kuruman and Taung before 1800'. There is some evidence

for Thlaping and Thlaro settlement in the 1880s around Postmasburg (and in particular at Groenwater and Humansrus) (Webley 2010; PGS 2011).

5.5 The Griqua

Intermingling and integration between the pastoralist Khoekhoen, hunting and gathering groups, white colonists and renegades, and also African farmers resulted in the formation of groups of mixed descent (Erasmus 2010). This was an unstable and complex period in the history of Griqualand West where the various role players competed to rule and to acquire land (Arnot & Orpen 1875). Within the Griqua communities internal strife was exacerbated by the role of missionary endeavours from various denominations. There was constant fission and movement within the region with various factions establishing new settlements where they lived in semi-autonomy away from their former capitals (Legassick 2010:105-106). Wealthy Bastards, and in particular members of the Kok and Berend families, played a major role in the emergence of the nascent state formation (Legassick 2010:89). Daniëlskuil, in the immediate vicinity of the study area, was an important settlement. Berend Berends, as a chief of some Griqua, also moved to this locality with a miscellaneous group of followers that included Griqua, San, Tswana, Nama and others (Legassick 2010). The Griqua, confusingly often referred to as the Korana, were composed of various subgroups. According to Leśniewski (2010:23) '[t]he name Korana was then a 'collective term' for various groups of different origin'.



Figure 28 A sketch of a group of travellers constituted of different groups titled 'Afrikander trek boer nomads - possibly Griqua. Cape Colony 1800s'. Source: Cape Colony Archives Depot

5.6 Historical: the built environment

Griqualand West was first surveyed in 1872 (Stow & Orpen 1872). A recent heritage survey of 20 farms established that most of these properties were surveyed relatively late, that is from 1904 to 1911 (Webley et al 2010; PGS 2013a). Many of the farms have been farmed over several generations by descendants of families who early settled in this region. Old routes followed by wagons are still in evidence around Humansras/Groenwater (PGS 2011).

However, the escalating mining activities have resulted in the sale of many of the farms and the abandonment or destruction of farmsteads.

6 A review of the archaeological context of the Northern Cape

The Northern Cape is an arid region with limited sources of surface water (Mitchell 2002). It is therefore not surprising that the remains of archaeological events occur mostly in the vicinity of water and good sources of lithics that have been used to produce stone tools. Palaeo- and current river systems, springs and pans and dominant geographical landscape features such as hills or shelters featured as important locales within any landscape. The Northern Cape contains very numerous small shallow pans, also known as dolines, of 100 to 200 m in diameter, and also larger pans. Areas around and in pans tend to display higher densities of lithics (van der Ryst & Küsel 2011, 2012). The region is particularly known for the very numerous archaeological remains of prehistoric hunting and gathering groups that utilized these resources over millennia. A remarkably large number of archaeological sites have been recorded, researched and published through archaeological impact and heritage assessments in this region.

Archaeological traces are mostly in the form of mostly stone tools and these suggest a widespread presence for tool-producing Plio-Pleistocene hominins¹ in southern Africa. This important part of the prehistory of southern Africa, known as the Stone Age, is chronologically divided into the ESA, MSA and LSA. The ESA is characterized by the use of large stone cutting tools (LCT's), in particular handaxes, but also cleavers and tool types such as scrapers. Following on the ESA the MSA typologies represent greater specialization in the production of stone tools, in particular flake, blade and scraper tools and also in a more extended range of specialized, formal tools. Regional lithic style, evidence for symbolic signalling, polished bone tools, portable art and decorative items are apparent

¹ The term "hominin" instead of the customary term "hominid", acknowledge that African apes, including human ancestors, are closer to each other phylogenetically than any of them are to orang-utans (Mitchell 2002). The term hominid includes all the higher primates (chimps, gorillas, orang-utans, ancestral human types and ourselves), while hominin refers to those genera which evolved **after** the split with the chimps.

during the MSA. During the LSA small (microlithic) tools, bone tools and weapon armatures and a range of decorative items as well as rock art were produced. Ceramics were used and/or produced by hunters and Khoekhoe herders towards the terminal phases of the LSA over a period of around 2000 years.

The southern African Stone Age sequence can be divided into the following periods:

Period	Approximate dates
Earlier Stone Age (ESA)	more than 2 million years ago - 250 000/200 000 years ago
Middle Stone Age (MSA)	200 000/250 000 years ago – 20 000 years ago to around the Last Glacial Maximum (LGM) in some regions
Later Stone Age (LSA) (Includes Rock Art) Hunter-gatherer and herder groups	>20 000 – 200 years ago and up to historic times in certain areas

In addition to the conventional Stone Age division (Deacon 1984a, 1984b) used for southern Africa assemblages, a typological classificatory system of five successive Modes that describe broad patterns in stone tool manufacture is currently applied (Barham & Mitchell 2008:16). This system avoids the association of particular tools with bounded periods of time. Processes of cultural and technological change were probably more gradual and continuous in the past, given that certain tool types are not restricted to a specific period so that developments within the various periods represent continuous processes of change. Any one assemblage can accordingly contain artefacts of various Modes. An extensive suite of radiometric dates as well as lithostratigraphic, faunal and palaeoenvironmental data that are now available support premises for considerable variation in the beginning and end dates of the various Stone Age industries of southern Africa (Mitchell 2002; Hardaker 2011).

