

**ARCHAEOLOGICAL IMPACT
ASSESSMENT (PHASE 1)**
for
**Environmental Assurance
(Pty) Ltd**

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1. Executive Summary

The authors were appointed by Environmental Assurance (Pty) Ltd to undertake an Archaeological study on the farm Mamatwan 331,21 km south of Hotazel, 56 km west of Kuruman and 37 km north of Kathu in the Northern Cape Province, to determine the scope of archaeological resources which could be impacted on by proposed underground manganese ore mining activities of Mamatwan Manganese (Pty) Ltd.

During the pedestrian survey on the Remaining Extent, a number of archaeological sites were observed. These sites are: five marked graves, and a homestead and vineyard dating to the Historical Period. The graves are located in a fenced graveyard in close proximity to the homestead, and are family graves of the owner of the Remaining Extent. The oldest of the graves date to 1953, and the most recent to 2000. The homestead was built in 1922, and the vineyard established in 1930. There were several other buildings on the property which dated to the Historical Period, but these were destroyed by wind storms and demolished by the owner many years ago. The authors found scattered Late Stone Age (LSA) stone tools in a 200 m radius along the river bed on the Remaining Extent, but no significant concentrations of stone tools or archaeological sites dating to the LSA.

During an accompanied survey on portions 8, 3 and the demarcated section of Portion 19, no sites of heritage importance were observed. It should also be noted that a large area of the demarcated section on Portion 19 has already been developed.

Apart from the heritage objects present on the Remaining Extent, the significance of the larger historical and pre-historical landscape must be stressed as the archaeological site of Wonderwerk Cave, which is classified as a provincial heritage site, is located in the Kuruman district.

Remaining Extent of the farm Mamatwan 331

The homestead on the Remaining Extent is older than 60 years, and is subsequently protected under the National Heritage and Resources Act (25 of 1999). The authors recommend that this structure should be retained. In addition to this site, the authors recommend that a conservation buffer of 20 m be placed around the graveyard in close proximity to the homestead, as all graves are protected under the Human Tissue Act (65 of 1983) and Ordinance on the Removal of Graves and Dead Bodies (Ordinance 7 of 1925), while graves older than 60 years are protected under the National Heritage and Resources Act (25 of 1999).

Due to the presence of LSA artefacts in a 200 m radius of the dry river bed on the western section of the Remaining Extent of the farm Mamatwan 331, the authors recommend that no development take place within

the buffered area. Should the need for development within this buffer arise, it is recommended that a Phase 2 Archaeological Impact Assessment be done prior to any construction or development activities.

Portions 8, 3, and the demarcated section of Portion 19 of the farm Mamatwan 331

Due to no visible material remains pertaining to heritage resources development may continue on these specific Portions. Should culturally significant material or skeletal remains be exposed during development and construction phases, all activities must be suspended pending further investigation by a qualified archaeologist (See National Heritage and Resources Act, 25 of 1999 section 36 (6)).

2. Project Background

2.1 Introduction

Environmental Assurance (Pty) Ltd appointed the authors to undertake an Archaeological study on the Remaining Extent, and Portions 3 and 8, as well as a section of Portion 19 of the farm Mamatwan 331, Northern Cape Province (Figures 1 & 2). The purpose of this study is to examine the demarcated Portions in order to determine if any archaeological resources of heritage value will be impacted on by the proposed underground manganese ore mining as well as to archaeologically contextualise the general study area. The aim of this report is to provide the developer with information regarding the location of heritage resources on the section demarcated for development.

We did not locate archaeological sites of heritage importance on Portions 3, 8 and the demarcated section of Portion 19 of the farm Mamatwan 331, but there are several archaeological sites on the Remaining Extent of the farm. There are five marked and fenced graves in close proximity to the homestead on the Remaining Extent. The homestead and vineyard dates to the Historical Period and the graves are family graves of the owners of the farm. The oldest of the graves date to 1953, and the most recent to 2000. According to oral testimonies the homestead was built in 1922, and the vineyard established in 1930.

We recorded these sites via GPS location and photographic record to serve as evidence for the type of archaeological remains present in the study area. In the following report, we discuss the implication for development on the demarcated Portions, Portions 3, 8, a section of Portion 19 and the Remaining Extent, of the farm Mamatwan 331 with regard to heritage resources. Additionally, we briefly discuss the archaeological sites on the Remaining Extent. The legislation section included serves as a guide towards the effective identification and protection of heritage resources and will apply to any such material unearthed during development and construction phases on the demarcated Portions, Portions 3, 8, a section of Portion 19 and the Remaining Extent.

2.2 Legislation

The South African Heritage Resources Agency (SAHRA) aims to conserve and control the management, research, alteration and destruction of cultural resources of South Africa and to prosecute if necessary. It is therefore crucially important to adhere to heritage resource legislation contained in the Government Gazette of the Republic of South Africa (Act No.25 of 1999), as many heritage sites are threatened daily by development. Conservation legislation requires an impact assessment report to be submitted for development authorisation that, in all cases, must include AIAs.

AIAs should be done by qualified professionals with adequate knowledge to (a) identify all heritage resources including archaeological and palaeontological sites that might occur in areas of development and (b) make

recommendations for protection or mitigation of the impact of the sites.

2.2.1 The EIA and AIA processes

Phase 1 Archaeological Assessments generally involve the identification of sites during a field survey with assessment of their significance, the possible impact development might have and relevant recommendations.

All Archaeological Impact Assessment reports should include:

- a. Location of the sites that are found;
- b. Short descriptions of the characteristics of each site;
- c. Short assessments of how important each site is, indicating which should be conserved and which mitigated;
- d. Assessments of the potential impact of the development on the site(s);
- e. In some cases a shovel test, to establish the extent of a site, or collection of material, to identify the associations of the site, may be necessary (a pre-arranged SAHRA permit is required); and
- f. Recommendations for conservation or mitigation.

This AIA report is intended to inform the client about the legislative protection of heritage resources and their significance and make appropriate recommendations. It is essential to also provide the heritage authority with sufficient information about the sites to enable the authority to assess with confidence:

- a. Whether or not it has objections to a development;
- b. What the conditions are upon which such development might proceed;
- c. Which sites require permits for mitigation or destruction;
- d. Which sites require mitigation and what this should comprise;
- e. Whether sites must be conserved and what alternatives can be proposed to relocate the development in such a way as to conserve other sites; and
- f. What measures should or could be put in place to protect the sites which should be conserved.

