

HERITAGE SCOPING REPORT

FOR THE PROPOSED KRANSPAN COLLIERY, MPUMALANGA PROVINCE

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EXECUTIVE SUMMARY

Site name and location: The Kranspan Project covers the Kranspan Prospect Area, located in the Mpumalanga Province of South Africa, some 13 kilometres (km) south-west of Carolina by road. The Project area can be reached via the R36 Provincial Road travelling southwest from the town of Carolina (Figure 1).

1: 50 000 Topographic Map: 2630 AA & 2629 BB.

EIA Consultant: ABS Africa (Pty) Ltd.

Developer: ILIMA Coal Company (Pty) Ltd

Heritage Consultant: Heritage Contracts and Archaeological Consulting CC (HCAC).

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Date of Report: 15 November 2018.

Findings of the Assessment:

The scope of work comprises a heritage scoping report for the Kranspan Colliery Project. This report was conducted based on a desktop study of available data regarding cultural heritage resources of the area and will be followed by a field-based assessment in the EIA phase. Previously recorded heritage sites in the larger project area indicate the range of cultural resources that can be expected in the study area. Large portions of the study area have previously been disturbed by agricultural activities, and this would have impacted on surface indicators of heritage resources. In terms of the NHRA and based on available information on the area the following features can be expected in the area:

- » Later Stone Age
- » Later Iron Age
- » Several buildings occur on site, and based on the history of the area these structures could be older than 60 years. The presence of structures older than 60 years will be confirmed during the EIA phase.
- » Graves and Cemeteries

The study area is of very high paleontological sensitivity and according to the SAHRIS palaeontological sensitivity map must be subjected to a field based palaeontological assessment in the impact assessment phase. From a heritage point of view, the proposed project is considered to be viable, and no fatal flaws are expected.

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ABBREVIATIONS

AIA: Archaeological Impact Assessment
ASAPA: Association of South African Professional Archaeologists
BIA: Basic Impact Assessment
CRM: Cultural Resource Management
EAP: Environmental Assessment Practitioner
ECO: Environmental Control Officer
EIA: Environmental Impact Assessment*
EIA: Early Iron Age*
EMP: Environmental Management Plan
ESA: Early Stone Age
GPS: Global Positioning System
HIA: Heritage Impact Assessment
LIA: Late Iron Age
LSA: Late Stone Age
MEC: Member of the Executive Council
MIA: Middle Iron Age
MPRDA: Mineral and Petroleum Resources Development Act
MSA: Middle Stone Age
NEMA: National Environmental Management Act
PRHA: Provincial Heritage Resource Agency
SADC: Southern African Development Community
SAHRA: South African Heritage Resources Agency
SAHRIS: South African Heritage Resources Information System

**Although EIA refers to both Environmental Impact Assessment and the Early Iron Age both are internationally accepted abbreviations and must be read and interpreted in the context it is used.*

GLOSSARY

Archaeological site (remains of human activity over 100 years old)

Early Stone Age (2 million to 300 000 years ago)

Middle Stone Age (300 000 to 30 000 years ago)

Late Stone Age (30 000 years ago until recent)

Historic (approximately AD 1840 to 1950)

Historic building (over 60 years old)

Lithics: Stone Age artefacts

1. INTRODUCTION

HCAC was contracted by ABS Africa (Pty) Ltd to conduct a heritage scoping study for the proposed Kranspan Colliery Project. A Heritage Impact Assessment report will follow the heritage scoping report.

The scoping report aims to conduct a desktop study to identify possible heritage resources within the project site. The study furthermore aims to assess the impact of the proposed project on non - renewable heritage resources, and to submit appropriate recommendations with regards to responsible cultural resources management measures. This will assist the developer in managing the discovered heritage resources in a responsible manner, to protect, preserve and develop them within the framework provided by Heritage legislation.

This report outlines the approach and methodology utilised for the scoping phase of the project. The report includes information collected from various sources and consultations. Possible impacts are identified, and mitigation measures are proposed in the following report. It is important to note that no fieldwork was conducted as part of the scoping phase but will be conducted as part of the impact assessment phase.

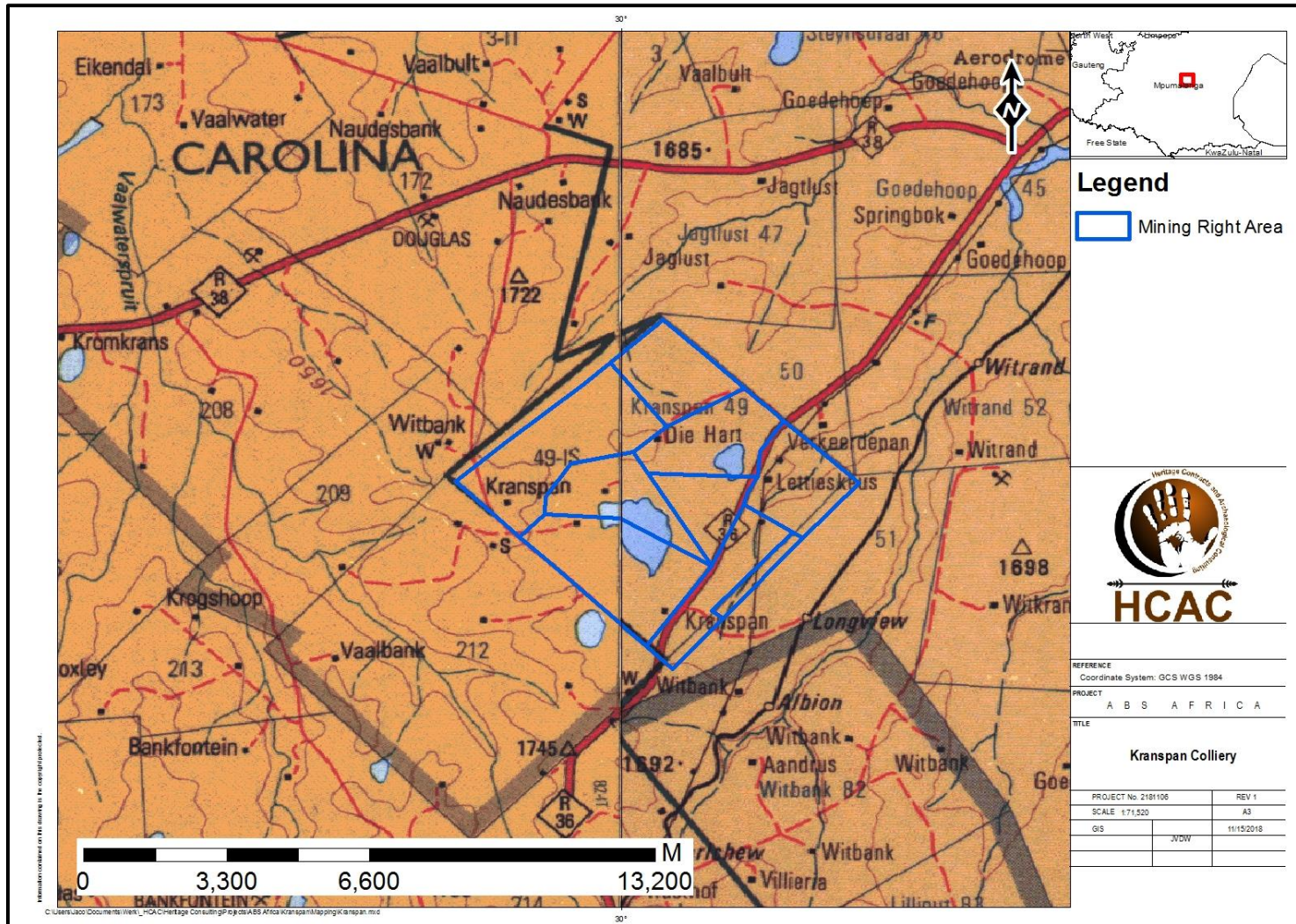


Figure 1. Regional Locality map of the site under investigation indicated in blue.