Earlier (ESA) and Middle Stone Age (MSA) lithics occur over most of the surface area with a more recent presence of Later Stone Age (LSA) occupations (Beaumont et al 1995). Whereas Parsons (2003, 2004, 2007, 2008; Lombard & Parsons 2008) used stone artefact assemblages to discern between late-Holocene hunter-gatherer and pastoral herder sites, this distinction is not generally accepted. Hunter-gatherer assemblages termed Swartkop contain grass-tempered ceramics (Beaumont & Vogel 1989) and are dominated by hornfels, but with the use of quartz for the lithics. Blades are said to be integral to the Swartkop, with high frequencies of backed blades (Parsons 2007,

2008). Two earlier pulses of occupation are associated with the Springbokoog Industry. Earlier assemblages have proportionally more blades and fewer potsherds (Beaumont & Vogel 1989). Nearby sites with engravings such as at Jagt Pan and neighbouring engraved localities are often situated close to water sources. The Doornfontein herder sites are marked by ceramics (sometimes with lugs and spouts). Differences in the geographical spread indicate a preference for pastoral Doornfontein sites along rivers while Swartkop sites are usually found further from the river (Fauvelle-Aymar 2004; Orton 2012a). This apparent patterning for hunter-gatherer vs herder localities is substantiated by Beaumont et al (1995:263) who noted that most of the recorded LSA localities in Bushmanland were ephemeral occupations of small groups in the hinterland on both sides of the [Orange] river'. Substantial herder encampments occur along the Orange River floodplain (Morris 2010). Hendrik Jacob Wikar during his travels in 1778 recorded the names of the various herder groups who had settlements on both sides of the river (Mossop 1935).

Stone circles have also been recorded within the Northern Cape area. These features may represent residential structures being the bases of huts or windbreaks, storage structures, stock enclosures or hunting blinds (Kinahan 1991, 1996; Parsons 2004; Jacobson 2005; Veldman 2008; Orton 2012a-c). These low structures are not well studied but research has been undertaken further east along the Orange River (Sampson 1968), in the Seacow Valley in the eastern Karoo (Sampson 1986) at Bloubos northwest of Upington (Parsons 2004) and in Namibia (Veldman 2008). Stone circles have recently also been discovered at De Aar in the central Karoo (Orton 2011). In Namibia stone circles date to the last 800 years (Veldman 2008).

6.1 Wonderwerk Cave

One of the best-known sites in the region is the Wonderwerk Cave in the Kuruman Hills. The cave extends horizontally for 139 m and was formed by an ancient solution cavity in the dolomite formation (Beaumont 2004). Excavations since the 1940s, which became more focussed as from 1976 to 1993, revealed a stratified series of deposits that accumulated up to a depth of about seven metres and are divided into nine Major Units (Beaumont & Vogel 2006). The application of a range of dating methods points to a complex cultural succession. The following cultural stages have been identified at Wonderwerk: an LSA at 1-12.5 kyr (kyr = thousand years ago), the MSA at around ~70 to >220 kyr, the Fauresmith to ~270-500 kyr and an ephemeral Acheulean at >0.78 myr BP (Beaumont & Vogel 2006). An interdisciplinary project initiated in 2004 aims at dating the ESA deposits in particular, using a range of radiometric techniques, and will also focus on analysing the lithic faunal and botanical remains recovered from these strata (Chazan et al 2008). The Wonderwerk deposits

also contain portable stone slabs with anthropogenic markings (Chazan & Horwitz 2010; Jacobson et al 2012; Beaumont & Bednarik 2013).

The lithic succession at Wonderwerk serves as a benchmark for the Stone Age sequence of the Northern Cape. It comprises an uppermost LSA sequence that contains Ceramic LSA, Wilton and Oakhurst (Humphreys & Thackeray 1983). Some of the cave deposit has been removed by guano diggers, which destroyed several important archaeological levels. The MSA levels that were still intact yielded blades and unifacial MSA points. The ESA sequence contains the usual LCT's and includes a transitional Fauresmith assemblage with blades, large scrapers and radially- prepared cores.