When a Phase 1 AIA is part of an EIA, wider issues such as public consultation and assessment of the spatial and visual impacts of the development may be undertaken as part of the general study and may not be required from the archaeologist. If, however, the Phase 1 project forms a major component of an AIA it will be

necessary to ensure that the study addresses such issues and complies with Section 38 of the National Heritage Resources Act.

2.2.2 Legislation regarding archaeology and heritage sites

National Resource Act of April 1999

According to Act No.25 of 1999 a historical site is “any identifiable building or part thereof, marker, milestone, gravestone, landmark or tell older than 60 years.” This clause is commonly known as the “60-years clause”. Buildings are among the most enduring features of human occupation, and this definition therefore includes all buildings older than 60 years, modern architecture as well as ruins, fortifications and Farming Community settlements. A “tell” refers to the evidence of human existence which is no longer above ground level, such as building foundations and buried remains of settlements (including artefacts). The Act identifies heritage objects as:

- objects recovered from the soil or waters of South Africa including archaeological and palaeontological objects, meteorites and rare geological specimens;
- visual art objects;
- military objects;
- numismatic objects;
- objects of cultural and historical significance;
- objects to which oral traditions are attached and which are associated with living heritage;
- objects of scientific or technological interest;
- any other prescribed category.

With regards to activities and work on archaeological and heritage sites this Act states that:

“No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit by the relevant provincial heritage resources authority.” (34. [1] 1999:58)

and

“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.”(35. [4] 1999:58)*

and

“No person may, without a permit issued by SAHRA or a provincial heritage resources agency:

- (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;*
- (c) *bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) and excavation equipment, or any equipment which assists in the detection or recovery of metals.” (36. [3] 1999:60)*

On the development of any area the gazette states that:

“...any person who intends to undertake a development categorised as:

- (a) *the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
- (b) *the construction of a bridge or similar structure exceeding 50m in length;*
- (c) *any development or other activity which will change the character of a site-*
- (d) *exceeding 5000m² in extent; or*
- (e) *involving three or more existing erven or subdivisions thereof; or*
- (f) *involving three or more erven or divisions thereof which have been consolidated within the past five years; or*

- (g) *the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;*
- (h) *the re-zoning of a site exceeding 10000m² in extent; or*
- (i) *any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.” (38. [1] 1999:62-64)*

and

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

- (a) *The identification and mapping of all heritage resources in the area affected;*
- (b) *an assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7;*
- (c) *an assessment of the impact of the development on such heritage resources;*
- (d) *an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;*
- (e) *the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;*
- (f) *if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and*
- (g) *plans for mitigation of any adverse effects during and after the completion of the proposed development.” (38. [3] 1999:64)*

Human Tissue Act and Ordinance 7 of 1925

The Human Tissues Act (65 of 1983) and Ordinance on the Removal of Graves and Dead Bodies (Ordinance 7 of 1925) protects graves younger than 60 years. These fall under the jurisdiction of the National Department of Health and the Provincial Health Departments. Approval for the exhumation and re-burial must be obtained from the relevant Provincial MEC as well as the relevant Local Authorities. Graves 60 years or older fall under the jurisdiction of the National Heritage Resources Act as well as the Human Tissues Act, 1983.

3. Study Area and Project Description

The farm Mamatwan 331 is located about 21 km south of Hotazel, 56 km west of Kuruman and 37 km north of Kathu and can be accessed via the R380 tarred public road (Figures 1 & 2). The farm falls within the Kuruman Magisterial District in the Northern Cape Province. The study area borders the Kalahari region, a semi-arid desert. Thus, vegetation consists mainly of shrubs and thorny trees. The average rainfall is usually below 300mm per annum, and temperatures vary from above 30°C in summer to -6°C in winter. The only river located on the study area is located on the western border of the Remaining Extent of the farm Mamatwan 331. The river, Vlermuisleegte, is generally dry throughout the year, but has water for short periods of time after rain showers.

The Kalahari Manganese Fields (KMF) contain higher grade ores, and thus manganese mines are concentrated around the towns of Kuruman, Hotazel and Kathu in the Northern Cape Province. There are two open pit mines bordering the study area, the Mamatwan Mine and Tshipi Borwa Mine. The life expectancy of the proposed mining activity on the demarcated areas of the farm Mamatwan 331 will be nine years. The mining activity will take place on 50 hectares of the demarcated areas, while infrastructure will occupy 300 hectares. The manganese ore is located approximately 300 m below surface, and underground mining operation is necessary to uncover the mineral resources. The mining method mainly includes two declines to access the manganese ore, as well as a processing plant, which will take about 20 months to construct. High grade manganese ore is exported.

Table 1: Farm name & coordinates

Farm	Portion	Map Reference (1:50 000)	Coordinates
Mamatwan 331	3	2722 BD	S: -27.389360 E: 22.982507
Mamatwan 331	8	2722 BD	S: -27.388810 E: 22.950624
Mamatwan 331	Section of 19	2722 BD	S: -27.395836 E: 22.975242
Mamatwan 331	Remaining Extent	2722 BD	S: -27.397882 E: 22.943239

