

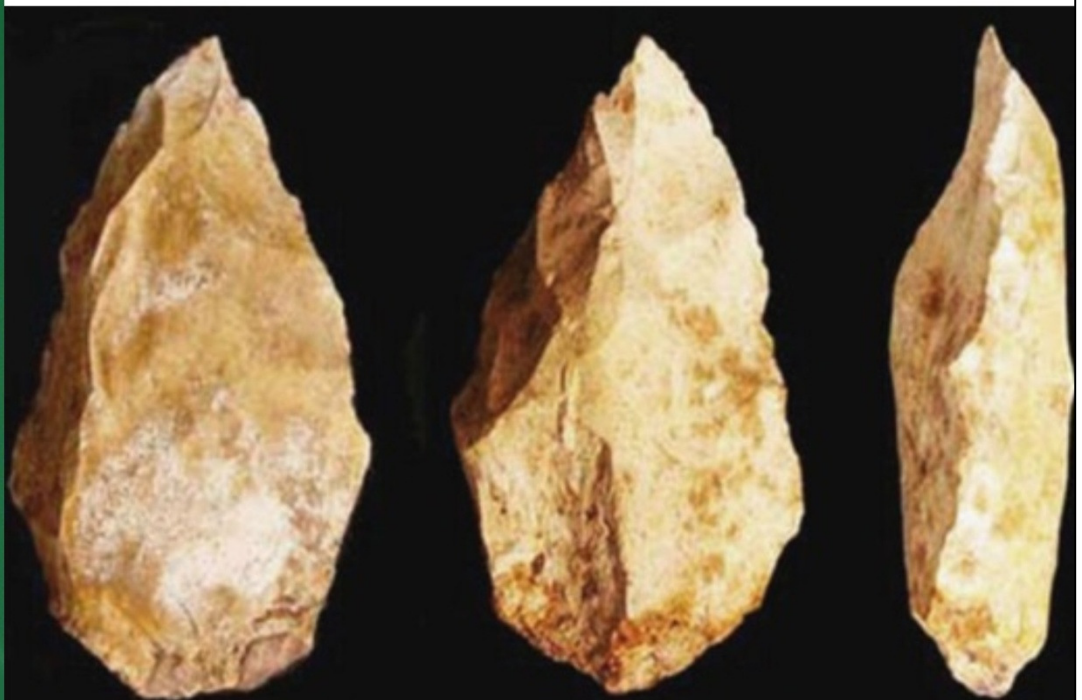
February 2013

**South African Coal Mine Holdings  
(PTY) LTD**

**ARCHAEOLOGICAL IMPACT  
ASSESSMENT (PHASE 1)**

**Submitted to:**

South African Coal Mine Holdings (Pty) Ltd  
198 Oxford Road  
Ilovo  
Johannesburg  
2000



**REPORT**



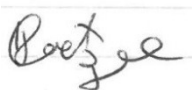


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## Table of Contents

<b>1. Executive Summary .....</b>	<b>3</b>
<b>2. Project Background .....</b>	<b>4</b>
2.1 Introduction .....	4
2.2 Legislation .....	4
2.2.1 The EIA and HIA processes .....	4
2.2.2 Legislation regarding archaeology and heritage sites .....	5
<b>3. Study Area and Project Description .....</b>	<b>8</b>
3.1 Archaeological Background .....	12
3.1.1 The Earlier Stone Age .....	12
3.1.2 The Middle Stone Age .....	12
3.1.3 The Later Stone Age .....	13
3.1.4 Early Iron Age .....	13
3.1.5 Later Iron Age and Historical Periods .....	13
<b>4. Methodology .....</b>	<b>14</b>
4.1 Sources of information .....	14
4.2 Limitations .....	15
<b>5. Archaeological and Historical Remains .....</b>	<b>16</b>
5.1 Stone Age Remains .....	16
5.2 Iron Age Farmer Remains .....	16
5.3 Historical and Recent Remains .....	16
5.4 Graves .....	16
<b>6. Evaluation .....</b>	<b>16</b>
6.1 Statement of significance .....	17
6.2 Recommendations .....	17
<b>7. Addendum: Terminology .....</b>	<b>18</b>
<b>8. References .....</b>	<b>19</b>