The paintings at Wonderwerk are in a poor state of preservation. While the region has some good painted sites, the Northern Cape is particularly known for its wealth of open-air rock engraving sites (Morris 1988, 2002, 2007, 2009, 2012). The landscape settings of the engraved sites include the glaciated andesite pavements at Driekopseiland and also koppies and rock outcroppings surrounded by extensive plains, often in close proximity to pans or springs such as Wildebeest Kuil, Driekopseiland and Rooipoort (Morris 1988, 1990, 2002, 2012) and the remarkable nested geometrics at Rooipoort/Klipfontein where thousands of engravings are clustered around a major spring (Morris 1990; Dowson 1992; Mitchell 2002). Differences in style are attributed to different time periods. Incised finelines are the oldest, while pecked and scraped engravings occur within the last 2000 years (Morris 1988). Scraped engravings occur between Kenhardt, Beaufort West and De Aar (Orton 2012a). The remarkable Springbokoog locality constitutes a significant cultural landscape where three stone circles cluster among the >80 boulders with fineline engravings (Deacon 1986, 1988, 1996). Other major engraved sites in the area are Keurfontein at Vosburg to the east of Springbok Oog (Morris 1990). The testimonies of the /Xam from Bushmanland underlie much of our interpretation of the beliefs and customs of the Bushmen (Bleek & Lloyd 1911).

6.2 Kathu

The Kathu sites contain significant ESA Acheulean and Fauresmith assemblages (Beaumont 1990, 2004; Chazan et al 2012; Wilkins & Chazan 2012). Archaeological and palaeoenvironmental data from Kathu Pan and Kathu Townlands have been used to reconstruct changes over time in the prehistoric environment (Beaumont 2004). Associated faunal remains with some of the ESA Acheulean include *Elephas recki recki*. These animals disappeared at sites in East Africa such as at Olorgesailie, Kenya, at around 600 000/800 000 years ago (Beaumont 2004; McNabb et al 2004). Biostratigraphy or faunal correlation is often used to date the southern African sites and gives some

indication of the approximate age of some of the associated assemblages. The transitional Fauresmith at Kathu Pan has been dated to ca. 500 000 BP (Porat et al 2010). Kathu Pan is formed by a shallow depression with an internal drainage and a high water table. North-east of Kathu newly-found ESA sites with LCT's and an associated range of tools occur in sand quarries and on a hilltop at Uitkoms Farm and the Bestwood locality (Chazan et al 2012). The new residential and commercial developments at Bestwood demonstrate the importance of Phase 2 heritage studies in the Kathu region. A current research project at Kathu Pan 1 established a date of 500 000 years for a Fauresmith blade assemblage where blades were systematically removed from prepared cores (Porat et al 2010; Wilkens & Chazan 2012).

The LCT's from this area often contain very fine handaxes with some superb symmetrical examples produced on banded ironstone in c. 0.8–1.3-Ma-old stratum 4b at Kathu Pan 1 (Beaumont & Bednarik 2013). Lithics in some of the ESA Acheulean deposits, but also in MSA levels, display a shiny silica skin. At Kathu Townlands an outcropping of banded ironstone that covers a large area of around 25 km contains enormous quantities of flaked items. This phenomenon is ascribed to the use of the high-grade bedrock jasper and banded ironstone as sources for raw materials and is supported by the high incidence of handaxe roughouts (Beaumont 2004). The prepared core technique was used to produce the spectacular small handaxes, long blades, convergent flakes/points, scrapers found in Fauresmith collections.

MSA tools were also recovered from the Kathu localities (Beaumont 2004). Surface sites around Kathu exhibit a palimpsest of prehistoric utilization and may contain lithics from all periods in the Stone Age succession.

6.3 Shelter sites

Cave and shelter sites are rare. An early MSA occupation was recorded at Zoovoorbij Cave close to the Orange River near Upington (Kaplan 2012a). Rockshelters along the escarpment mostly contain LSA and herder occupation deposits (Humphreys & Thackeray 1983; Herries et al 2007). The LSA of the Northern Cape is well researched on the Ghaap Escarpment (Humphreys & Thackeray 1983; Herries et al 2007). Small rock shelters with occupations dating to the Holocene occur along the Ghaap Escarpment. A few of these have been excavated including Burchell's Shelter (Humphreys 1975) and Dikbosch I and II (Humphreys & Thackeray 1983). Burchell's Shelter has been occupied during historic times and travellers such as Burchell himself observed some of the Bushmen present within this region (Humphreys 1975:10, 16). Burchell, in describing their dress, wrote that they wore sandals and that their skin karosses were reddened with ochre (Humphreys 1975:16). It is evident

from the archaeological investigations at Burchell's Shelter that small groups occupied this locality. The artefacts and food remains demonstrate that they exploited a wide range of animals and collected plant foods, snakes and lizards, ostrich eggshell eggs and harvested termite eggs.

The shelters of Dikbosch I and the smaller locality of II are located on the edge of the Ghaap Escarpment (Humphreys & Thackeray 1983). To the north of Dikbosch I is a stream bed below a waterfall that would have represented a good water source during prehistoric times. The occupational sequence at the bigger shelter shows a regular use of this locality throughout the major part of the Holocene. The preservation of organic materials is good and the artefactual remains demonstrate a range of hunting and gathering and also probably ritual activities. The excavations at Dikbosch II suggest intermittent and ephemeral occupations (Humphreys & Thackeray 1983:171).

Excavations at two shelters at Limerock on the Ghaap Plateau uncovered deposits with LSA cultural remains that include lithics, numerous decorated ostrich eggshell fragments and other decorative pieces as well as ceramics (Humphreys & Thackeray 1983).

