

ARCHAEOLOGICAL SCOPING REPORT

FOR THE PROPOSED TSHIVHASO COAL-FIRED POWER PLANT, LIMPOPO PROVINCE

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EXECUTIVE SUMMARY

Site name and location: Tshivhaso Power Station, Located on the farm Graafwater 456 LQ, close to Lephalale, Limpopo Province.

1: 50 000 Topographic Map: 2327 CB & 2327 DA

EIA Consultant: Savannah Environmental (Pty) Ltd.

Developer: Cennergi

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

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Date of Report: 30 September 2015

Findings of the Assessment:

This scoping study revealed that pans with exposed calcrete could contain Middle Stone Age sites and although unlikely it might be possible to find Late Iron Age sites/material belonging to the *Letsibogo* ceramic *facies* that dates to between 1550 AD and 1750 AD in the area. Two farmhouse complexes are indicated on Google images of the study area and if older than 60 years these structures are protected by legislation. Several grave sites are on record for the wider region and similarly grave sites can be expected in the study area.

Every site is relevant to the Heritage Landscape, but it is anticipated that few if any, have conservation value. All sites could be mitigated either in the form of conservation of the sites with in 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.

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ABBREVIATIONS

AIA: Archaeological Impact Assessment
ASAPA: Association of South African Professional Archaeologists
BIA: Basic Impact Assessment
CRM: Cultural Resource Management
ECO: Environmental Control Officer
EIA: Environmental Impact Assessment*
EIA: Early Iron Age*
EIA Practitioner: Environmental Impact Assessment Practitioner
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

**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

Heritage Contracts and Archaeological Consulting CC was contracted by Savannah (Pty) Ltd to conduct a Heritage Scoping Report for the proposed Tshivhaso Power station.

The heritage scoping report forms part of the scoping phase of the EIA for the proposed project. The aim of the scoping report is to conduct a desktop study to identify possible heritage resources within the project area and to assess their importance within a Local, Provincial and National context. 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 the responsible cultural resources management measures that might be required 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.

The report outlines the approach and methodology utilized for the Scoping phase of the project. The report includes information collected from various sources. Possible impacts are identified and mitigation measures are proposed in the report. It is important to note that no field work was conducted as part of the scoping phase but will be conducted as part of the Impact Assessment phase of the EIA.