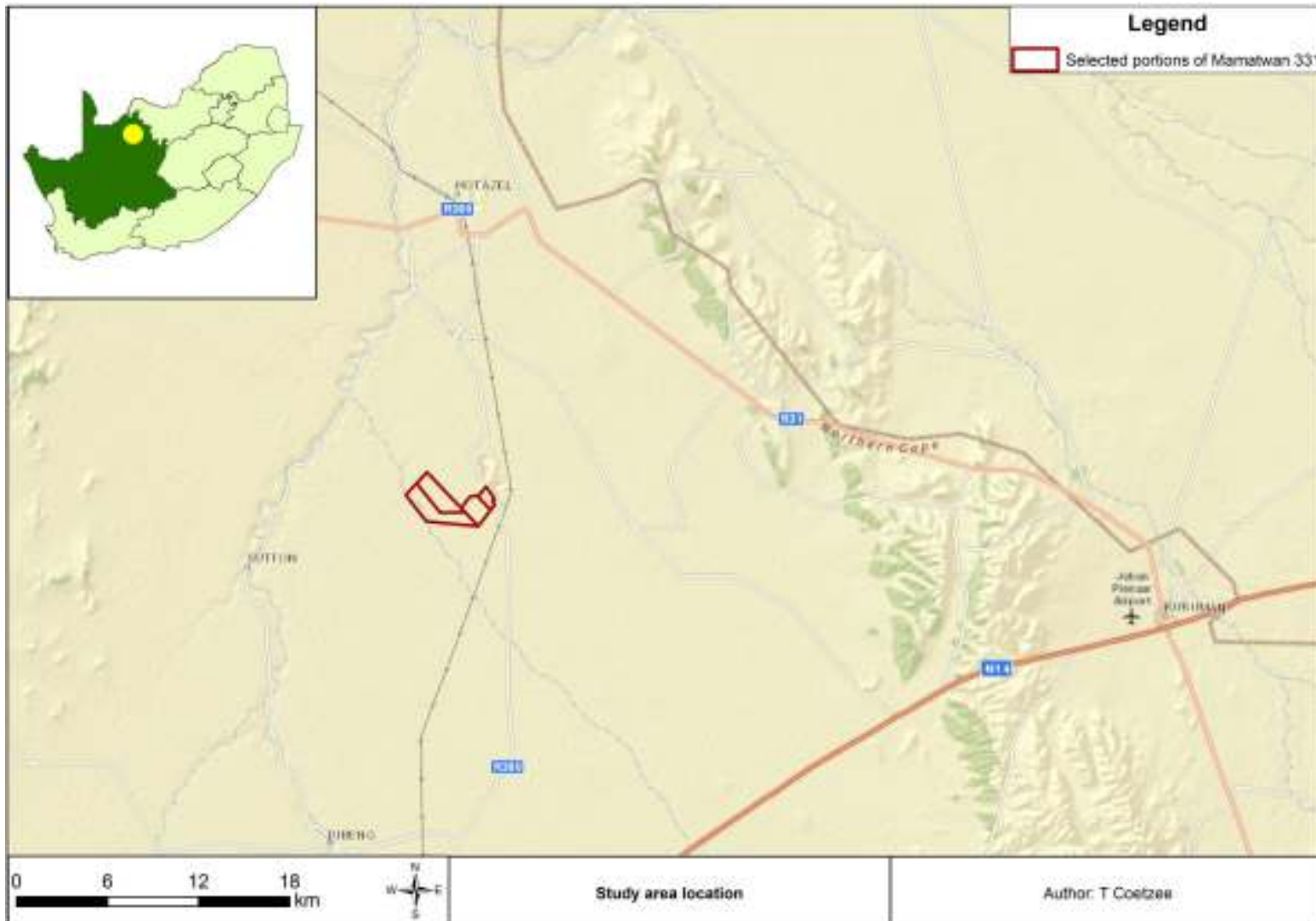


Figure 1: Provincial location of study area.

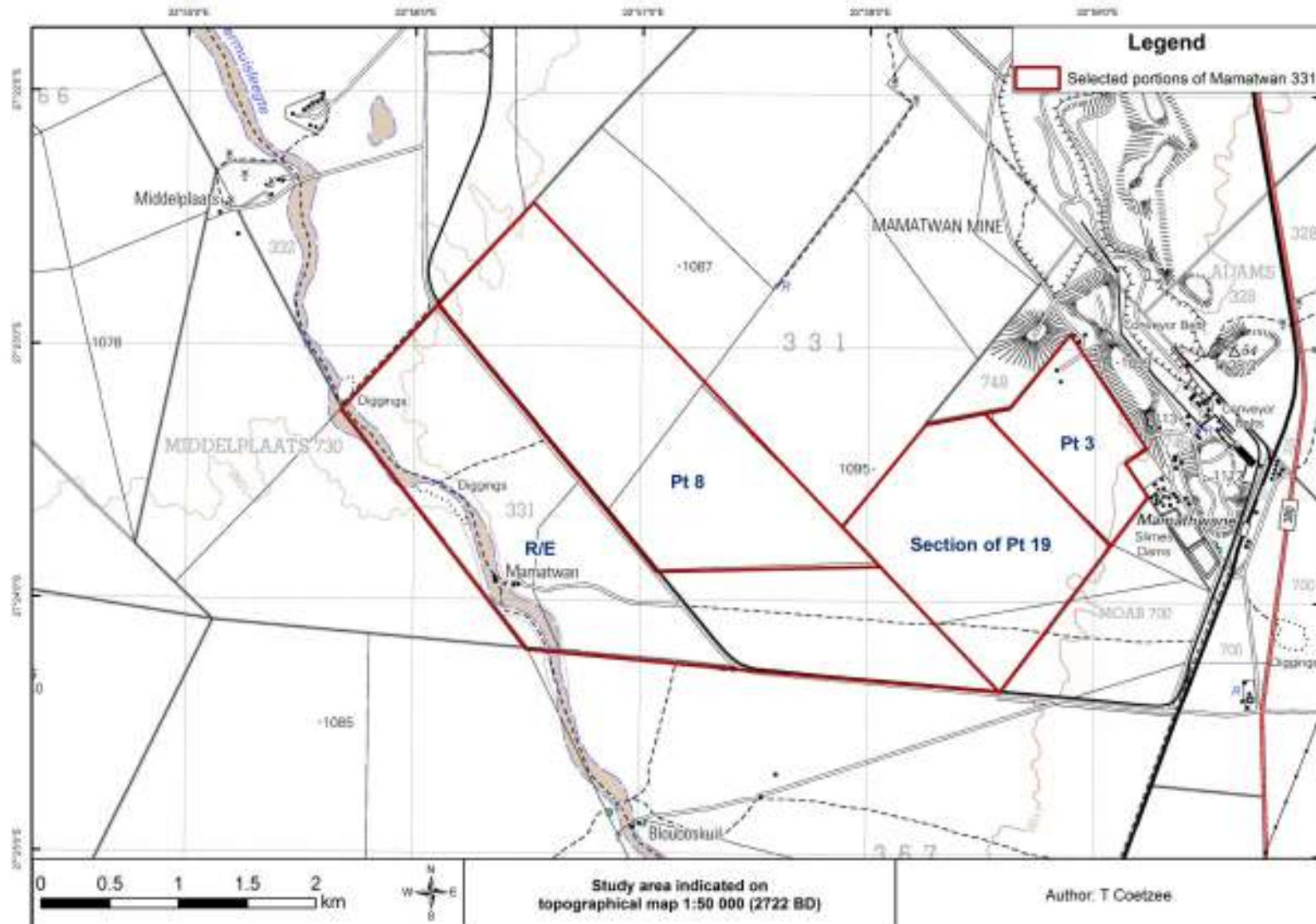


Figure 2: Segment of SA 1: 50 000 2722 BD indicating the study area.