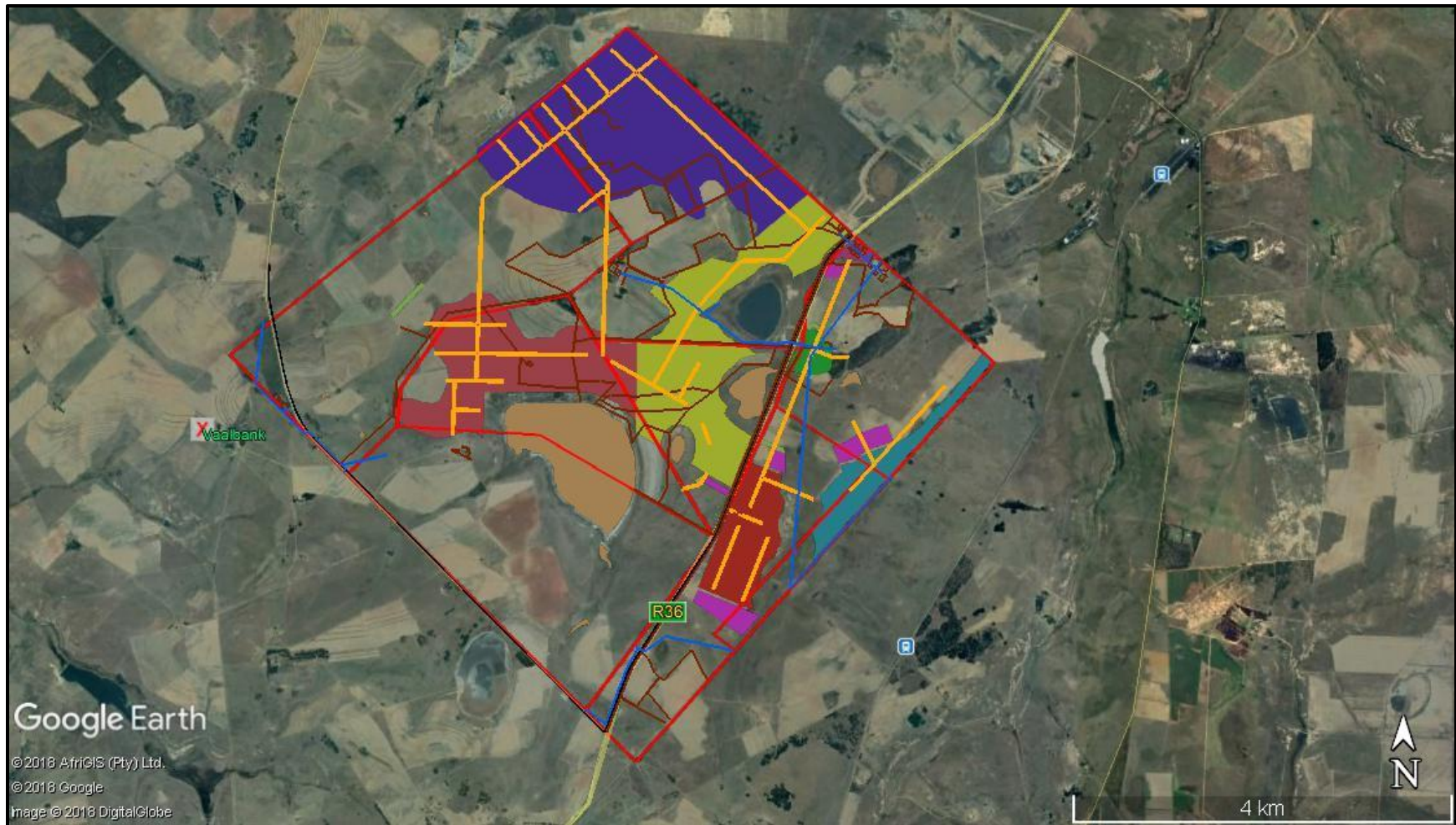


Figure 2. 2018 Google Earth image showing the surface infrastructure. (Google Earth 2018)

1.1 Terms of Reference

The main aim of this scoping report is to determine if any known heritage resources occur within the project site. The objectives of the scoping report were to:

- » Conduct a desktop study:
 - * Review available literature, previous heritage studies and other relevant information sources to obtain a thorough understanding of the archaeological and cultural heritage conditions of the area;
 - * Identify known and recorded archaeological and cultural sites; and
 - * Determine whether the area is renowned for any cultural and heritage resources, such as Stone Age sites, Iron Age sites, informal graveyards or historical homesteads.
- » Compile a specialist Heritage Scoping Report in line with the requirements of the EIA Regulations, 2014, as amended on 07 April 2017.

The reporting of the scoping component is based on the results and findings of a desktop study, wherein potential issues associated with the proposed project will be identified, and those issues requiring further investigation through the IA Phase highlighted. Reporting will aim to identify the anticipated impacts, as well as cumulative impacts, of the operational units of the proposed project activity on the identified heritage resources for all 3 development stages of the project, i.e. construction, operation and decommissioning. Reporting will also consider alternatives should any significant sites be impacted on by the proposed project. This is done to assist the developer in managing the discovered heritage resources in a responsible manner, in order to protect, preserve and develop them within the framework provided by Heritage Legislation.

During the EIA phase, the following terms apply:

Field study

Conduct a field study to (a) locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest; b) record GPS points of sites/areas identified as significant areas; c) determine the levels of significance of the various types of heritage resources affected by the proposed development

Reporting

Report on the identification of anticipated and cumulative impacts the operational units of the proposed project activity may have on the identified heritage resources for all 3 phases of the project; i.e., construction, operation and decommissioning phases. Consider alternatives, should any significant sites be impacted adversely by the proposed project. Ensure that all studies and results comply with the relevant legislation, SAHRA minimum standards and the code of ethics and guidelines of ASAPA.

To assist the developer in managing the discovered heritage resources in a responsible manner, and to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999).

1.2 Nature of the development

Ilima Coal Company (Ilima) is the holder of a prospecting right for coal minerals over nine (9) portions of the Farm Kranspan 49IT. The latter is situated in the Mpumalanga Province, approximately 13 km south-west of the town of Carolina (Figure 1).

Following the successful completion of prospecting activities, Ilima now intends to apply for a mining right in terms of Section 22 of the Minerals and Petroleum Resources Development Act 28 of 2002. The planned operations entail both surface and underground mining as well as the establishment of various mine support infrastructure within the proposed mining right area.

Ilima has advised as follows:

1. There will be both opencast (roll over) and underground (bord & pillar) mining operations on the project area. The attached plan defines the areas.
2. At this stage, only the E-Seam will be mined. There are some localised areas where the B Seam and CU and CL are present, however they appear to be uneconomic.
3. The underground conceptual design is being conducted and will be incorporated into the MWP once completed.
4. We have applied a 100m stand-off from known wetlands/water courses etc.
5. Mining will commence with opencast areas and underground operations will be started later.
6. The draft MWP makes provision for a beneficiation plant, (this is not confirmed)
7. If the wash plant is excluded the mine will either dry crush and screening the ROM or transport it to Ilima or another wash plant in the area

The mine infrastructure will be situated in the south-eastern portion of the farm Kranspan 49IT and will consist of the following:

- Opencast mining areas with contractor's camp.
- Haulroads to access the mining areas.
- Adits from opencast highwalls to provide access to the underground mining.
- ROM stockpile areas.
- Upcast ventilation shaft with the main fan situated on this shaft.
- Offices, stores, workshop, change house, and lamp room, all prefabricated structures that allows for easy removal and rehabilitation of the site.
- Parking area.
- Diesel Tanks
- Crushing and Screening Plant (Raw)
- Dense Medium beneficiation plant
- Product stockpiles and loading area.
- Discard/Tailings
- Onsite laboratory
- Weighbridges
- An access road to the shaft that will be constructed along the overland conveyor route and in the same servitude.

1.3 The receiving environment

The Project covers the Kranspan Prospecting Right area and is located in the Mpumalanga Province of South Africa, some 13 km southwest of Carolina. The Project can be accessed via the R36 paved provincial road if travelling from the north or the south.

The nearest sizeable towns are Carolina, 13 km to the northeast. The nearest accessible railway siding is at Witrand, ~ 6 km north. There are numerous farm homesteads situated within the Project Area. The land is currently mainly used for maize, cattle and sheep farming. The surface topography is undulating, with gradual rises and falls over the area with the highest elevations towards the central portion of the Project area. The farms covered by Kranspan is 3383.42 hectares (ha) in extent, is held under a Prospecting Right (PR) (No. 44/2016 (PR) [MP30/5/1/2/2/102PR]); granted to Ilima Coal Company, which expires in 02 March 2019. The boreholes drilled in the Prospecting Area indicate that the area of interest lies on all the farms covered by the Kranspan Prospecting Right area. The boundaries of the Target Area, which is the same as the Prospecting Right Area. The vegetation of the general area and the proposed site consists of Eastern Highveld Grassland (Mucina & Rutherford 2006) and is characterised by ankle- high grass cover

2. APPROACH AND METHODOLOGY

The assessment is to be undertaken in two phases, a desktop study as part of the Scoping phase and a Heritage Impact Assessment as part of the EIA phase. This report concerns the scoping phase. The aim of the scoping phase is to cover available data regarding archaeological and cultural heritage to compile a background history of the study area in order to identify possible heritage issues or fatal flaws that could possibly be associated with the project and should be avoided during development.

This was accomplished by means of the following phases (the results are represented in section 4 of this report):

2.1 Literature review

A review was conducted utilising data for information gathering from a range of sources on the archaeology and history of the area. The aim of this is to extract data and information on the area in question, looking at archaeological sites, historical sites and graves of the area.

2.2 Information collection

The South African Heritage Resources Information System (SAHRIS) was consulted to collect further data from CRM practitioners who undertook work in the area to provide the most comprehensive account of the history of the area where possible. In addition, the archaeological database housed at the University of the Witwatersrand was consulted.

2.3 Public consultation

No public consultation was conducted during this phase by the author.