In addition to the well-known Taung localities some important fossiliferous and lithic-bearing breccias have recently been found on the Ghaap Plateau (Herries et al 2007; Johnson et al 1997). A multi-disciplinary project involving Australian, British and South African researchers has been initiated to investigate the palaeoanthropological potential of the Ghaap escarpment (Herries et al 2007; Curnoe 2005).

6.4 The use and mining of pigments

The use of earth pigments, and in particular ochre and specular haematite, is universal (Watts 2002). Pigments and the exceptional pieces of engraved and ground incised pieces of ochre from MSA contexts at sites such as Wonderwerk attest to the time-depth of such practices (Mitchell 2002). Soft red haematite manuports were found in association with an Acheulean ESA assemblage At Kathu Pan I in deposits dated to ~540 ka ago (Porat et al 2010) (Beaumont 1990, 2004; Beaumont & Bednarik 2013). At Wonderwerk, Kathu Pan and Canteen Koppie unmodified specularite and ochre lumps have been found in association with transitional ESA/MSA Fauresmith lithics (Beaumont & Bednarik 2013). Ngwenya Mines, Swaziland are known for the extensive mining of specular haematite by at least 40 000 BP at (Nkambula 2011). Ongoing quarrying of ore bodies often destroy earlier evidence for the utilization of the resource.

The specularite mines at Tsantsabane/Blinkklipkop and Doornfontein 1 near Postmasburg were rich and well-known ore sources that were quarried extensively over a long period of time as discussed

above (Beaumont & Thackeray 1981; Beaumont & Morris 1990; Mitchell 2002; Thackeray et al 1983).

7 References

- Arbousset, T & Daumas, F. 1968. *Narrative of an exploratory tour to the Cape of Good Hope*. Facsimile reprint. Cape Town: Struik.
- Annot, D & Orpen, FHS. 1875. *The land question of Griqualand West: an inquiry into the various claims to land in that territory; together with a brief history of the Griqua nation*. Cape Town: Saul Solomon & Co. (Offloaded from Google).
- Barham, L and Mitchell, P. 2008. *The first Africans. African archaeology from the earliest toolmakers to most recent foragers*. Cambridge: Cambridge University Press.
- Beaumont, PB. 1990. Kathu Pan. In PB Beaumont and D Morris (Eds) *Guide to archaeological sites in the Northern Cape*: 14-16. Kimberley: McGregor Museum.
- Beaumont, P.B. 1998. Report on preliminary fieldwork on the farm Beeshoek 448, Postmasburg district, Northern Cape. Unpublished report, McGregor Museum.
- Beaumont, P. 2004. Kathu Pan and Kathu Townlands/Uitkoms. In PB Beaumont and D Morris (Eds) *Archaeology in the Northern Cape: some key sites*. Kimberley: McGregor Museum, 50-53.
- Beaumont, P. 2011. Baseline archaeological reconnaissance report on the farm Lomoteng 669, north of Postmasburg in the Siyanda District Municipality of the Northern Cape Province.
- Beaumont, P. 2013. Phase 1 Archaeological Impact Assessment Report on a 6.4 ha area on the remaining extent of farm Middelplaas 140, situated ~45 Km ENE of Daniëlskuil, Barkly West Magisterial District, Northern Cape Province.
- Beaumont, PB & Boshier, AK. 1974. *Report on Test Excavations in a Prehistoric Pigment Mine near Postmasburg, Northern Cape*. *The South African Archaeological Bulletin* 29(113/114): 41-59.
- Beaumont, PB & Bednarik, RG. 2013. Tracing the emergence of palaeoart in sub-Saharan Africa. *Rock Art Research* 30(1): 1-22.
- Beaumont, PB & Vogel, JC. 1989. Patterns in the age and context of rock art in the Northern Cape. *South African Archaeological Bulletin* 44(150): 73-81.
- Beaumont, PB & Vogel, JC. 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, PB, Smith, AB & Vogel, JC. 1995. Before the Einiqua: the archaeology of the frontier zone. In: Smith, AB (ed.) *Einiqualand: studies of the Orange River frontier*: 236-264. Cape Town: University of Cape Town Press.
- Bleek, WHI & Lloyd, LC. 1911. *Specimens of Bushman folklore*. Collected by the late WHI Bleek PhD and LC Lloyd edited by the latter. London: George Allen & Co.
- Breutz, P-L. 1963. *The Tribes of the Districts of Kuruman and Postmasburg*. Department of Bantu Administration and Development, Ethnological Publication No. 49.