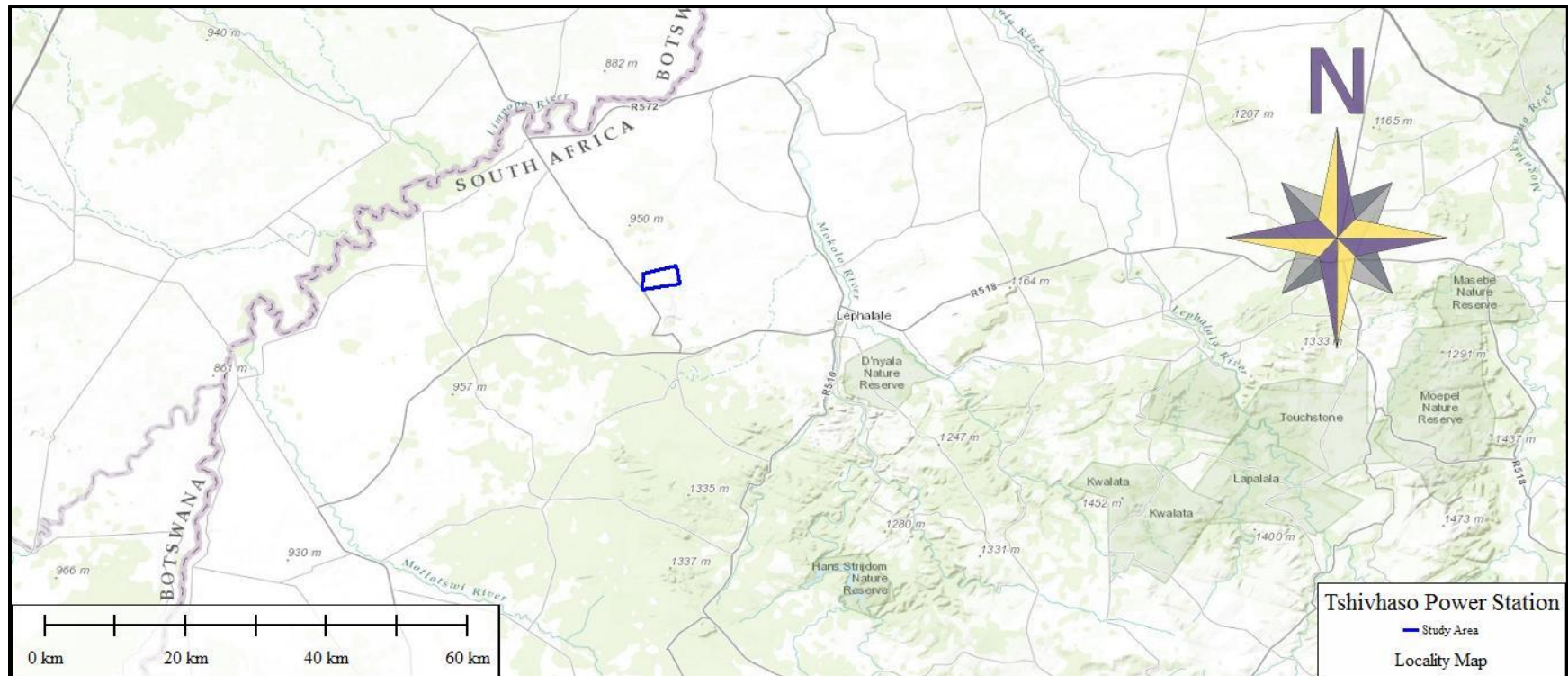


Figure 1: Locality Map

1.2 Terms of Reference

The main aim of this scoping report is to determine if any known heritage resources occur within the study area and to predict the occurrence of any possible heritage significant sites that might present a fatal flaw to the proposed project. 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;
 - * Gather data and compile a background history of the area;
 - * Identify known and recorded archaeological and cultural sites;
 - * 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.
- » Report

The reporting of the scoping component is based on the results and findings of the desk-top 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.

1.3 Nature of the development

The main infrastructure proposed includes (specifications will be decided based on the technology selected):

- » Access roads.
- » Coal storage areas and bunkers.
- » Coal mill (for grinding the coal into fine material).
- » Pipeline for water supply. Water is expected to be available from the allocation to Exxaro Coal from the Mokolo-Crocodile Water Augmentation Project (MCWAP) Phase 2.
- » Coal loading and offloading areas, as well as conveyor belts.
- » Power plant production unit/s (boilers / furnaces, turbines, generator and associated equipment, control room).
- » Water infrastructure such as Raw-Water Storage Dam, purification works and reservoirs
- » A substation.
- » An overhead power line to connect into the Eskom grid. Office and maintenance area/s.

1.4 The receiving environment

Cennergi is proposing the construction of a coal-fired power station on a site near Lephalale in the Limpopo Province. The power station would have a capacity of up to 600MW in Phase 1 and up to 1200MW in Phase 2. The project is to be known as the Tshivhaso Coal-fired Power Plant. Various options regarding siting of the power station and associated infrastructure are being investigated. Coal is proposed to be sourced from Exxaro Coal's Thabametsi Coal-Mine development which is to be located in the vicinity of the sites under investigation. The electricity generated from the power station will be fed into the Eskom electricity grid. Two options in this regard are being considered.

The vegetation is predominantly Limpopo Sweet Bushveld vegetation in the Savannah biome (Mucina & Rutherford 2006). Historical imagery on Google earth indicates that the land has been fallow for a number of years and mostly used for cattle and game farming.