2.4 Google Earth and mapping survey

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where archaeological sites might be located.

2.5 Genealogical Society of South Africa

The database of the genealogical society was consulted to collect data on any known graves in the area.

2.6. Restrictions

This study did not assess the impact on intangible resources or the palaeontological component of the project. Based on available data and resources as outlined in the report additional information that becomes available at a later stage might change the outcome of the assessment.

3. LEGISLATION

For this project, the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) is of importance and the following sites and features are protected:

- a. Archaeological artefacts, structures and sites older than 100 years;
- b. Ethnographic art objects (e.g. prehistoric rock art) and ethnography;
- c. Objects of decorative and visual arts;
- d. Military objects, structures and sites older than 75 years;
- e. Historical objects, structures and sites older than 60 years;
- f. Proclaimed heritage sites;
- g. Grave yards and graves older than 60 years;
- h. Meteorites and fossils; and
- i. Objects, structures and sites of scientific or technological value.

The national estate includes the following:

- a. Places, buildings, structures and equipment of cultural significance;
- b. Places to which oral traditions are attached or which are associated with living heritage;
- c. Historical settlements and townscapes;
- d. Landscapes and features of cultural significance;
- e. Geological sites of scientific or cultural importance;
- f. Archaeological and palaeontological importance;
- g. Graves and burial grounds;
- h. Sites of significance relating to the history of slavery; and
- i. Movable objects (e.g. archaeological, palaeontological, meteorites, geological specimens, military, ethnographic, books etc.).

Section 34 (1) of the Act deals with structures that are older than 60 years. Section 35(4) of this Act deals with archaeology, palaeontology and meteorites. Section 36(3) of the Act, deals with human remains older than 60 years. Unidentified/unknown graves are also handled as older than 60 years until proven otherwise.

3.1 Heritage Site Significance and Mitigation Measures

The presence and distribution of heritage resources define a Heritage Landscape. In this landscape, every site is relevant. In addition, because heritage resources are non-renewable, heritage surveys need to investigate an entire project area. In all initial investigations, however, the specialists are responsible only for the identification of resources visible on the surface.

This section describes the evaluation criteria used for determining the significance of archaeological and heritage sites. National and Provincial Monuments are recognised for conservation purposes. The following interrelated criteria were used to establish site significance:

- » The unique nature of a site;
- » The integrity of the archaeological/cultural heritage deposit;
- » The wider historic, archaeological and geographic context of the site;
- » The location of the site in relation to other similar sites or features;
- » The depth of the archaeological deposit (when it can be determined or is known);
- » The preservation condition of the site; and
- » Potential to answer present research questions.

The criteria above will be used to place identified sites within the South African Heritage Resources Agency's (SAHRA's) (2006) system of grading of places and objects that form part of the national estate. This system is approved by the Association of South African Professional Archaeologists (ASAPA) for the Southern African Development Community (SADC) region. The recommendations for each site should be read in conjunction with Section 10 of this report.

FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION
National Significance (NS)	Grade 1	-	Conservation; national site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; provincial site nomination
Local Significance (LS)	Grade 3A	High significance	Conservation; mitigation not advised
Local Significance (LS)	Grade 3B	High significance	Mitigation (part of site should be retained)
Generally Protected A (GP.A)	-	High/medium significance	Mitigation before destruction
Generally Protected B (GP.B)	-	Medium significance	Recording before destruction
Generally Protected C (GP.C)	-	Low significance	Destruction

4. REGIONAL OVERVIEW

4.1 General Information

4.1.1. Database search

The following CRM studies were consulted for this report.

Author	Year	Project	Findings
Van Schalkwyk, J.	2003	Archaeological Survey of a Section of The Secunda-Mozambique Gas Pipeline, Carolina District, Mpumalanga	Cemeteries
Pistorius, JCC.	2007	A Phase I Heritage Impact Assessment (HIA) Study for The Upgrading of Eskom's Nooitgedacht Substation on The Farm Wintershoek 451 Near Carolina In the Mpumalanga Province of South Africa	No sites were recorded.
Van Schalkwyk, J. A.	2007	Heritage Impact Assessment for The Planned Development on The Farms Hebron 421JT And Twyfelaar 11 IT, Carolina Municipal District, Mpumalanga Province	Iron Age, Historical Sites and Cemeteries were recorded.
Van Schalkwyk, J.A.	2007	Heritage Impact Scoping Report for The Planned Hendrina-Marathon Powerline, Mpumalanga Province	Settlements to initiation sites, industrial and farming related sites as well as cemeteries were noted in the area.
Pelser, A and Van der Walt, J.	2008	A Report on A Heritage Impact Assessment for Proposed Opencast Coal Mining Operations For The Klippan Colliery On The Farm Klippan 452 JS (Emachibini), Wonderfontein, Mpumalanga	Graves were recorded.
Pelser, A.	2012	A Report on a Heritage Impact Assessment (HIA) For the Proposed Motshaotshela Colliery Project, Close to Hendrina, Mpumalanga Province	Cemeteries

4.1 2. Public consultation

No public consultation was conducted by the heritage consultant during the scoping phase.

4.1.3. Google Earth and mapping survey

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where archaeological sites might be located.

4.1.4. Genealogical Society of South Africa

No gravesites are on record for the study area.

5. BACKGROUND INFORMATION FOR THE STUDY AREA

5.1. Archaeology of the area

5.1.1. Stone Age

South Africa has a long and complex Stone Age sequence of more than 2 million years. The broad sequence includes the Later Stone Age, the Middle Stone Age and the Earlier Stone Age. Each of these phases contains sub-phases or industrial complexes, and within these, we can expect regional variation regarding characteristics and time ranges. For Cultural Resources Management (CRM) purposes it is often only expected/ possible to identify the presence of the three main phases. Yet sometimes the recognition of cultural groups, affinities or trends in technology and/or subsistence practices, as represented by the sub-phases or industrial complexes, is achievable (Lombard et al. 2012). The three main phases can be divided as follows;

- Later Stone Age; associated with Khoi and San societies and their immediate predecessors. Recently to ~30 thousand years ago
- Middle Stone Age; associated with Homo sapiens and archaic modern humans. 30-300 thousand years ago.
- Earlier Stone Age; associated with early Homo groups such as Homo habilis and Homo erectus. 400 000-> 2 million years ago.

Early Stone Age:

The Early Stone Age in southern Africa is defined by the Oldowan complex, primarily found at the sites Sterkfontein, Swartkrans and Kromdraai, situated within the Cradle of Humankind, just outside Johannesburg (Kuman, 1998). Within this complex, tools are more casual and expediently made, and tools consist of rough cobble cores and simple flakes. The flakes were used for such activities as skinning and cutting meat from scavenged animals. This industry is unlikely to occur in the study area.

The second complex is that of the more common Acheulean, defined by large handaxes and cleavers produced by hominids at about 1.4 million years ago (Deacon & Deacon, 1999). Among other things, these Acheulian tools were probably used to butcher large animals such as elephants, rhinoceros and hippopotamus that had died from natural causes. Acheulian artefacts are usually found near the raw material from where they were quarried, at butchering sites, or as isolated finds. No Acheulian sites are on record near the project area, but isolated finds are possible. However, isolated finds have little value.

Middle Stone Age:

During the Middle Stone Age, significant changes start to occur in the evolution of the human species. These changes manifest themselves in the complexity of the stone tools created, as seen in the diversity of tools, the standardisation of these tools over a widespread area, the introduction of blade technology, and the development of ornaments and art. What these concepts ultimately attest to is an increase or development of abstract thinking. By the beginning of the Middle Stone Age (MSA), toolkits included prepared cores, parallel-sided blades and triangular points hafted to make spears (Volman, 1984). MSA people had become accomplished hunters by this time, especially of large grazing animals such as wildebeest, hartebeest and eland.

These hunters are classified as early humans, but by 100,000 years ago, they were anatomically fully modern. The oldest evidence for this change has been found in South Africa, and it is an important point in debates about the origins of modern humanity. In particular, the degree to which behaviour was fully modern is still a matter of debate. The repeated use of caves indicates that MSA people had developed the concept of a home base and that they could make fire. These were two important steps in cultural evolution (Deacon & Deacon, 1999). Accordingly, if there are caves in the study area, they may be sites of archaeological significance. MSA artefacts are common throughout southern Africa, but unless they occur in undisturbed deposits, they have little significance.

Later Stone Age:

The Later phases of the Stone Age began at around 20 000 years BP (Before Present). This period was marked by numerous technological innovations and social transformations within these early hunter-gatherer societies. Hunting tools now included the bow and arrow. More particularly, the link-shaft arrow which comprises a poisoned bone tip loosely linked to a shaft which fell away when an animal was shot and left the arrow tip embedded in the prey animal. Other innovations included bored stones used as digging –stick weights to help with the uprooting of tubers and roots, small stone tools, normally less than 25mm long, which was used for cutting meat and scraping hides. There were also polished bone needles, twine made from plant fibres, tortoiseshell bowls, fishing equipment including bone hooks and stone sinkers, ostrich eggshell beads and other decorative artwork (Delius, 2007).