	Originated By:	Reviewed By:	Approved By:
<b>Name:</b>	Tobias Coetzee	Retha Weir	Henno Engelbrecht
<b>Designation:</b>	Archaeological Specialist	Quality Reviewer	Programme Manager
<b>Signature:</b>			
<b>Date:</b>	2013/02/15	2013/02/15	2013/02/19

## 1. Executive Summary

Environmental Assurance (Pty) Ltd was appointed by South African Coal Mine Holdings (Pty) Ltd to undertake an archaeological study on a selected section traversing portions five and ten of the farm Voorslag 274 IS to determine the scope of archaeological resources which could be impacted on by the proposed relocation of the collier's processing plant.

During the site survey of the area demarcated for the new location of the processing plant, no material of archaeological significance was observed.

The relocation of the processing plant MDF plant on portion 60 of the farm Lothair 124 IT may therefore continue, subject to the recommendations made. Should culturally significant material or skeletal remains be exposed during construction, 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 was appointed by South African Coal Mine Holdings (Pty) Ltd to undertake an archaeological study on the demarcated section on portions five and ten on the farm Voorslag 274 IS, Mpumalanga. The purpose of this study was to examine the demarcated section in order to determine if any archaeological resources of heritage value will be impacted on by the proposed relocation of the processing plant, 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 demarcated section, as well as to provide advice and recommendations that will ensure the protection of heritage resources alongside development.

In the following report the significance and importance as well as legislative requirements regarding heritage resources found on the demarcated section are discussed.

### **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 Heritage Impact Assessment (HIA's).

HIA's 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 HIA 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 suggest relevant recommendations.

All Heritage Impact Assessment reports should include:

- a. Location of the sites that are found;
- b. Short description of the characteristics of each site;

- c. Short assessment of how important each site is, indicating which should be conserved and which mitigated;
- d. Assessment 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 might be required to identify the associations of the site. (A pre-arranged SAHRA permit is required); and
- f. Recommendations for conservation or mitigation.

This HIA report is intended to inform the client about the legislative protection of heritage resources and their significance and make appropriate recommendations. It is essential that it also provides the heritage authority with sufficient information about the sites to enable it 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 of;
- e. Whether sites must be conserved and what alternatives can be proposed that may re-locate the development in such a way as to conserve other sites; and
- f. What measures should/can be put in place to protect the sites that should be conserved.

When a Phase 1 HIA 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 HIA 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 amongst 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. “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 5000m<sup>2</sup> 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 10000m<sup>2</sup> 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 Voorslag 274 IS is located about 8km south of the town of Breyten and about 16km north of the town of Ermelo (see **Table 1** and **Figure 1, Figure 2 & 3**). The area of planned development is about 50 hectares in size and is located on the eastern side of the road between Ermelo and Breyten. The area where the plant will be relocated to consists of short grassland and two patches of Blackwattle trees. The current access gate and site offices are also located on this section while the access road from the R36 to the colliery divides the section into a smaller upper and a larger bottom part.