3.1 Archaeological Background

Southern African archaeology is broadly divided into the Early, Middle and Later Stone Ages, Early and Later Iron Ages, and Historical, or Colonial, Periods.

3.1.1 The Early Stone Age

The earliest stone tool industry, the Oldowan, was developed by early human ancestors which were the earliest members of the genus *Homo*, such as *Homo habilis*, around 2.6 million years ago. It comprises tools such as cobble cores and pebble choppers (Toth & Schick 2007). The oldest stone tools from the Sterkfontein Caves are found in the Oldowan Infill and date to between 2 and 1.7 million years ago. As the name suggests, these tools are similar to those found at Olduvai Gorge in Tanzania. Archaeologists suggest these stone tools are the earliest direct evidence for culture in southern Africa (Clarke & Kuman 2000). The advent of culture indicates the advent of more cognitively modern hominins (Mitchell 2002: 56, 57)

The Acheulean industry completely replaced the Oldowan industry. The Acheulian industry was first developed by *Homo ergaster* between 1.8 to 1.65 million years ago and lasted until around 300 000 years ago. Archaeological evidence from this period is also found at Swartkrans, Kromdraai and Sterkfontein. Around 1.5 million years ago, the western side of the cave probably enlarged, since artefact-bearing breccias (coarse-grained sedimentary rock made of sharp fragments of rock and stone cemented together by finer material, which is produced by volcanic activity or erosion, including frost shattering) are more widely distributed.

The most typical tools of the ESA are handaxes, cleavers, choppers and spheroids. Although hominins seemingly used handaxes often, scholars disagree about their use. There are no indications of hafting, and some artefacts are far too large for it. Hominins likely used choppers and scrapers for skinning and butchering scavenged animals and often obtained sharp ended sticks for digging up edible roots. Presumably, early humans used wooden spears as early as 5 million years ago to hunt small animals. The hominin *Homo erectus* and *Homo ergaster* used fire as early as between 300,000 and 1.5 million years ago, and possibly even earlier. The invention of fire reduced mortality rates and provided protection against predators. Examples of sites from this time period include Kromdraai, Makapansgat and Sterkfontein and Swartkrans (Toth & Schick 2007).

3.1.2 The Middle Stone Age

Middle Stone Age artefacts started appearing about 250 000 years ago and replaced the larger Early Stone Age bifaces, handaxes and cleavers with smaller flake industries consisting of scrapers, points and blades. These artefacts roughly fall in the 40-100 mm size range and were, in some cases, attached to handles, indicating a significant technical advance. Few other artefacts from this period remain. In some cases,

archaeologists found circular hearths, which indicate the ability to make fire. Animal and plant remains indicate a hunting and gathering lifestyle. The first *Homo sapiens* species also emerged during this period. Associated sites are Klasies River Mouth, Blombos Cave and Border Cave (Deacon & Deacon 1999). The most recent deposit in the Sterkfontein cave dates to between 115 000 and 253 000 years ago and includes a few hominin bone fragments, fauna and Middle Stone Age artefacts (Clarke & Kuman 2000:10-13). Anatomically modern *Homo sapiens sapiens* emerged around 150 000 years ago (Mitchell 2002:42).

3.1.3 The Later Stone Age

Although the transition from the Middle Stone Age to the Later Stone Age did not occur simultaneously across the whole of Southern Africa, the Later Stone Age ranges from about 20 000 to 2000 years ago. Stone tools from this period are generally smaller, but were used to do the same job as those from previous periods; only in a different, more efficient way. At the time of European contact in South Africa, some groups, for example the Khoisan, were still producing and using these tools. This aided understanding how and for what these tools were used. The Later Stone Age is associated with: rock art, smaller stone tools (microliths), bows and arrows, bored stones, grooved stones, polished bone tools, earthenware pottery and beads. Examples of Later Stone Age sites are Nelson Bay Cave, Rose Cottage Cave and Boomplaas Cave (Deacon & Deacon 1999).

3.1.4 Early Iron Age

The Early Iron Age marks the movement of farming communities into South Africa in the first millennium AD, or around 2500 years ago (Mitchell 2002:259, 260). These groups were agro-pastoralist communities that settled in the vicinity of water in order to provide subsistence for their cattle and crops. Archaeological evidence from Early Iron Age sites is mostly artefacts in the form of ceramic assemblages. The origins and archaeological identities of this period are largely based upon ceramic typologies. Some scholars classify Early Iron Age ceramic traditions into different “streams” or “trends” in pot types and decoration, which emerged over time in southern Africa. These “streams” are identified as the Kwale Branch (east), the Nkope Branch (central) and the Kalundu Branch (west). Early Iron Age ceramics typically display features such as large and prominent inverted rims, large neck areas and fine elaborate decorations. This period continued until the end of the first millennium AD (Mitchell 2002; Huffman 2007). Some well-known Early Farming community sites include the Lydenburg Heads in Mpumalanga, Happy Rest in the Limpopo Province and Mzonjani in Kwa-Zulu Natal.

3.1.5 Later Iron Age and Historical Periods

The farm Mamatwan 331 has a history dating to the 19th century, when ancestors of the current owners occupied the farm. Several sources suggest the broader region has a rich history dating to the 17th century, if not earlier. We provide a brief outline of the events dating from the 1600s to the 1900s.

Archival maps may provide valuable spatial information of activities during early times. Information, however, may not always be as accurate, but certain truthful derivations can be made. According to the Merensky 1887

archival map (map reference 3/302), for example, settlements were located in close proximity to rivers. Another archival map, such as the British Bechunaland Map of 1894, indicates that farms were not proclaimed in the vicinity of the study area by that time, only further east (PGS 2010).

The first group from the Later Iron Age to move into the Kuruman area was probably the Tlharo, a Tswana group. According to Snyman (1992), the Tlharo originated from the Hurutshe to the NE. After splitting from the Hurutshe towards the end of the 17th century they moved south along the Molopo River. One of their early settlements, Tsineng, is located in the vicinity of the study area.