These people may be regarded as the first modern inhabitants of Mpumalanga, known as the San or Bushmen. They were a nomadic people who lived together in small family groups and relied on hunting and gathering of food for survival. Evidence of their existence is to be found in numerous rock shelters throughout the Eastern Mpumalanga where some of their rock paintings are still visible. A number of these shelters have been documented throughout the Province (Bornman, 1995; Schoonraad in Barnard, 1975; Delius, 2007). These include areas such as Witbank, Ermelo, Barberton, Nelspruit, White River, Lydenburg and Ohrigstad.

At Honingklip near Badplaas in the Carolina District, two LSA rock shelters with four panels of rock art was discovered and archaeologically investigated. The site was used between 4870 BP and as recently as 200 BP. Stone walls at both sites date to the last 250 years of hunter-gatherer occupation and they may have served as protection against intruders and predators. Pieces of clay ceramic and iron beads found at the site indicate that there was an early social interaction between the hunter-gatherer (San) communities and the first farmers who moved into this area at around 500 AD.

Three late Stone Age sites are on record in the greater area. The sites are Welgelegen Skuiling close to Ermelo, Chrissiesmeer (also known for rock art) and lastly Groenvlei close to Carolina; this area is also known for rock art (Bergh 1999).

5.1.2. Iron Age

The Iron Age as a whole represents the spread of Bantu speaking people and includes both the pre-Historic and Historic periods. It can be divided into three distinct periods:

- The Early Iron Age: Most of the first millennium AD.
- The Middle Iron Age: 10th to 13th centuries AD
- The Late Iron Age: 14th century to the colonial period.

The Iron Age is characterised by the ability of these early people to manipulate and work Iron ore into implements that assisted them in creating a favourable environment to make a better living.

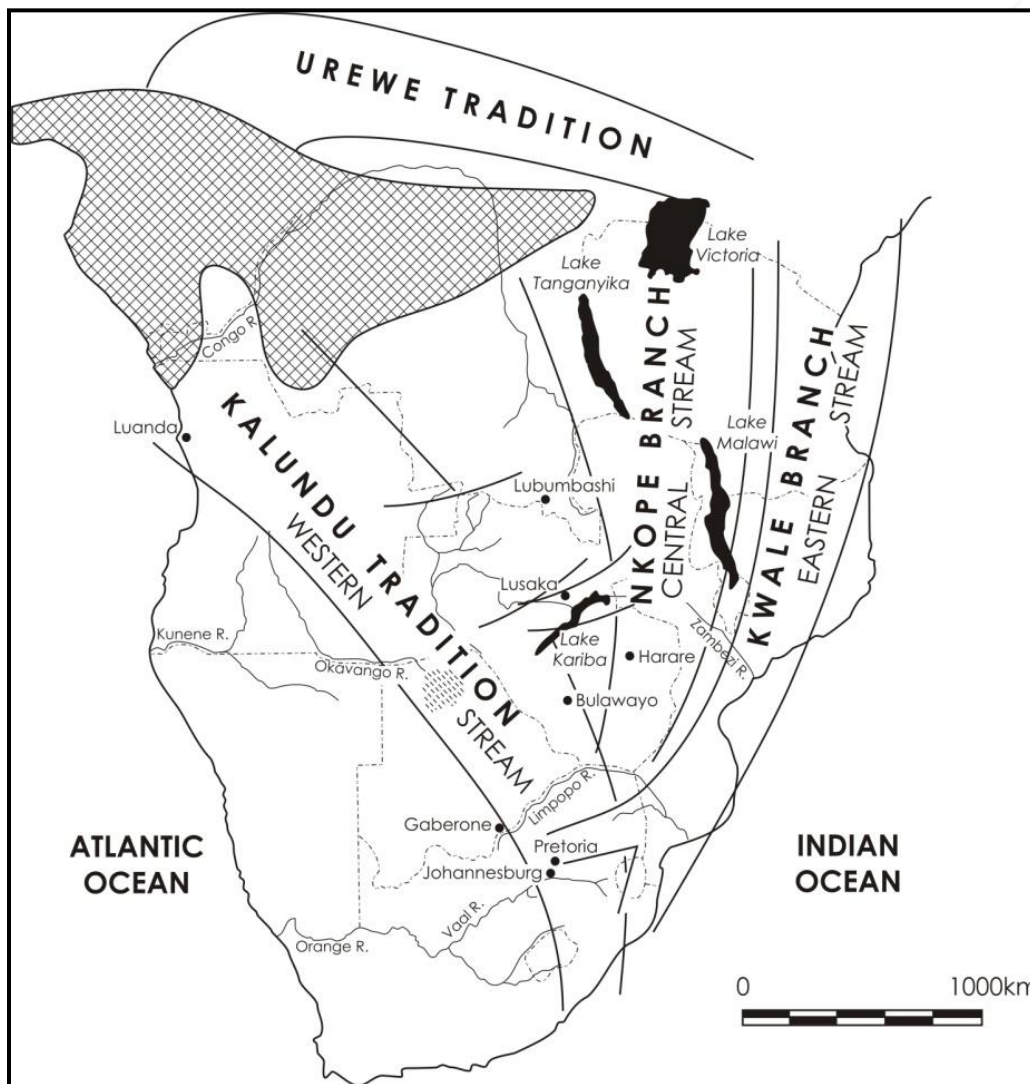


Figure 3. Movement of Bantu speaking farmers (Huffman 2007)

Early and Middle Iron Age

No sites dating to this period are on record close to the study area.

Late Iron Age

Stonewalled settlements are well known around the Watervalboven and Machadodorp area to the north of the study area, in fact, these settlements are found all along the Mpumalanga escarpment, from Ohrigstad in the north, all the way to Carolina in the south (Maggs 2007). These settlements consist of roughly circular homesteads linked by walled roads or cattle tracks associated with agricultural terraces. These complexes sometimes extend over several square kilometres, and some researchers claim that these settlements are the most prominent footprint on the landscape of any pre-colonial society in South Africa and compare this complex agricultural system to the internationally renowned terraced settlements of Nyanga in eastern Zimbabwe (Delius et al. 2012).

5.1.3. Anglo-Boer War



Figure 4. The Witkloof Monument (<http://www.boerenbrit.com>)

The Witkloof Monument stands testament to an interesting battle that took place in the larger area. According to the Canadian War Museum, the following events took place:

In the morning of 6 November, a British column left the town of Belfast and rode south to disperse a large Boer commando camping about thirty kilometres to the south near the Komati River. The force included the Canadian Mounted Rifles, the Royal Canadian Dragoons, and one section of "D" Battery, Royal Canadian Field Artillery, with two 12-pounder guns. After forcing the commando back across the river, the column camped for the night near a farm named Leliefontein. Boer resistance had been stronger than expected, and the British commander expected them to be reinforced during the night. He issued orders to return to Belfast in the morning. The Boer commander brought up reinforcements and thought that the British would continue their advance. The Boers prepared to meet them on the road heading south in the morning.

The British commander detailed the Royal Canadian Dragoons and the two 12-pounder field guns of "D" Battery as his rear-guard, all under the command of Lieutenant-Colonel François-Louis Lessard of the Dragoons. The Dragoons had only around one hundred men and a horse-drawn Colt machine gun. However, the Canadian horsemen and artillerymen were experienced and had worked together long enough to operate as a team. The Dragoons deployed in line four or five kilometres across covering the rear of the departing British column with the guns and the machine gun in the centre. The Boers realized that the British were retiring and began to press the Canadian rear-guard. During the morning, the Boers mounted a series of strong attacks along the Canadian line. These attacks culminated in a charge by two hundred mounted Boers firing from the saddle that threatened to break the Canadian line and capture the two field guns. The charge was only beaten off by the gallantry of a small party of Dragoons and the fire of the machine gun, which killed the two Boer commanders (J.C Fourie and H.F. Prinsloo).

Leliefontein was the most desperate situation faced by Canadians during the war. Awarded decorations, including Victoria Crosses to Lieutenants H.Z. C. Cockburn, R.E.W. Turner and Sergeant E.J. Holland, all of the Royal Canadian Dragoons, attest to the intensity of this battle. (http://www.warmuseum.ca/cwm/exhibitions/boer/battleleliefontein_e.shtml).

This battle is considered a defeat for the British, but <http://www.canadahistory.com> reports that "the considered actions of the Canadians made the loss one that was bearable and productive of building moral for the Empire's troop"s.