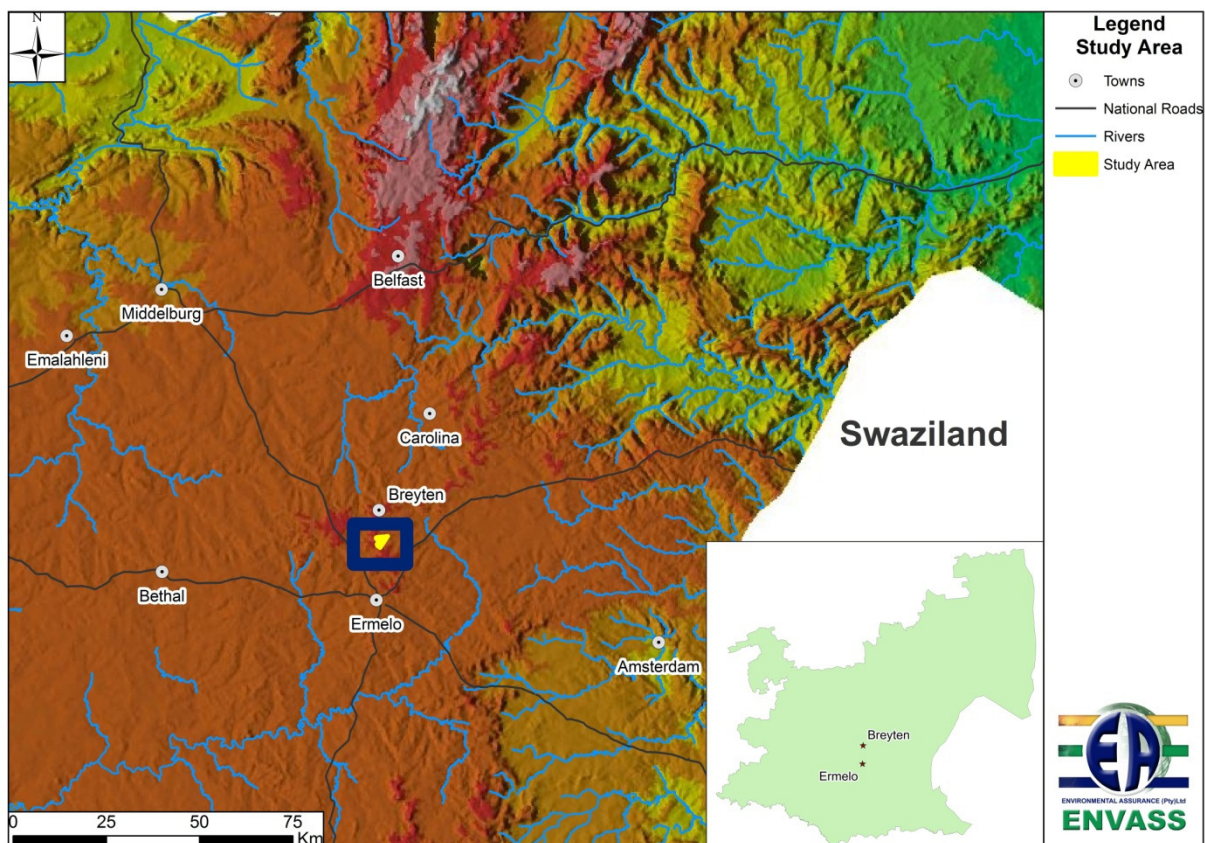
Although no water sources occur in the immediate vicinity of the area to be impacted, several fountains, perennial, as well as non-perennial rivers are found in the general area. The most notable of these is the Vaal River flowing about 12km to the east of the development area. In terms of vegetation the study area falls within the North Eastern Sandy Highveld biome and consists mostly of Sourveld species covering undulating hills. Average rainfall amounts to about 748 mm per year, while thundershowers are common during the months between October and March.



Coal mining is considered expensive in cases where reserves are located deep below the surface. In the case of the area being mined by Umlabu Colliery, however, coal reserves are relatively shallow (12 – 18m), making coal mining an economically viable option. Previous research based on previously operating mines suggest that 100 000 tonnes of coal could be mined per year for the duration of 11 years. The processing plant's purpose is to wash impurities from the coal and to prepare the coal for transportation to the end user or market. It would therefore be practical to establish the processing plant close to mining activities for ease of transport. With the processing plant relocating from portion one on the farm Mooifontein 109 IT to the designated section on portions five and ten of the farm Voorslag 274 IS, a new area for exploiting coal is opened.