- Burchell, W. 1967 [1822-24]. *Travels in the interior of southern Africa*. Vol 2. Cape Town: Struik.
- Campbell, J. 1815. *Travels in South Africa*. 3rd ed. London: Black, Parry & Co. Facsimile reprint 2004. Cape Town: Struik.
- Campbell, J. 1822. *Travels in South Africa*. Volume I and II. London: Francis Westley. Facsimile reprint 2004. Elibron Classics Series.
- Chazan, M, Hagai, R, Matmon, A, Porat, N, Goldberg, P, Yates R, Avery, M, Sumner, A & Horwitz, LK. 2008. Radiometric dating of the Earlier Stone Age sequence in Excavation I at Wonderwerk Cave, South Africa: preliminary results. *Journal of Human Evolution* 55(1):1-11.
- Chazan, M & Horwitz, L.K. 2010. Milestones in the development of symbolic behaviour: a case study from Wonderwerk Cave, South Africa. *World Archaeology* 41 (4), 521-539.
- Chazan, C, Wilkins, J, Morris, D & Berna, F. 2012. Bestwood 1: a newly discovered Earlier Stone Age living surface near Kathu, Northern Cape Province, South Africa. *Antiquity* 86(331). Antiquity Gallery.
- Curnoe, D. 2005. Beyond Taung: Palaeoanthropological research at Groot Kloof, Ghaap Escarpment, Northern Cape Province, South Africa. *NYAME AKUMA* 64: 58-56.
- Collins, S. 1973. Rock-Engravings of the Danielskuil Townlands. *The South African Archaeological Bulletin* 28(109/110): 49-57.
- Deacon, J. 1984a. *The Later Stone Age of southernmost Africa*. Oxford: BAR International Series 213.
- Deacon, J. 1984b. Later Stone Age people in southern Africa. In Klein, RG (Ed.) *Southern African prehistory and Paleoenvironments*. Rotterdam: AA Balkema, pp 221-328.
- Deacon, J. 1986. "My place is the Bitterpits": the home and territory of Bleek and Lloyd's /Xam San informants. *African Studies* 45: 135-155.
- Deacon, J. 1988. The power of a place in understanding southern San rock engravings. *World Archaeology* 20: 129-140.
- Deacon, J. 1996. Archaeology of the Flat and Grass Bushmen. In Deacon, J & Dowson, TA (eds) *Voices from the past: /Xam bushmen and the Bleek and Lloyd collection*. Johannesburg: Witwatersrand University Press: 245-270.
- De Jong, RC. 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 Province. Unpublished Report by Cultmatrix Heritage Consultants for Kai Batla. June 2010. PROJECT 2010/23.
- Dowson, A. 1992. *Rock engravings of southern Africa*. Johannesburg: Witwatersrand University Press.
- Dunn, EJ. 1931. *The Bushman*. London: Griffin.
- Erasmus, P. 2010. Dreams and visions in Koranna and Griqua revival in colonial and post-Apartheid South Africa. *The Journal of Pan African Studies* 3(9): 78-105.

Envass Environmental. 2011. Heritage Impact Assessment scoping report prepared for proposed Skeifontein Photovoltaic Power Plant and Power Lines, near Postmasburg, Northern Cape.

Fauvelle-Aymar, F-X. 2004. Between the first herders and the last herders: are the Khoekhoe descendants of the Neolithic 'hunters-with sheep'? *Before Farming* [online version] 2004/4, article 5: 1-11.

Fisher, RC. 1992. *Visual lexicon of the South African dwelling*. Cape Town: Unibook Publishers.

Geological Society. 1873. Mr GW Stow's geological notes on Griqualand West, pp. 313-314.

Hardaker, T. 2011. *New approaches to the study of surface palaeolithic artefacts: a pilot project at Zebra River, Western Namibia*. Oxford: Archaeopress.

Henderson, Zoë. 2000. Transgariep Branch outing to excavate an Ostrich Eggshell cache on Thomas's farm, Belmont, Northern Cape. *The Digging Stick* 17(2).

Herries, AIR. 2011. A chronological perspective on the Acheulian and its transition to the Middle Stone Age in Southern Africa: The question of the Fauresmith. *International Journal of Evolutionary Biology*. Article ID 961401, 2012: 1-25. doi:10.4061/2011/961401.

Herries, H, Curnoe, D, Brink, J, Henderson, Z, Morris, D, Van Reyneveld, K & Hodge, E. 2007. Landscape evolution, palaeoclimate and Later Stone Age occupation of the Ghaap Plateau escarpment, Northern Cape Province, South Africa. *Antiquity* 81(313), no page numbering.

Humphreys, AJB. 1975. Burchell's Shelter: the history and archaeology of a Northern Cape rock shelter. *South African Archaeological Bulletin* 117/118:3-18.

Humphreys, AJB & Thackeray, AI. 1983. *Ghaap and Gariep: Later Stone Age studies in the northern Cape*. South African Archaeological Society Monograph Series 2. Cape Town.

Jacobson, L. 2005. Comments on stone circles in the Blouboos landscape, Northern Cape. *Southern African Humanities* 17: 153-154.

Johnson, BJ, Miller, GH, Fogel, ML & Beaumont, PB. 1997. The determination of late Quaternary paleoenvironments at Equus Cave, South Africa, using stable isotopes and amino acid racemization in ostrich eggshell. *Palaeogeography, Palaeoclimatology, Palaeoecology*. 136: 121-37.

Kiehn, AV. 2004. Geochemical fingerprinting of specular hematite from prehistoric mines and archaeological sites in Southern Africa. MSc, University of Georgia.