Another influential group in the Kuruman area was the Tlhaping. Their origin is traced to the Rolong in the mid 18th century from where they moved from the Vaal and Harts Rivers in a western direction towards the edge of the Kalahari Desert. The Tlhaping, under Maswe, established their capital next to the Nokaneng River, which might be the present-day Ga-Mogara River as the missionary John Campbell referred to it. Breutz (1992 cited in PGS 2010), however, argues that the Nokaneng was in fact located closer to Postmasburg. Molehabangwe allegedly succeeded Maswe in 1775 and formed a confederation consisting of the Tlhaping, Rolong, Tlharo, Kgalagadi and San with the Tlhaping as ruler class.

Successful trading between the Tlhaping and the Tswana to the north and the Korana to the south flourished until the Korana crossed the Orange River to the Tlhaping. After conflict erupted the Tlhaping were driven from the area in the 1790's after which they moved to Kathu and then to Ga-Mopeni. Eventually they settled on the Moshaweng River at Dithakong (Snyman 1992:16).

A few European explorers ventured to these areas as well. Two expeditions worth mentioning are that of Lichtenstein in 1805 and that of Andrew Smith in 1835. After Lichtenstein reached the Kuruman River where they met Tswana speaking people they turned in a southern direction towards the Orange River. It is noted that Lichtenstein's party made contact with Muliawang's capital consisting of about 600 houses near the Kuruman River (PGS 2010).

In 1819 Reverend Robert Moffat noted that the Tlhaping had settled in the Kuruman Valley under Mothibi but later moved upstream towards present-day Kuruman (PGS 2010: 21). The journey of Andrew Smith in 1835 is also significant since mention is made of a visit to Tsineng. Research suggests that a route along the Ga-Mogara River was followed and that a small group of Tswana people practising agricultural activities was noted close to Tsineng.

Evidence regarding white settlement in the Kuruman district suggests brief occupation during the latter part of the 19th century. Permanent settlement, however, only followed around 1907 and 1908 when a period of drought in the then Cape Colony encouraged relocation (Smith 1966 cited in PGS 2010: 25).

During the First World War several boreholes were erected along the Kuruman River. Farmers settled at these boreholes and acted as borehole watchmen. For their duties they received grazing land for their cattle. After

the war these borehole watchmen were given first option to apply for land ownership on the farms they settled (Smith 1996 cited in PGS 2010: 26). It is for this reason that several farm houses dating to the Historical Period are found in the vicinity of the study area. A strong possibility exists that such dwellings would be located in close proximity to water sources. It must also be kept in mind that graves are often associated with these homesteads and are located in close proximity to these structures.

4. Methodology

We conducted archaeological reconnaissance of the study area mainly through an unsystematic site survey of 40 GPS (Global Positioning System) locations (Table 2) plotted beforehand on Google Earth and black and white aerial imagery (Figure 17). The GPS locations were plotted on areas of potential archaeological interest, i.e. circular formations or any other anomaly inconsistent with natural landscape features.

During the site visit we inspected all pre-plotted sites, and recorded the locations via photographic record. In addition the pre-plotted sites, two areas of heritage importance were identified and recorded via GPS and photographic record.

The reconnaissance of the area under investigation served a twofold purpose:

- To obtain an indication of heritage material found in the general area as well as to identify or locate archaeological sites on the Remaining Extent and Portions 3, 8 and the demarcated section of Portion 19 that may be affected. This was done in order to establish a heritage context and to supplement background information that would benefit developers through identifying areas that are sensitive from a heritage perspective.
- All archaeological and historical events have spatial definitions in addition to their cultural and chronological context. Where applicable, spatial recording of these definitions were done by means of a handheld GPS during the site visit.

4.1 Sources of information

At all times during the survey we followed standard archaeological procedures for the observation of heritage resources. As most archaeological material occurs in single or multiple stratified layers beneath the soil surface, we paid special attention to disturbances; both man-made such as roads and clearings, and those made by natural agents such as burrowing animals and erosion. We recorded locations of archaeological material

remains by means of a Garmin Oregon 550 GPS and photographed these sites as well as general conditions on the terrain with a Nikon D40 DSLR(Digital Single Lens Reflex) camera and an iPhone 5 camera.

We conducted a literature study, which incorporated previous work done in the region, in order to place the study area into context from a heritage perspective. An in depth literature study would be necessary should further studies be initiated.

During the site visit, we spoke to the current owner of the Remaining Extent of the farm Mamatwan 331, Mr Andries Van den Berg, who confirmed the presence and locations of the historical homestead and graveyard. The farm owner also remarked that when his ancestors first arrived on the farm evidence of shelters built of branches could be observed on the banks of the river. The location of these shelters, however, is not known. The farm owner also confirmed that to his knowledge there are no other significant material cultural remains on the affected portion or any other portions of the farm.

4.2 Limitations

The vegetation on the Remaining Extent is mainly shrubs and the occasional thorny tree (Figures 3-5); therefore, the general visibility was good during the time of surveying (September 2013). The vegetation on Portion 3, 8 and the demarcated section of Portion 19 consisted mainly of thorn trees, but did not affect visibility (Figures 6-8, 11-12, 15-16). We accessed the Remaining Extent on foot and had no trouble conducting an extensive pedestrian survey to cover the property. The historical homestead, vineyard and graveyard were easily accessible by foot.

However, we could not gain unsupervised access to Portion 8 and the demarcated section of Portion 19 due to strict mining regulations. Due to the large portion sizes, an accompanying official and a blast scheduled for the afternoon, limited pedestrian surveying could be conducted. Although there were limitations, all the pre-plotted sites were visited and no material remains of heritage importance were observed.

It should be noted that the demarcated section of Portion 19 is significantly disturbed by development and a small area remains unaffected (Figures 13-14). Also, a gravel road several metres wide spans the entire north-eastern border of Portion 8 (Figure 9), while several prospecting holes were observed on the same Portion (Figure 10).

The Google imagery available for the study area is outdated and recent mining development is not indicated. This is particularly significant for the disturbed areas of the demarcated section of Portion 19.



Figure 3: Environment on the Remaining Extent of Mamatwan 331



Figure 4: Environment on the Remaining Extent of Mamatwan 331 with distant mining activities



Figure 5: General environmental conditions on the Remaining Extent of Mamatwan 331



Figure 6: General environmental conditions on Portion 8 of Mamatwan 331



Figure 7: General environmental conditions on Portion 8 of Mamatwan 331



Figure 8: Environment on Portion 8 of Mamatwan 331 with distant mining activities.