**Table 1: Farm name & coordinates**

Farm	Portions	Map Reference (1:50 000)	Coordinates
Voorslag 274 IS	5 & 10	2629 BD	26°22'31.85"S 29°59'22.78"E



**Figure 1: Provincial location of the study area**

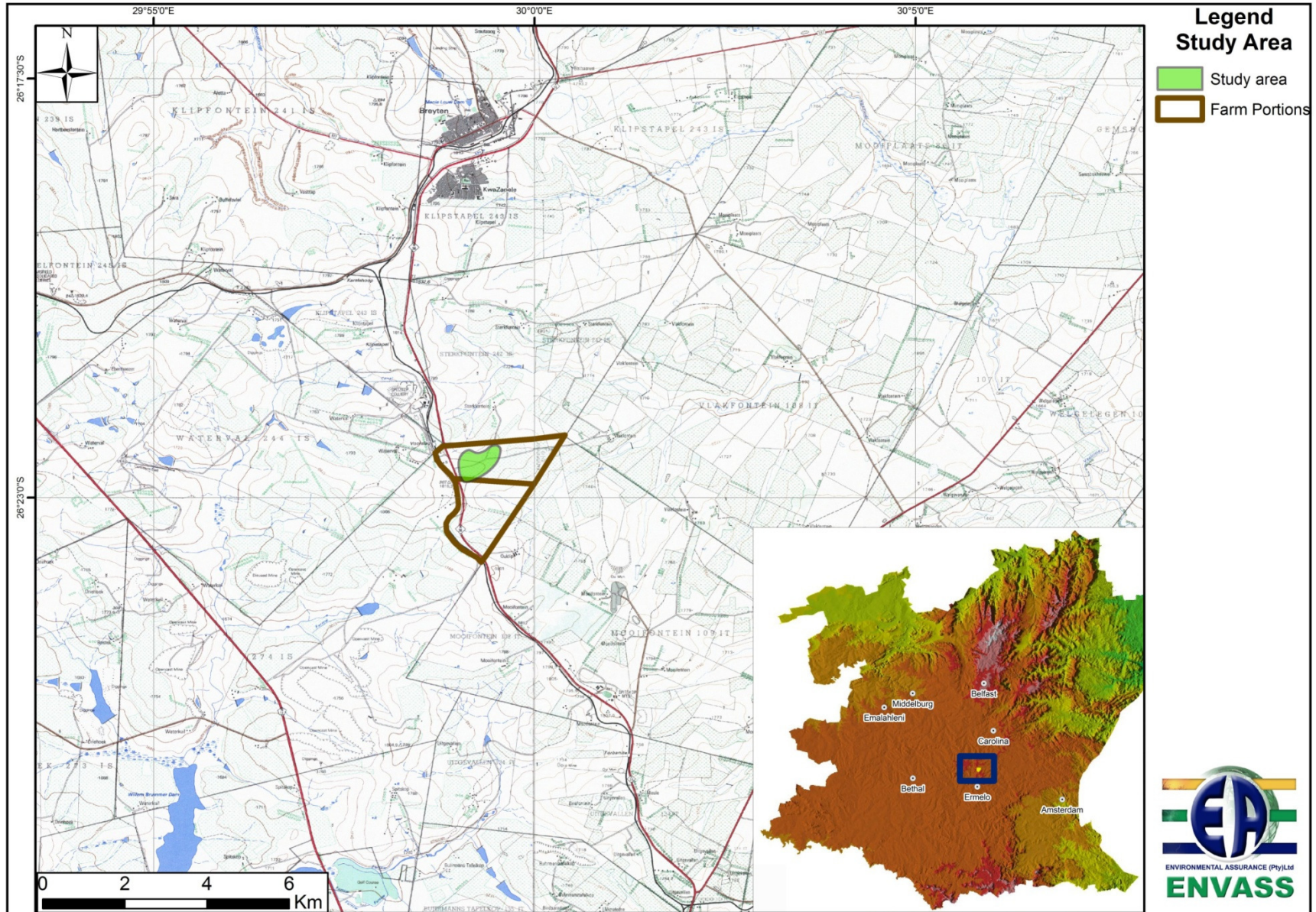


Figure 2: Segment of SA 1: 50 000 2629 BD indicating the study area