Kiberd, P. 2006. Bundu Farm: a report on archaeological and palaeoenvironmental assemblages from a pan site in Bushmanland, Northern Cape, South Africa. *South African Archaeological Bulletin* 61: 189-201.

Kinahan, J. 1991. *Pastoral nomads of the Central Namib Desert: the people history forgot*. Windhoek: New Namibia Books.

Kinahan, J. 1996. Alternative views on the acquisition of livestock by hunter-gatherers in southern Africa: a rejoinder to Smith, Yates and Jacobson. *South African Archaeological Bulletin* 51:106-108.

Küsel, U & Küsel, SU. 2011. Heritage Management Plan for Portion 2, the remainder of Portion 3, Portions 4, 6 and 8 of the farm York A 279, Portions 0 and 1 of the farm Devon 277 and Portions 0 and 1 of the farm Telele 312 situated in the John Taolo Gaetsepe District Municipality of the Northern Cape Province. Prepared for: Northern Cape Manganese Company (Pty) Ltd and Dirleton Minerals and Energy (Pty) Ltd.

Legassick, MC. 2010. *The politics of a South African frontier: the Griqua, the Sotho-Tswana and the missionaries, 1780 – 1840*. Basel: Basler Afrika Bibliographien.

Leśniewski, M. 2010. Guns and horses, c 1750 to c 1850: Korana – people or raiding hordes? *Werkwinkel* 5(2): 11-26.

Lombard, M & Parsons, I. 2008. Blade and bladelet function and variability in risk management during the last 2000 years in the Northern Cape. *South African Archaeological Bulletin* 63: 18-23.

Mackay, A, Orton, J, Schwartz, S & Steele, T. 2010. Soutfontein (SFT)-001: preliminary report on an open-air site rich in bifacial points, southern Namaqualand, South Africa. *South African Archaeological Bulletin* 65:84–95.

McNabb, J, Binyon, F and Hazelwood, L. 2004. The large cutting tools from the South African Acheulean and the question of social traditions. *Current Anthropology* 45(5):653-677.

Miller, S. 2011. Phase 2 Documentation of architectural elements on the farms Leeuwfontein, Kapstevel, Welgevonden and Strydfontein in the Postmasburg District Municipality of the Northern Cape Province. Commissioned by African Heritage Consultants.

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

Morris, D. 1988. Engraved in place and time: a review of variability in the rock art of the Northern Cape and Karoo. *South African Archaeological Bulletin* 43:109-121.

Morris, D. 1990. Klipfontein: Bushman's Fountain rock engraving site. In Beaumont, P & Morris, D (eds) *Guide to archaeological sites in the northern Cape*, pp. 1-3. Kimberley: McGregor Museum.

Morris, D. 2001. Report on assessment of archaeological resources in the vicinity of proposed mining at Morokwa.

Morris, D. 2002. Driekopseiland and 'the rain's magic power': history and landscape in a new interpretation of a Northern Cape rock engraving site. MA diss., University of the Western Cape, Cape Town.

Morris, D. 2005. Report on a Phase 1 archeological Impact Assessment of proposed mining areas on the farms Ploegfontein, Klipbankfontein, Welgevonden, Leeuwfontein, Wolhaarkop and Kapstevel, west of Postmasburg, Northern Cape.

Morris, D. 2007. Mokala National Park: a first report on heritage resources. Kimberley:McGregor Museum.

Morris, D. 2008. Archaeological and Heritage Impact Assessment on remainder of Carter Block 458, near Lime Acres, Northern Cape. McGregor Museum.

Morris, D. 2009. Archaeological Impact Assessment on the mining property of Idwala Mine, Daniëlskuil, Northern Cape.

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

Morris, DRNM. 2012. *Rock art in the Northern Cape: the implications of variability in engravings and paintings relative to issues of social context and change in the precolonial past*. PhD diss., University of the Western Cape.

Morris, D & Beaumont, PB. 1994. Ouplaas 2: Rock engravings, Daniëlskuil. Unpublished report for Anglo-Alpha and the NMC.

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

Morris, D. & Beaumont, P.B. 1994. Ouplaas 2: Rock engravings, Daniëlskuil. Unpublished report to Anglo-Alpha and the NMC. McGregor Museum.

Morris, D & Beaumont, P. 2004. *Archaeology in the Northern Cape: some key sites*. Kimberley: McGregor Museum.

Mossop, EE. 1935. *The journals of Wikar, Coetsé and Van Reenen*. The Van Riebeeck Society 15: Cape Town.

Orton, J. 2011. Heritage impact assessment for three solar energy facilities at De Aar, Northern Cape. Unpublished report prepared for Aurecon South Africa (Pty) Ltd. St James: ACO Associates.

Orton, J. 2012a. Heritage impact assessment for a proposed photovoltaic energy plant on the farm Vogelstruisbult near Klipgatspan, Northern Cape. Unpublished report prepared for Aurecon South Africa (Pty) Ltd.