Figure 9: Road on north-eastern section of Portion 8 of Mamatwan 331.



Figure 10: Prospecting borehole on Portion 8 of Mamatwan 331.



Figure 11: General Environment on the demarcated section of Portion 19 of Mamatwan 331.



Figure 12: Environment on the demarcated section of Portion 19 of Mamatwan 331.



Figure 13: Development on the demarcated section of Portion 19 of Mamatwan 331.



Figure 14: Disturbed area on the demarcated section of Portion 19 of Mamatwan 331.



Figure 15: General environmental conditions on Portion 3 of Mamatwan 331.



Figure 16: Environment on Portion 3 of Mamatwan 331.

5. Archaeological and Historical Remains

5.1 Stone Age Remains

We found scattered Later Stone Age (LSA) stone tools in a radius of 200 m of the dry riverbed (Vlermuisleegte) spanning the western border of the Remaining Extent of the farm Mamatwan 331 (Figure 18). The area is indicated as a 200 m buffer area in figure 17. No concentrations that might indicate a production site were observed.

5.2 Iron Age Farmer Remains

We found no Iron Age Farmer archaeological remains on the Remaining Extent, Portions 3 and 8 or the demarcated section of Portion 19.

5.3 Historical Remains

There is a historical homestead dating to 1922 (Figure 19) and a vineyard dating to 1930 (Figure 20) on the Remaining Extent. The other historical homesteads were destroyed years ago, but were once located in relative close proximity to the existing homestead. Interestingly, the corrugated iron roof sheets used to build parts of the roof was originally used by the first owners of the farm Mamatwan 331 when they moved to the area (Figure 21). These roof sheets were used to build temporary homesteads while travelling.

During the pedestrian survey we observed a linear stonewall feature (Mam stonewall) located in the dry riverbed and close to a quarry (Figure 22). The stonewall feature may be part of the quarry, but the owner of the farm bears no knowledge of its origins. Additionally, the possibility exists that the feature dates to the Historical Period.

According to the farm owner his ancestors observed shelters built of branches on the banks of the dry riverbed on the western side of the Remaining Extent of the Farm Mamatwan 331. The location of these structures are unknown and no material remains were observed during the survey.

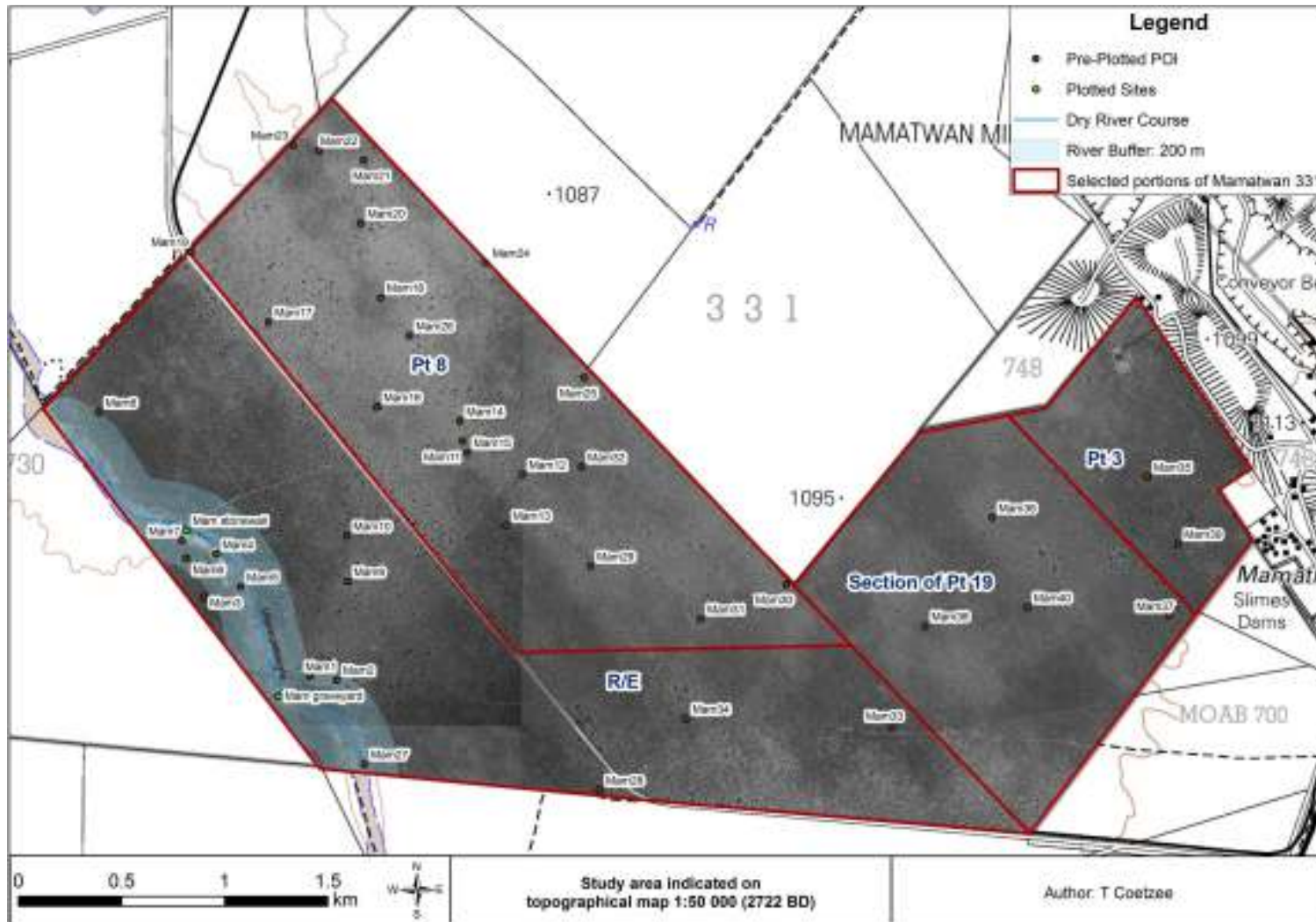


Figure17: Distribution of heritage sites and POI on the demarcated study area.