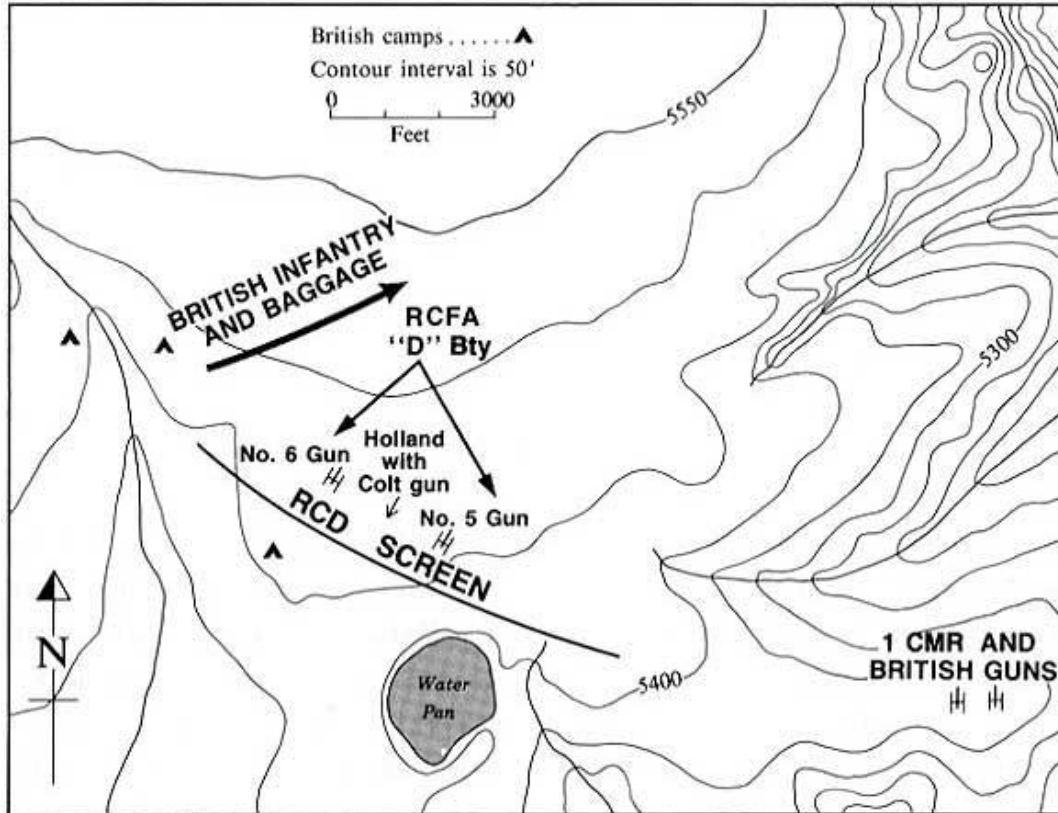


Figure 5. Map of the Battle of Lieffontein, 9 a.m., 7 November 1900 (<http://www.warmuseum.ca>)

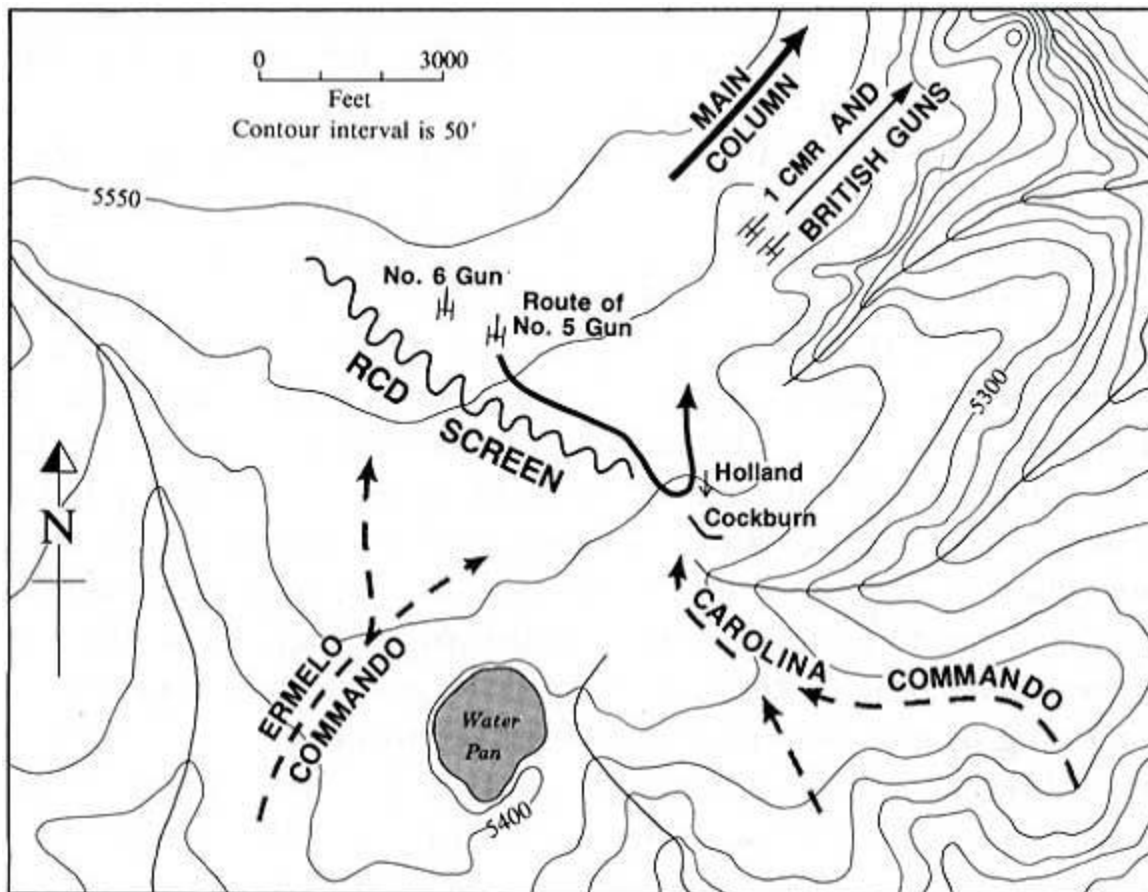


Figure 6. Map of the Battle of Leliefontein, 11 a.m., 11 November 1900 (<http://www.warmuseum.ca>)

According to the map (fig. 9) from J.S. Bergh, (red), *Geskiedenisatlas van Suid-Afrika, Die vier noordelike provinsies*, p. 54, there were two concentration camps located to the north of the study area close to Belfast.



Figure 7. Concentration camps represented by red dots and railway stations with grey squares (Bergh 1999).

5.1.4. Cultural landscape

The site under investigation is located on both sides of the R36, about 10 kilometres north of Breyten and 12 kilometres south-west of Carolina in Mpumalanga Province.