Orton, J. 2012b. Heritage impact assessment for a proposed photovoltaic energy plant on the farm Hoekplaas near Copperton, Northern Cape. Unpublished report prepared for Aurecon South Africa (Pty) Ltd.

Orton, J. 2012c. Heritage impact assessment for a proposed photovoltaic energy plant on the farm Klipgats Pan near Copperton, Northern Cape. Unpublished report prepared for Aurecon South Africa (Pty) Ltd.

Parsons, I. 2003. Lithic expressions of Later Stone Age lifeways in the Northern Cape. *South African Archaeological Bulletin* 58: 33-37.

Parsons, I. 2004. Stone circles in the Bloubos landscape, Northern Cape. *Southern African Humanities* 16: 59-69.

Parsons, I. 2007. Hunter-gatherers or herders? Reconsidering the Swartkop and Doornfontein Industries, Northern Cape Province, South Africa. *Before Farming* 4: Article 3.

Parsons, I. 2008. Five Later Stone Age artefact assemblages from the interior Northern Cape Province. *South African Archaeological Bulletin* 63: 51-60.

Pelser, AJ. 2012. A report on the historical-archaeological investigation and relocation of known and unknown historical burials dating to the late 19th/early 20th century on the farm Paling 434 Hay Magisterial District, near Postmasburg in the Northern Cape Province. Unpublished Report Archaetnos cc AE01246P. For Kai Batla.

Pelser, A. 2012/2013. A report on the archaeological investigation of Stone Age finds on the Farm Paling 434 Hay Magisterial District, near Postmasburg in the Northern Cape Province. Prepared for Kai Batla Holdings (Pty) Ltd.

Pelser, AJ & van Vollenhoven, AC. 2010. A report on Archaeological Impact Assessment (AIA) for proposed mining operations on the remainder of the farm Paling 434, Hay Magisterial District, Northern Cape. Unpublished Report Archaetnos cc AE1030. For Cultmatrix Heritage Consultants. May 2010.

PGS Heritage & Grave Relocation Consultants. 2010. Heritage Scoping, Prospecting activities on the Portions 1 and 2 of Farms 558 "Lovedale", 559 "Kleinbegin" and 521 "Rooigrond", Hay District, Northern Cape Province.

PGS Heritage & Grave Relocation Consultants. 2011. SolarReserve SA (Pty) Ltd. Humansrus Solar Thermal Energy Power Plant Postmasburg. Heritage Impact Report.

PGS Heritage & Grave Relocation Consultants. 2012a. Proposed Construction of 132KV Power Line and Switchyard associated with the Redstone Solar Thermal Energy Plant in the Northern Cape Province. Heritage Impact Assessment.

PGS Heritage & Grave Relocation Consultants. 2012b. Proposed Arriesfontein Solar Thermal Energy Power Plant near Daniëlskuil, Northern Cape Province. Heritage Impact Assessment.

PGS Heritage & Grave Relocation Consultants. 2013a. Coza Iron Ore Project. Proposed Mining Activities. Remainder of the farm Driehoekspan 435 and Portion 1 of the farm Doringpan 445, north of Postmasburg, Northern Cape Province. Heritage Scoping Report.

PGS Heritage & Grave Relocation Consultants. 2013b. Tshipi é Ntle Manganese Mining Prospecting on remaining extent of the farm Wessels 227 and Portions 1 and 2 and the remaining extent of the farm Dibiaghomo 226, near Black Rock in the Northern Cape Province. Heritage Impact Assessment.