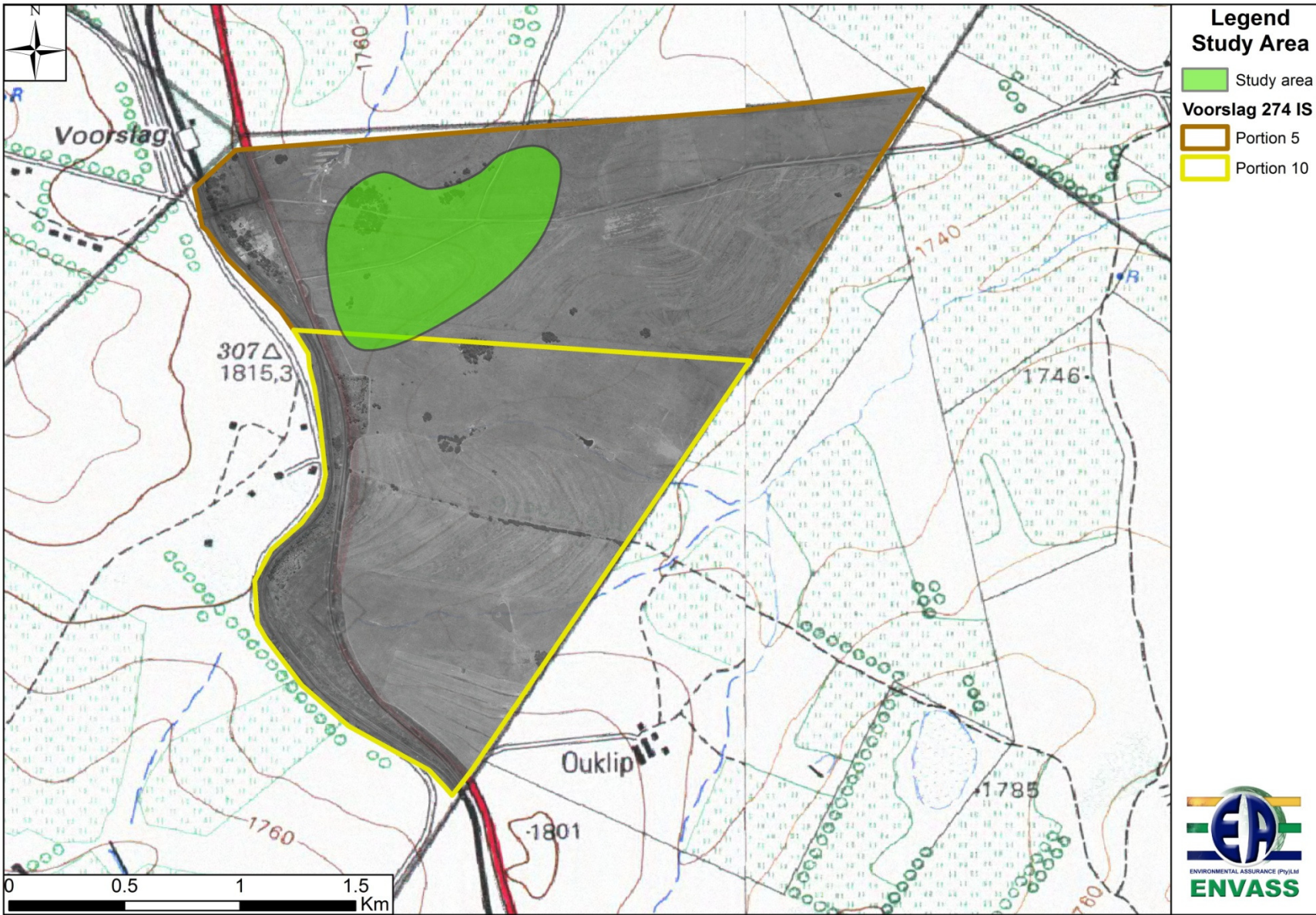


Figure 3: The section demarcated for the relocation of the processing plant

## 3.1 Archaeological Background

The southern African archaeology is broadly divided into the Earlier, Middle and Later Stone Age, Early and Later Iron Age, and Historical / Colonial Periods.