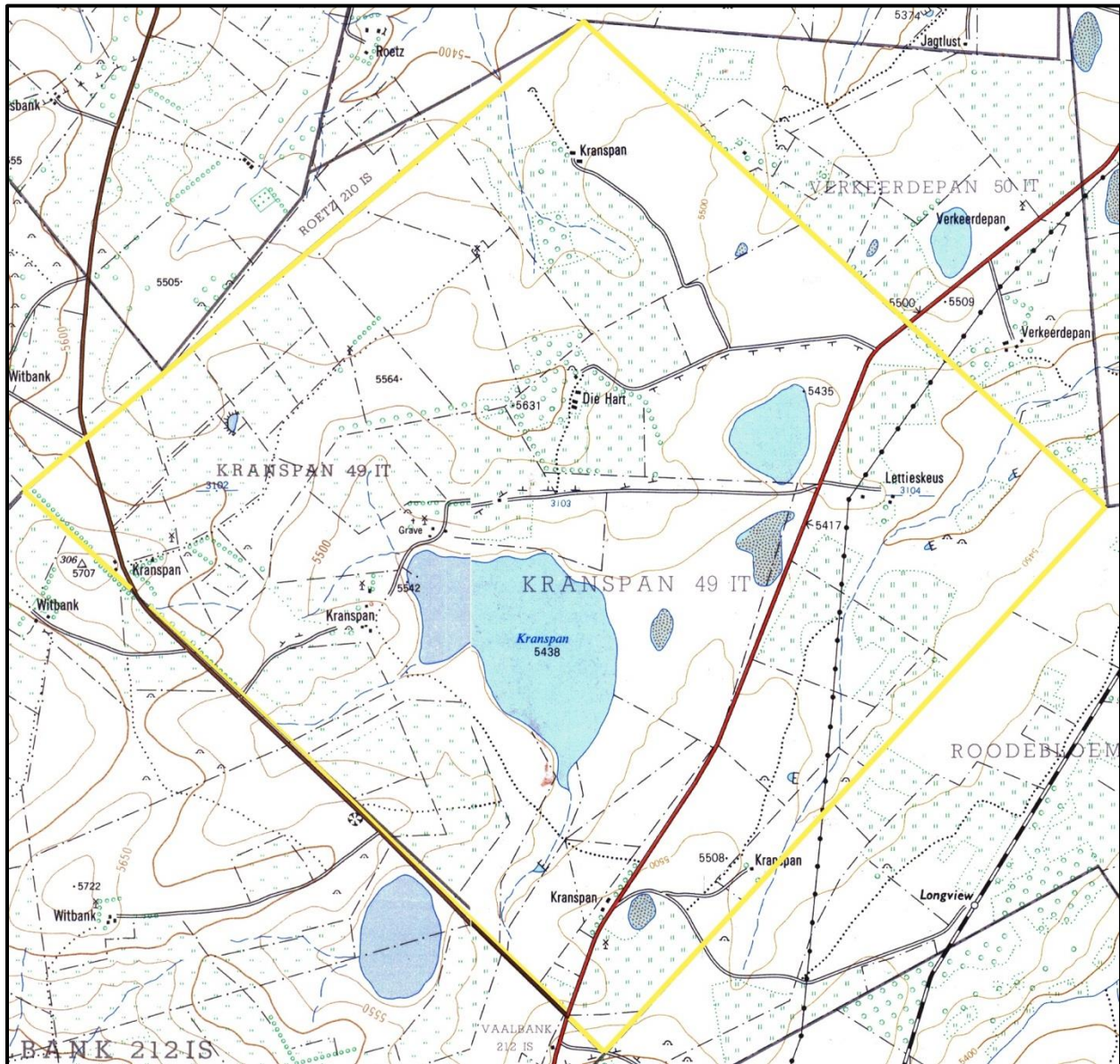


Figure 8. 1966-1968 Topographical map of the site under investigation. A main road went through the farm, and a secondary road ran along its southwestern boundary. Three minor roads and a number of tracks / footpaths went through the property. About half of the farm was used as cultivated lands (this includes orchards). The Kranspan Dam, as well as four medium-sized dams and six small dams, can be seen. A number of settlement sites are visible. Individual buildings, huts and windmills can be seen in various places. A power line went through the eastern part of the study area. (Topographical Map 1966; Topographical Map 1968)

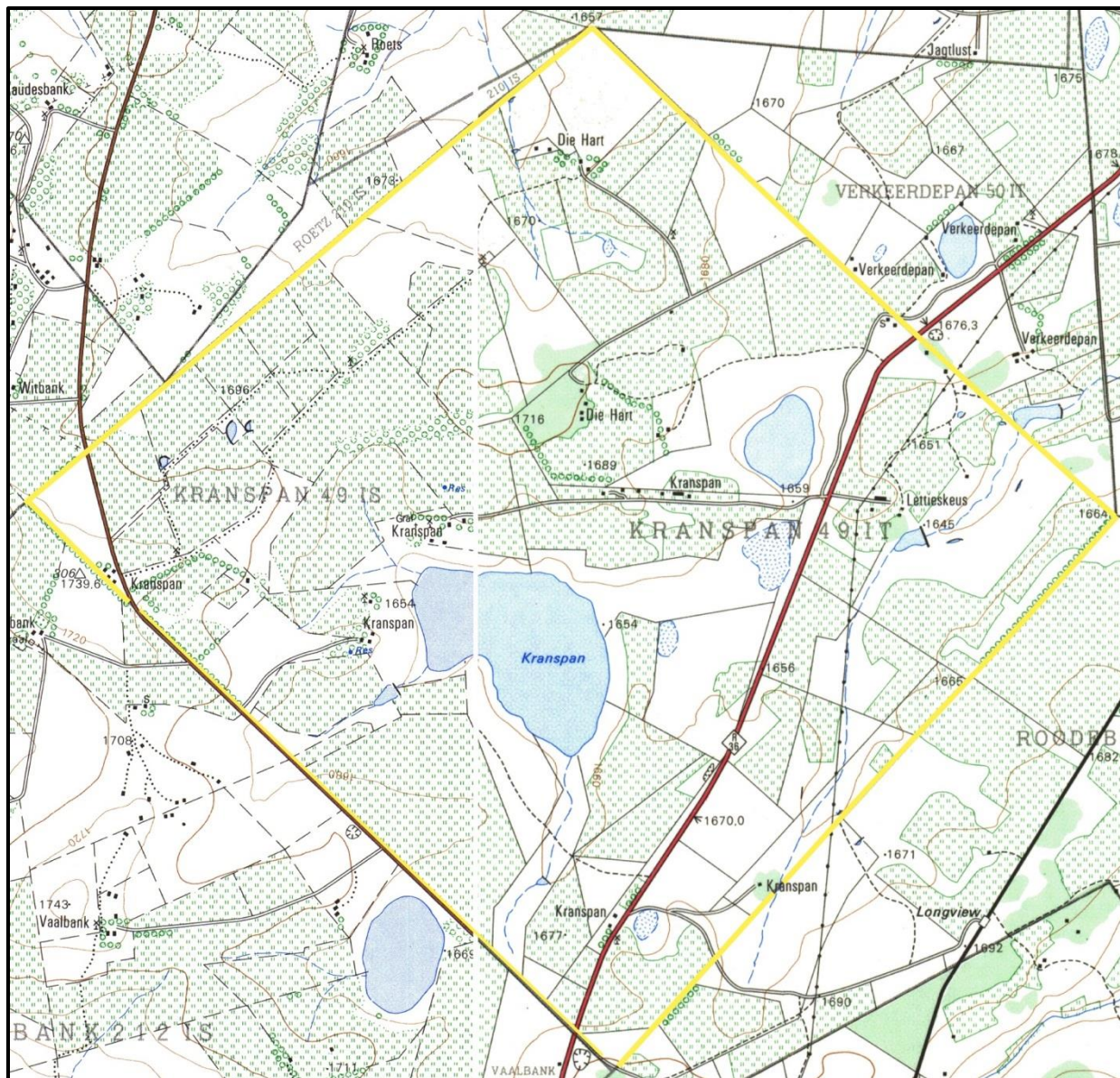


Figure 9. 1984-1985 Topographical map of the site under investigation. The study area is indicated with a yellow border. A main road went through the farm and a secondary road ran along its southwestern boundary. A number of minor roads and tracks / footpaths went through the farm. About two-thirds of the property was used as cultivated lands. The Kranspan Dam, as well as two medium-sized dams and 13 small dams can be seen. A number of settlement sites are visible. Individual buildings and windmills can be seen in various places. A power line went through the eastern part of the study area. (Topographical Map 1983; Topographical Map 1985)

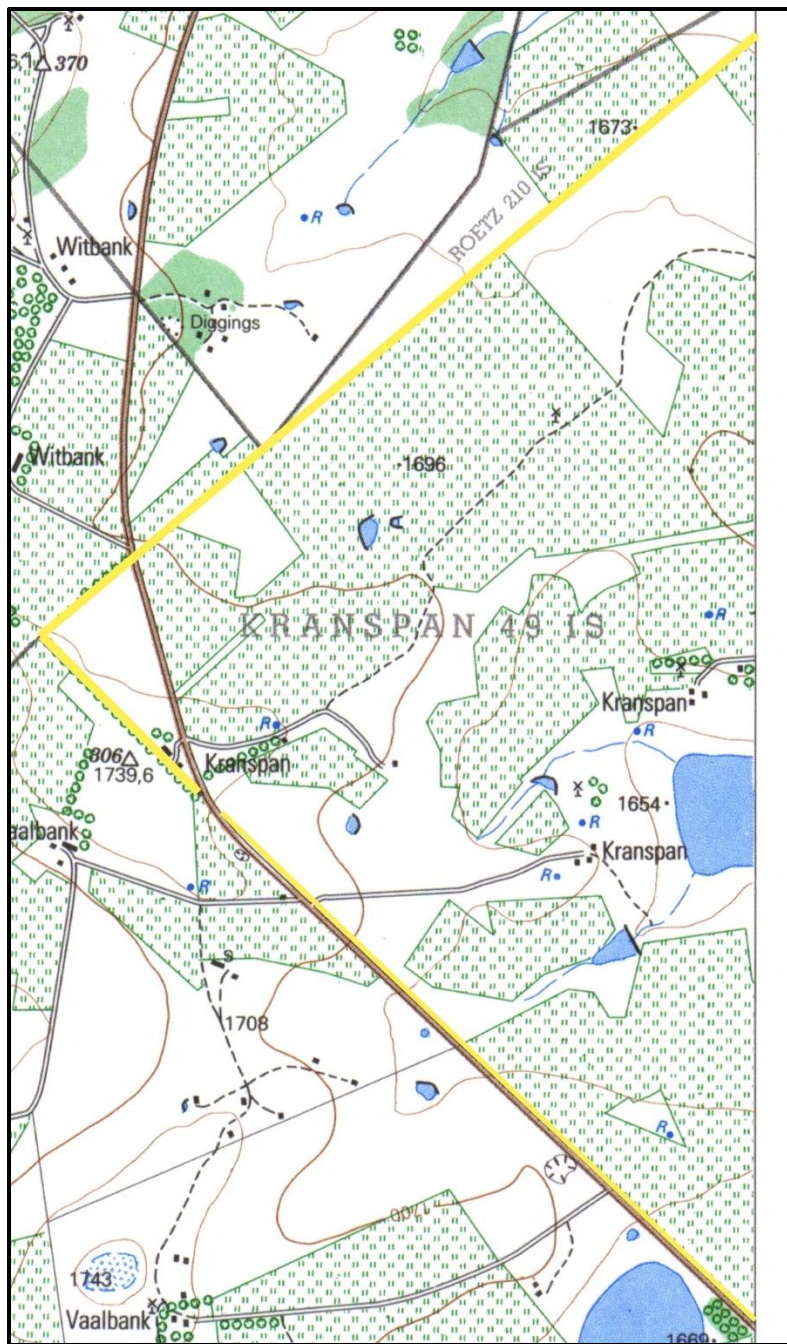


Figure 10. 1996 Topographical map of a western part of the site under investigation. The study area is indicated with a yellow border. More than half of this section of Kranspan was used as cultivated lands. A secondary road ran along the southwestern boundary of the study area. Two minor roads and a track / footpath went through the site. A part of the Kranspan Dam and five small dams can be seen. Six water reservoirs are also visible. One can see three settlement sites with two, three and three buildings respectively. Two windmills are visible. (Topographical 1996)