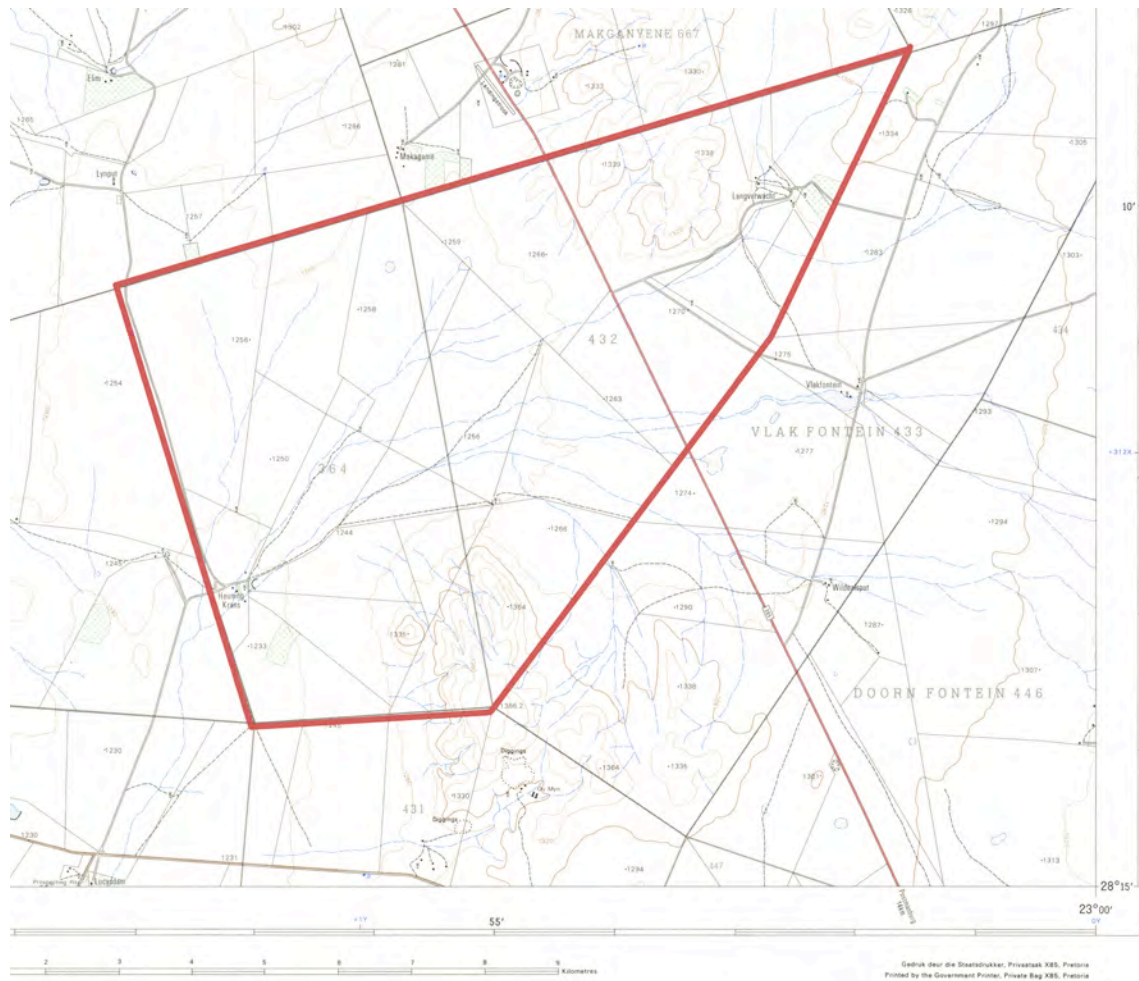
Polteau, S, Moore, JM & Tsikos, H. 2006. The geology and geochemistry of the Palaeoproterozoic Makganyene diamictite. *Precambrian Research* 148 (3&4): 257-274. ISSN 0301-9268 .

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

Powicke, FM. 1954. Review: The place-names of Cumberland by Armstrong, AM et al *The place-names of Cumberland* (1950–53). *The English Historical Review* 69: 311-313.

- SAHRA. 1999. *National Heritage Resources Act No. 25 of 1999*. Cape Town: RSA Government Gazette.
- SAHRA. 2007. *SG 2.2 SAHRA APM Guidelines: Minimum Standards: Archaeological and Palaeontological Components of Impact Assessment Reports*. (www.sahra.org.za).
- SAHRIS Website. 2013.
- Sampson, CG. 1968. The Middle Stone Age industries of the Orange River scheme area. *National Museum Bloemfontein Memoir* 4: 1–111.
- Stow, GW & Orpen, F. Griqualand West. *The Cape Monthly Magazine* 5: 65-78.
- Thackeray, AI. 1992. The Middle Stone Age south of the Limpopo. *Journal of World Prehistory* 6:385-440.
- Thackeray, AI, Thackeray, JF & Beaumont, PB. 1983. Excavations at the Blinkklipkop specularite mine near Postmasburg, Northern Cape. *South African Archaeological Bulletin* 38:17-25.
- Van der Ryst, MM & Küsel, SU. 2011. *Specialist report on the Stone Age and other heritage resources at Kolomela, Postmasburg, Northern Cape*. Commissioned by African Heritage Consultants.
- Veldman, A. 2008. *Living on the edge: Damara herders in the landscape*. Hons diss. Unisa.
- Wadley, L. 1993. The Pleistocene Later Stone Age south of the Limpopo. *Journal of World Prehistory* 7:243-96.
- Webley, L. 2010. Heritage Impact Assessment of Proposed Groenwater Solar Array, Northern Cape Province. ACO cc.
- Webley, L & Halkett, D. 2010. Archaeological Impact Assessment: Proposed prospecting on the kopje Bleskop, Farm Doornpan 445, Postmasburg, Northern Cape.
- Webley, L, Halkett, D & Miller, D. 2010. Scoping Heritage Impact Assessment: proposed prospecting on 20 farms in the Olifantshoek and Kuruman areas of the Northern Cape.
- Wilkins, J & Chazan, M. 2012. Blade production ~500 thousand years ago at Kathu Pan 1, South Africa: support for a multiple origins hypothesis for early Middle Pleistocene blade technologies. *Journal of Archaeological Science* 39(6): 1883-1900.
- Wilman, M. 1933. *Rock engravings of Griqualand West and British Bechuanaland South Africa*. Cambridge: Deighton Bell.

Map 1: 1:50 000 2822BB Mamagodi



Map 2 Sensitivity map