### 3.1.1 The Earlier Stone Age

The earliest stone tool industry, the Oldowan, was developed by the earliest members of the genus *Homo* such as *Homo habilis*, around 2.6 million years ago. It contained tools such as cobble cores and pebble choppers (Toth & Schick 2007). The oldest stone tools from the Sterkfontein cave 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. These stone tools therefore suggest the earliest direct evidence for culture in southern Africa (Clarke & Kathleen 2000). It was completely replaced by the Acheulean industry, which was first conceived by *Homo ergaster* around 1.8 or 1.65 million years ago, which lasted until around 300 000 Kya. Evidence from this period is also found at Swartkrans, Kromdraai and Sterkfontein. At about 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, 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 they appear to have used handaxes often, there is disagreement about their use. There are no indications of hafting, and some artefacts are far too large for that. Choppers and scrapers were likely used for skinning and butchering scavenged animals and sharp ended sticks were often obtained for digging up edible roots. Presumably, early humans used wooden spears as early as 5 million years ago to hunt small animals. Fire was used by the hominin *Homo erectus* and *Homo ergaster* as early as 300,000 or 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 Earlier 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 remain from this period. In some cases circular hearths were found which indicate the ability to make fire while animal and plant remains refer to a hunting and gathering lifestyle. It is also during this period that the first *Homo sapiens* species emerged. 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 hominid fragments, fauna and Middle Stone Age artefacts (Clarke & Kuman 2000:10-13).

### 3.1.3 The Later Stone Age

This time period ranges from about 20 000 years ago to the present and saw the emergence of *Homo sapiens sapiens*. Stone tools from this period are generally smaller but were used to do the same job as those from previous periods, but in a different way. At the time of European contact in South Africa, some such as the Khoisan people, were still making these tools. This greatly helped in understanding what these tools were used for. Some Later Stone Age associations are: rock art, smaller stone tools (microliths), bows and arrows, bored stones, grooved stones, polished bone tools, earthenware pottery and beads. Some Later Stone Age sites include 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 at around 200 A.D. These groups were agro-pastoralist communities that settled in the vicinity of water in order to provide subsistence for their cattle and crops. Artefact evidence from Early Iron Age sites is mostly found in the form of ceramic assemblages. The origins and archaeological identities of this period are largely based upon ceramic typologies. Early Iron Age ceramic traditions are classified by some scholars into different “streams” or trends in pot types and decoration that, over time emerged 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 up to the end of the first millennium AD (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 time period around the end of the 18<sup>th</sup> Century and early 19<sup>th</sup> Century, characterised by the ‘Difaqane’, was marked by conflict and the displacement of people. The reasons for these conflicts have for long been attributed to individuals, such as Shaka, and Nguni state formation processes. Continuous research, however, led to a general shift towards a wider interpretation regarding the origins of these conflicts. It is now argued that a multitude of factors, such as socio-economical, demographical, political processes as well as the effects of slavery and the movement of groups like the Korana, Griekwa and white pioneers might have contributed to the rise in conflict (Bergh 1999: 110).

The movement of people during these times, largely influenced by conflict, did see the sporadic movement of people in the Ermelo surroundings. It is known, for instance, that Lowveld communities sent hunting parties to the escarpment during summer months. Worthy of noting is the fact that during early times the Ermelo environment was quite inhospitable since it is known for very low winter temperatures, little timber for firewood, and grass not suitable for thatching. These factors, along with others, certainly influenced Iron Age settlement location. An example of one settlement site occurs about 20km NW of the town of Ermelo on Tafelkop

Mountain. More than 100 corbelled huts are found on top of the mountain of which most are situated in clusters or circles (Paulsen & Stone 2001:39).