Table 2: Heritage site and POI coordinates

Site / POI Name	Longitude	Latitude
Plotted Sites		
Mam graveyard	22.93960	-27.40014
Mam stonewall	22.93505	-27.39289
Pre-Plotted POI		
Mam1	22.94112	-27.39926
Mam2	22.94245	-27.39942
Mam3	22.93592	-27.39581
Mam4	22.93652	-27.39394
Mam5	22.93773	-27.39536
Mam6	22.93507	-27.39411
Mam7	22.93484	-27.39335
Mam8	22.93074	-27.38774
Mam9	22.94295	-27.39510
Mam10	22.94291	-27.39309
Mam11	22.94854	-27.38891
Mam12	22.95148	-27.39035
Mam13	22.95071	-27.39259
Mam14	22.94839	-27.38803
Mam15	22.94877	-27.38940
Mam16	22.94435	-27.38743
Mam17	22.93900	-27.38374
Mam18	22.94448	-27.38263
Mam19	22.93520	-27.38067
Mam20	22.94350	-27.37938
Mam21	22.94361	-27.37661
Mam22	22.94141	-27.37621
Mam23	22.94016	-27.37596
Mam24	22.94962	-27.38107
Mam25	22.95448	-27.38608
Mam26	22.94591	-27.38429
Mam27	22.94384	-27.40310
Mam28	22.95535	-27.40417
Mam29	22.95484	-27.39435
Mam30	22.96443	-27.39508
Mam31	22.96025	-27.39663
Mam32	22.95436	-27.39000
Mam33	22.96962	-27.40126
Mam34	22.95956	-27.40102
Mam35	22.98206	-27.39028
Mam36	22.97448	-27.39210
Mam37	22.98317	-27.39637
Mam38	22.97124	-27.39688
Mam39	22.98358	-27.39320



Figure 18: Example of stone tools along the dry riverbed on the Remaining Extent.



Figure19: Heritage site Mam1 (Homestead)



Figure 20: Historical vineyard



Figure 21: Corrugated iron roof sheets



Figure 22: Linear stone feature (Mam stonewall)

5.4 Graves

There is a graveyard on the Remaining Extent of the farm Mamatwan 331 (Mam graveyard), in close proximity to the historical homestead and the vineyard. The graveyard is fenced and the graves are marked; the earliest date to 1953, while the most recent to 2000 (Figures 23-27). These graves are family graves of the current owner.



Figure 23: Graveyard on the Remaining Extent of the Farm Mamatwan 331 (Mam graveyard)



Figure 24: Van den Berg grave



Figure 25: Andreas Matthys Duvenhage grave



Figure 26: Cornelia Duvenhage grave



Figure 27: Verster grave

6. Evaluation

The significance of an archaeological site is based on the amount of deposit, the integrity of the context, the kind of deposit and the potential to help answer present research questions. Historical structures are defined by Section 34 of the National Heritage Resources Act, 1999, while other historical and cultural significant sites, places and features, are generally determined by community preferences.

A fundamental aspect in the conservation of a heritage resource relates to whether the sustainable social and economic benefits of a proposed development outweigh the conservation issues at stake. There are many aspects that must be taken into consideration when determining significance, such as rarity, national significance, scientific importance, cultural and religious significance, and not least, community preferences. When, for whatever reason the protection of a heritage site is not deemed necessary or practical, its research

potential must be assessed and if appropriate mitigated in order to gain data / information which would otherwise be lost. Such sites must be adequately recorded and sampled before being destroyed.

6.1 Field Rating

All sites should include a field rating in order to comply with section 38 of the national legislation. The field rating and classification in this report is prescribed by SAHRA.

Table 3: Field Rating

Rating	Field Rating/Grade	Significance	Recommendation
National	Grade 1		National site
Provincial	Grade 2		Provincial site
Local	Grade 3 A	High	Mitigation not advised
Local	Grade 3 B	High	Part of site should be retained
General protection A	4 A	High/Medium	Mitigate site
General Protection B	4 B	Medium	Record site
General Protection C	4 C	Low	No recording necessary

Site: Mam2-40 (Pre-plotted POI)

Pre-plotted POI's Mam2-40 did not reveal any material protected under the National Heritage and Resources Act, 25 of 1999. The majority of cases were natural circular formations caused by vegetation growth as well as two recent manmade structures: Mam2 – Scrap yard area; Mam25 – Small dam made of corrugated iron.

Site Mam1 (Homestead):

Rating	Field Rating/Grade	Significance	Recommendation
Local	3 A	High	Mitigation not advised

Site Mam stonewall:

Rating	Field Rating/Grade	Significance	Recommendation
General Protection B	4 B	Medium	Record site

Site Mam graveyard:

Rating	Field Rating/Grade	Significance	Recommendation
Local	3 A	High	Mitigation not advised

7. Statement of Significance & Recommendations

7.1 Statement of significance

Remaining Extent, farm Mamatwan 331

Sites: Mam1 (Homestead), Mam graveyard and Mam stonewall

There is archaeological material of heritage significance on the section demarcated for development on the Remaining Extent of the farm Mamatwan 331. The concentration of LSA stone tools in a 200 m radius along the river indicate the specific area's importance. Adding to this importance is the possibility of settlements on the banks of the river prior to the arrival of the current owner's ancestors. Although the stonewall observed in the river channel might be of recent origin, a possibility exists that this feature might have its origins in the Historical Period. The river and its surroundings as a source of water would have been a key area for past human settlement, especially since the river might have been a perennial river.

The historical homestead dates to 1922 and is therefore older than 60 years. The homestead is therefore protected under the National Heritage and Resources Act (25 of 1999). Also, according to the owner his ancestors were of the first people to move to the specific area. Such information might be useful in terms of a regional context. Adding to this is the fact that the family graves are located in close proximity to the original homestead.

The five graves on the Remaining Extent of the farm Mamatwan 331 are the family graves of the current owner. The oldest of these graves dates to 1953, while the most recent dates to 2000. In the event that these graves are affected or on discovery of other graves during the course of development, the following will apply: The National Heritage Resources Act (25 of 1999) and the Human Tissues Act (65 of 1983) protect graves older than 60 years. Graves younger than 60 years, however, are protected under the Human Tissue Act (65 of 1983) and fall under Section 2 (1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925). The exhumation of graves falls under the jurisdiction of the National Department of Health and the relevant Provincial Department of Health. Exhumation permission must also be obtained from the relevant local or regional council where graves are located, and from the relevant regional and local council to where the grave will be relocated.

Portions 3, 8 and the demarcated section of Portion 19, farm Mamatwan 331

We observed no archaeological material of heritage significance on Portions 3, 8 and the demarcated section of Portion 19 of the farm Mamatwan 331. However, the demarcated section of Portion 19 has to a large extent already been developed.