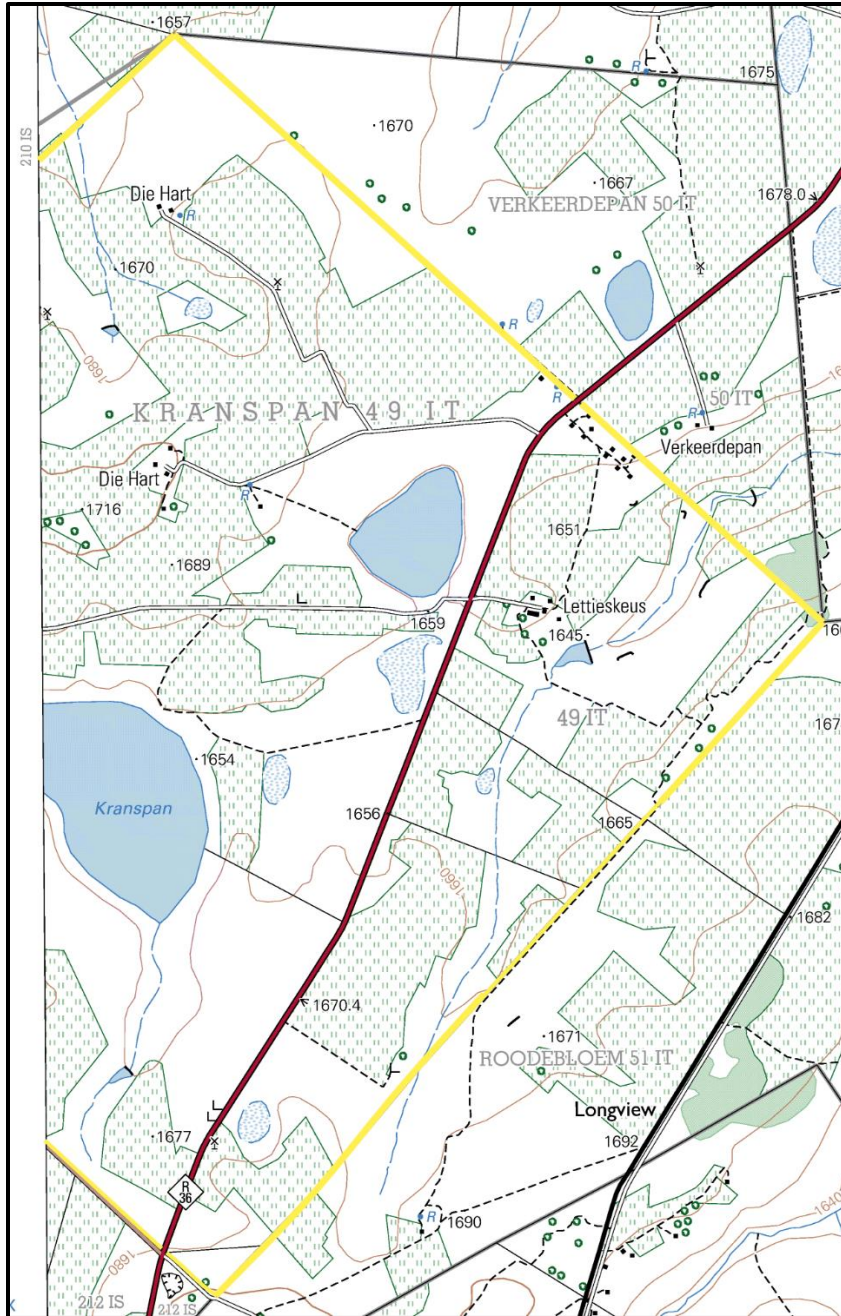


Figure 11. 2009 Topographical map of an eastern part of the site under investigation. The study area is indicated with a yellow border. The R36 main road went through the property, and a number of minor roads and tracks / footpaths are visible. Two large dams, including the Kranspan Dam and eight smaller dams are visible. Two buildings and a water reservoir can be seen at Die Hart (north); four buildings and a reservoir can be seen at the second Die Hart site (south of the latter site); five buildings are visible at Lettieskeus and 10 more at a site to the north thereof. Some individual buildings, windmills and ruins can be seen at various places on the property. (Topographical 2009)



Figure 12. 2018 Google Earth image showing the study area in relation to the R36, Breyten, Carolina, Chrissiesmeer and other sites. (Google Earth 2018)

5.2. Palaeontology

Based on the SAHRA paleontological sensitivity map the area is of very high sensitivity and will require a palaeontological study prior to development



Colour	Sensitivity	Required Action
RED	VERY HIGH	Field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	Desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	Desktop study is required
BLUE	LOW	No palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	No palaeontological studies are required
WHITE/CLEAR	UNKNOWN	These areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

Figure 13. SAHRA Paleontological Sensitivity map indicating the approximate location of the study area (blue star) as of very high paleontological sensitivity.

6. PROBABILITY OF OCCURRENCE OF SITES

Based on the above information, it is possible to determine the probability of finding archaeological and cultural heritage sites within the study area to a certain degree. For the purposes of this section of the report the following terms are used – low, medium and high probability. Low probability indicates that no known occurrences of sites have been found previously in the general study area. Medium probability indicates some known occurrences in the general study area are documented and can, therefore, be expected in the study area. A high probability indicates that occurrences have been documented close to or in the study area and that the environment of the study area has a high degree of probability for the occurrence of sites.

» Archaeological and Cultural Heritage Landscape

NOTE: *Archaeology is the study of human material and remains (by definition) and is not restricted in any formal way as being below the ground surface.*

Archaeological remains dating to the following periods can be expected within the study areas:

- » Stone Age finds
 - ESA: *Low Probability*
 - MSA: *Low Probability*
 - LSA: *High Probability*
 - LSA –Herder: *Low Probability*
- » Iron Age finds
 - EIA: *Low Probability*
 - MIA: *Low Probability*
 - LIA: *Medium - High Probability*
- » Historical finds
 - Historical period: *Medium Probability*
 - Historical dumps: *Medium Probability*
 - Structural remains: *Medium to high Probability*
- » Living Heritage
 - For example, rainmaking sites: *Low Probability*
- » Burial/Cemeteries
 - Burials over 100 years: *High Probability*
 - Burials younger than 60 years: *High Probability*

Subsurface excavations including ground levelling, landscaping, and foundation preparation can expose any number of these resources.

7. ASSUMPTIONS AND LIMITATIONS

The study area was not subjected to a field survey at this stage in the environmental process; this will be done during the impact assessment phase. It is assumed that information obtained for the wider area is applicable to the study area. Additional information could become available in future that could change the results of this report. It is assumed that the EAP will upload all relevant documents to the SAHRIS.

8. FINDINGS

Based on the databases consulted no known heritage sites occur within the study area although a single grave site located at 30.0330571765, -26.16513 is on record (Figure 14). Based on historic maps structures older than 60 years are also likely to occur in the study area (Figure 8). The lack of sites on record can be attributed to a lack of systematic research in the study area and does not mean that there are no heritage sites in the project area.