In a phase one heritage impact assessment conducted by Archaeology Africa cc on the farm Voorslag 274 IS in 2007, no material of heritage importance was observed. The section, on which Voorslag Siding is now located, is positioned on the western side of the road between Ermelo and Breyten, about 800m to the south of the area demarcated for the relocation of the processing plant. The study, which included several archival maps, indicated that no heritage features were visible. A map of the Carolina district produced during 1899 and early 1890 reveal only the road between Ermelo and Breyten, although the town of Breyten was only established in 1905. A map dating to between 1911 and 1920 indicate the railway line between Ermelo and Breyten, as well as the wagon road alongside it. Although farmhouses and huts are depicted, none is shown on the study area (Archaeology Africa cc 2007).

## **4. Methodology**

Archaeological reconnaissance of the area under investigation was mainly done through site surveys and inspecting satellite imagery for traces of past human activity. Visibility was generally good as short Grassveld makes up the majority of the site. Satellite imagery often proves useful in locating heritage sites that are no longer easily visible on ground level. 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/locate archaeological sites on the sections of the portions that will 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**

Standard archaeological procedures for the observation of heritage resources were followed at all times during the survey. Transects were conducted at roughly 60m intervals in an east-west direction. As most archaeological material occur in single or multiple stratified layers beneath the soil surface, special attention was given to disturbances, both man-made such as roads and clearings, as well as those made by natural agents such as burrowing animals and erosion. General conditions on the terrain were photographed with a Sony Cyber-shot digital camera.

Information regarding past human activity and the location of sites which may be of heritage value was also obtained through personal communication with a local farmer and neighbour of Umlabu Colliery. According to the farmer's knowledge no archaeological material or graves exist on the demarcated section.

A literature study, which incorporated previous work done in the region, was conducted in order to place the study area into context from a heritage perspective. Because little evidence is available for Early or Later Iron Age the focus was on historical times and the period known as the *Difaqane*. Rock art, which is common in the area, tend to be located along ridges. In the vicinity of the study area no ridges are located. It is therefore unlikely that rock paintings or engraving exist within the direct vicinity of the study area.

## 4.2 Limitations

The surrounding vegetation in the area under investigation is Eastern Highveld Grassland consisting mostly of relatively thick but short Grassveld. The general visibility of the investigated area was good at the time of surveying (November 2012) (**Figure 4**). Smaller finds, such as stone tools and other material culture, could however still go undetected since some material may be located beneath the thicket. It should be noted that undetected heritage remains may be present in sub-surface deposits, if found 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)).



**Figure 4:** Environment on the section demarcated for development

## **5. Archaeological and Historical Remains**

### **5.1 Stone Age Remains**

No Stone Age archaeological remains were found.

### **5.2 Iron Age Farmer Remains**

No Iron Age Farmer archaeological remains were identified in the study area.

### **5.3 Historical and Recent Remains**

No Historical archaeological remains were identified in the study area.

### **5.4 Graves**

No graves were observed on the demarcated section.

## **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 Statement of significance

The greater landscape holds a rich archaeological history ranging from stonewalled settlements on a hilltop to various rock art sites, as well as colonial wagon roads. These sites, however, are located a considerable distance from the location where the processing plant will be relocated to. Because no cultural remains were observed in the direct vicinity of the area to be impacted, it is highly unlikely that cultural remains will be affected. This does not guarantee an area vacant of culturally significant material; the site should therefore be monitored on a continuous basis during the construction phase should such material be unearthed.

## 6.2 Recommendations

The following recommendations are made in terms of the National Heritage Resources Act (25 of 1999):

- Because archaeological artefacts generally occur below surface, the possibility exists that culturally significant material and skeletal remains may be exposed during development, 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)). It is therefore recommended that the Environmental Control Officer (ECO), who will be responsible for the relocation of the SACMH (Pty) Ltd processing plant, monitor the development should culturally significant material be observed.
- From a heritage point of view the relocation of the processing plant may proceed on the demarcated section on portions five and ten of the farm Voorslag 274 IS (as indicated by **Figure 3**), subject to the abovementioned conditions and recommendations.

## 7. 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:**

Two basic kinds can be identified: (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 systematically, thus making the recording of finds more accurate.

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