7.2 Recommendations

The prehistorical and historical landscape around Kuruman infers a rich and diverse cultural horizon. Therefore, the following recommendations are made in terms with the National Heritage Resources Act (25 of 1999) in order to avoid the destruction of heritage remains in areas demarcated for development:

- Farmsteads on farms in this section of the Northern Cape generally date to the Historical Period and in most cases, family graves and burials occur within the context of farmsteads. These areas are therefore sensitive and should be excluded from development as far as possible. This is particularly relevant in connection with the Remaining Extent.
- We recommend that the homestead on the Remaining Extent should be retained, as it is older than 60 years and is consequently protected under the National Heritage and Resources Act (25 of 1999). A qualified archaeologist must record the structure and obtain a destruction permit should the need arise to demolish it.
- We recommend that a conservation buffer of 20 m be placed around the graveyard located in close proximity to the homestead on the Remaining Extent of the farm Mamatwan 331. All graves are protected under the Human Tissue Act (65 of 1983) and Ordinance on the Removal of Graves and Dead Bodies (Ordinance 7 of 1925) while graves older than 60 years are protected under the National Heritage and Resources Act (25 of 1999).
- There is a dry river channel cutting through the Remaining Extent of the farm Mamatwan 331. From a heritage perspective this area is sensitive. Should development and construction activities impact on the 200 m buffered area, as indicated on figure 17, a full Phase 2 Archaeological Impact Assessment (AIA) should be undertaken.
- We did not observe any heritage material on Portions 3, 8 and the demarcated section of Portion 19 of the farm Mamatwan 331. Therefore, from a heritage point of view, development may proceed on Portions 3, 8, the demarcated section of Portion 19 as well as the Remaining Extent of the farm Mamatwan 331 subject to the abovementioned conditions and recommendations. We note that mining activities are already occurring on the demarcated section of Portion 19.
- Because archaeological artefacts generally occur below surface, the possibility exists that culturally significant material and skeletal remains may be exposed during the development and construction phases, in which case all activities must be suspended pending further archaeological investigations by a qualified archaeologist (See National Heritage and Resources Act, 25 of 1999 section 36 (6)).

- Should the need arise to expand the development beyond the demarcated areas mentioned in this study, the following applies: a qualified archaeologist must conduct a full Phase 1 Archaeological Impact Assessment (AIA) on the sections beyond the demarcated areas which will be affected by the expansion, in order to determine the occurrence and extent of any archaeological sites and the impact development might have on these sites.

8. Addendum: Terminology

Archaeology:

The study of the human past through its material remains.

Artefact:

Any portable object used, modified, or made by humans; e.g. pottery and metal objects.

Assemblage:

A group of artefacts occurring together at a particular time and place, and representing the sum of human activities.

Context:

An artefact's context usually consist of its immediate *matrix* (the material surrounding it e.g. gravel, clay or sand), its *provenience* (horizontal and vertical position within the matrix), and its *association* with other artefacts (occurrence together with other archaeological remains, usually in the same matrix).

Cultural Resource Management (CRM):

The safeguarding of the archaeological heritage through the protection of sites and through salvage archaeology (rescue archaeology), generally within the framework of legislation designed to safeguard the past.

Excavation:

The principal method of data acquisition in archaeology, involving the systematic uncovering of archaeological remains through the removal of the deposits of soil and other material covering and accompanying it.

Feature:

An irremovable artefact; e.g. hearths or architectural elements.

Ground Reconnaissance:

A collective name for a wide variety of methods for identifying individual archaeological sites, including consultation of documentary sources, place-name evidence, local folklore, and legend, but primarily actual fieldwork.

Matrix:

The physical material within which artefacts is embedded or supported, i.e. the material surrounding it e.g. gravel, clay or sand.

Phase 1 Assessments:

Scoping surveys to establish the presence of and to evaluate heritage resources in a given area.

Phase 2 Assessments:

In-depth culture resources management studies which could include major archaeological excavations, detailed site surveys and mapping / plans of sites, including historical / architectural structures and features. Alternatively, the sampling of sites by collecting material, small test pit excavations or auger sampling is required.

Sensitive:

Often refers to graves and burial sites although not necessarily a heritage place, as well as ideologically significant sites such as ritual / religious places. *Sensitive* may also refer to an entire landscape / area known for its significant heritage remains.

Site:

A distinct spatial clustering of artefacts, features, structures, and organic and environmental remains, as the residue of human activity.

Surface survey:

There are two kinds: (1) unsystematic and (2) systematic. The former involves field walking, i.e. scanning the ground along one's path and recording the location of artefacts and surface features. Systematic survey by comparison is less subjective and involves a grid system, such that the survey area is divided into sectors and these are walked ally, thus making the recording of finds more accurate.

9. References

- Breutz, P., L. 1963. *The Tribes of the District of Kuruman and Postmasburg*. Department of Bantu Administration and Development. Pretoria. (Cited in PGS 2010)
- Clarke, R. J. & Kuman, K. 2000. *The Sterkfontein Caves Palaeontological and Archaeological Sites*. Johannesburg: University of the Witwatersrand.
- Deacon, H. & Deacon, J. 1999. *Human beginnings in South Africa*. Cape Town: David Philip
- Huffman, T. N. 2007. *Handbook to the Iron Age*. Pietermaritzburg: UKZN Press
- Mitchell, P. 2002. *The archaeology of southern Africa*. Cambridge: Cambridge University Press.
- Personal Grave Solutions (PGS). 2010. Amari Kongoni Project, Heritage Assessment, on Kongoni 311
- Smith, A., P. 1966. *Wateroog in die Dorsland: Ned. Geref. Kerk Kuruman 1916-1966*. Kuruman: Kerkraad van die gemeente Kuruman. (cited in PGS 2010)
- Snyman, P. H. R. 1992. *Kuruman: Vervloë pad na Afrika*. Pretoria: Raad vir Geesteswetenskaplike Navorsing
- Toth, N. & Schick, K. 2007. *Handbook of paleoanthropology*. Berlin: Springer.
- Human Tissue Act No. 65 of 1983, Government Gazette, Cape Town*
- National Resource Act No.25 of 1999, Government Gazette, Cape Town*
- Removal of Graves and Dead Bodies Ordinance No. 7 of 1925, Government Gazette, Cape Town*