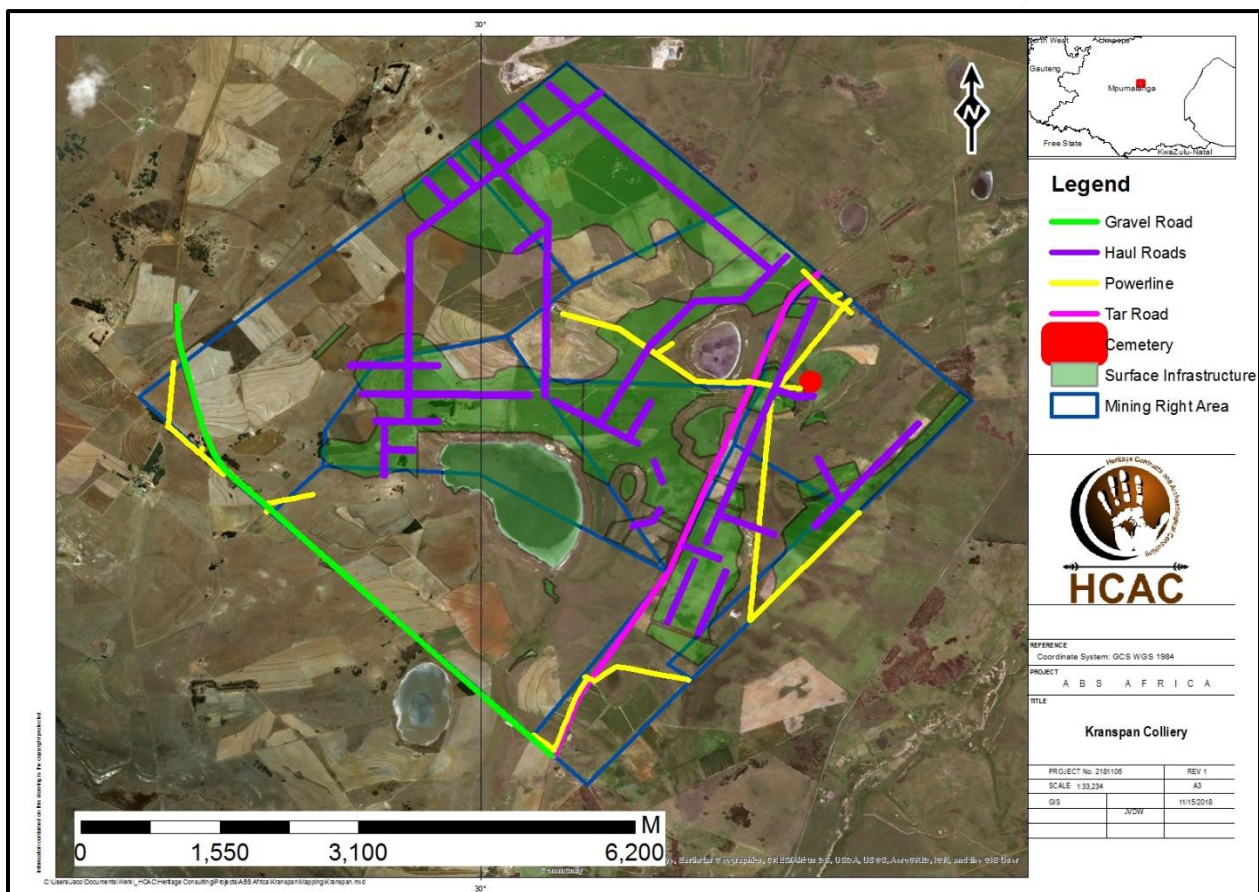


Figure 14. Known sites that occur in the study area.

8.1. Archaeology

8.2. Historical period

8.2.1 Historical finds:

Historical finds include middens, structural remains and cultural landscape features that can be expected in the study area, since the area has been developed and cultivated from prior to the 1960's. Impacts to heritage resources will occur primarily during the construction phase, and no impacts are expected during the operation and decommissioning phase.

8.2.2 Nature of Impact

Due to the development of the study area and surrounds no impacts of any magnitude are expected as the proposed development is in line with the surrounding land use.

8.2.3 Extent of impact

The construction of the project could have a low impact on a local scale.

8.3. Burials and Cemeteries

8.3.1 Burials and Cemeteries

Graves and informal cemeteries can be expected anywhere on the landscape and studies in the surrounding areas recorded informal graves, and unmarked graves can be expected throughout the study area.

8.3.2 Nature of Impact

The construction and operation of the proposed project could directly impact on marked and unmarked graves.

8.3.3 Extent of impact

The project could have a low to medium impact on a local scale.

Impact on Heritage resources			
The construction of the proposed project could directly impact on graves, archaeological sites and historical sites.			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Disturbance and destruction of archaeological sites, historical sites and graves.	Construction activities could cause irreversible damage or destroy heritage resources and depletion of the archaeological record of the area.	Low to Medium on a local scale.	TBC after field work
Description of the expected significance of impacts			
The significance of sites, mitigation and significance of possible impact can only be determined after the fieldwork has been conducted, but based on previous work in the area Stone Age, Iron Age and grave sites can be expected.			
Gaps in knowledge & recommendations for further study			
The study area has not been subjected to a heritage resource survey, and it is assumed that information obtained for the wider region is applicable to the study area. To address these gaps, it is recommended that a field study should be conducted to confirm the presence of heritage resources after which mitigation measures will be recommended (if needed).			

9. POTENTIAL SIGNIFICANCE OF HERITAGE RESOURCES

Based on the current information obtained for the area at a desktop level it is anticipated that any sites that occur within the proposed development area will have a Generally Protected A (GP.A) or lower field rating and all sites should be mitigatable. No red flags have been identified.

10. CONCLUSIONS AND RECOMMENDATIONS

This brief background study indicates that the general area under investigation can contain heritage sites and a cultural layering dating to the following periods:

» Paleontological Sensitivity

The study area is of very high paleontological sensitivity and according to the SAHRIS palaeontological sensitivity map must be subjected to a desktop palaeontological assessment in the impact assessment phase.

» Archaeological sites

Based on research conducted in the area Stone Age scatters as well as Iron Age sites can be expected in the larger study area. The extensive agricultural activities in the study area would have impacted on surface indicators of heritage sites and apart from pans and ridges that would have been focal points in antiquity few sites of significance are expected, but this will have to be verified during a field-based study. If any sites of significance are found these sites could be mitigated either in the form of conservation of the sites within the development or by a Phase 2 study where the sites will be recorded and sampled before the client can apply for a destruction permit for these sites prior to development.

» Historical finds and Cultural landscape

Some structures do occur on site and could be older than 60 years and therefore protected by the NHRA. This will be verified during the Impact Assessment phase.

» Burials and cemeteries

Formal and informal cemeteries, as well as pre-colonial graves, occur widely across Southern Africa and a grave site is known to exist in the project area. It is generally recommended that these sites are preserved *in situ* and within a development. These sites can, however, be relocated if conservation is not possible, but this option must be seen as a last resort and is not advisable. The presence of grave sites must be confirmed during the field survey and the public consultation process.

» General

From a heritage viewpoint, the proposed project is considered to be viable. This will, however, be confirmed through the Heritage Impact Assessment to be undertaken in the EIA Phase.

11. PLAN OF STUDY

The development triggers the NHRA in the following areas, and therefore a Phase 1 Heritage Impact Assessment (HIA) is recommended:

Action Trigger	Yes/No	Description
Construction of a road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300 m in length.	Yes	Access and Haul roads
Construction of a bridge or similar structure exceeding 50 m in length.	No	
Development exceeding 5000 m ²	Yes	Footprint of impact area exceeds 5000m ²
Development involving more than 3 erven or sub divisions	No	
Development involving more than 3 erven or sub divisions that have been consolidated in the past 5 years	No	
Re-zoning of site exceeding 10 000 m ²	Yes	Unknown
Any other development category, public open space, squares, parks or recreational grounds	No	

With cognisance of the recorded archaeological sites in the wider area and in order to comply with the National Heritage Resources Act (Act 25 of 1999), it is recommended that a Phase 1 HIA must be undertaken. During this study sites of archaeological, historical or places of cultural interest must be located, identified, recorded, photographed and described. During this study, the levels of significance of recorded heritage resources must be determined, and mitigation proposed should any significant sites be impacted upon, ensuring that all the requirements of the SAHRA are met.

11.1 Reasoned Opinion

If the above recommendations are adhered to, HCAC is of the opinion that the impact of the development on heritage resources can be mitigated. This will be confirmed through the Heritage Impact Assessment to be undertaken in the EIA Phase.

If during the pre-construction phase or during construction, any archaeological finds are made (e.g. graves, stone tools, and skeletal material), the operations must be stopped, and the archaeologist must be contacted for an assessment of the finds. Due to the subsurface nature of archaeological material and graves, the possibility of the occurrence of unmarked or informal graves and subsurface finds cannot be excluded.

12. LIST OF PREPARERS

Jaco van der Walt (Archaeologist and project manager).

13. STATEMENT OF COMPETENCY

The author of the report is a member of the Association of Southern African Professional Archaeologists and is also accredited in the following fields of the Cultural Resource Management (CRM) Section, member number 159: Iron Age Archaeology, Colonial Period Archaeology, Stone Age Archaeology and Grave Relocation. Jaco is also an accredited CRM Archaeologist with SAHRA and AMAFA.

Jaco has been involved in research and contract work in South Africa, Botswana, Mozambique, Zimbabwe, Tanzania and the DRC and conducted well over 300 AIAs since he started his career in CRM in 2000. This involved several mining operations, Eskom transmission and distribution projects and infrastructure developments. The results of several of these projects were presented at international and local conferences.

14. STATEMENT OF INDEPENDENCE

I, Jaco van der Walt as duly authorised representative of Heritage Contracts and Archaeological Consulting CC, hereby confirm my independence as a specialist and declare that neither I nor the Heritage Contracts and Archaeological Consulting CC have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of which the client was appointed as Environmental Assessment practitioner, other than fair remuneration for work performed on this project.



SIGNATURE:

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