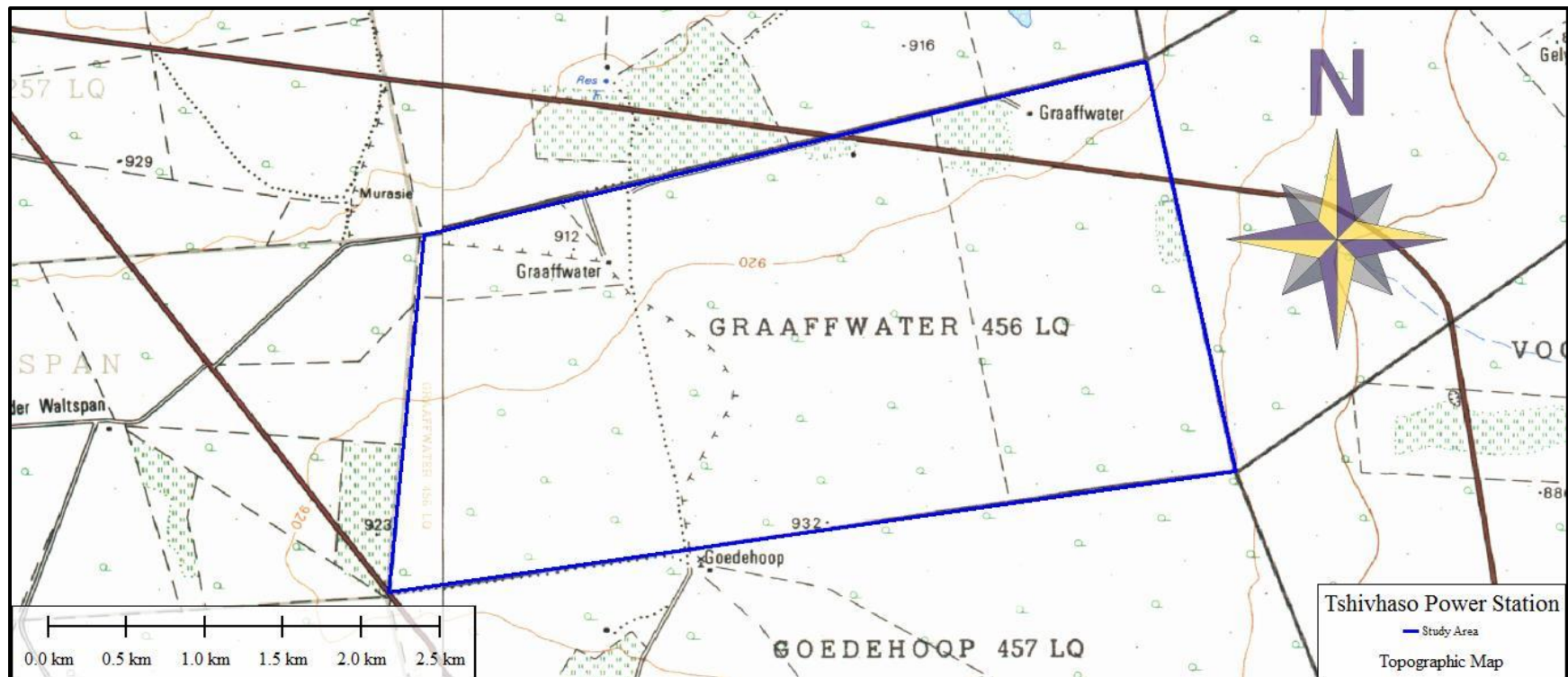


Figure 2: Topographic Map of the study area.

2. APPROACH AND METHODOLOGY

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

This was accomplished by means of the following phases (the results are represented in section 4 & 5 of this report):

2.1 Literature search

Utilising data for information gathering stored in the archaeological database at Wits University, National Archives and published articles 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 SAHRA report mapping project (Version 1.0) was consulted to further collect data from CRM practitioners who undertook work in the area to provide the most comprehensive account of the history of the area where possible. The South African Heritage Information System was also used to collect information.

2.3 Public consultation

No public consultation was conducted by the heritage team.

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.

3. LEGISLATION

For this project the National Heritage Resources Act, 1999 (Act No. 25 of 1999) 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
- i. Objects, structures and sites of scientific or technological value.

The national estate that 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
- i. Movable objects (e.g. archaeological, palaeontological, meteorites, geological specimens, military, ethnographic, books etc.)

Section 34 (1) of the act deals with structures which is older than 60 years. Section 35(4) of the act deals with archaeology, palaeontology and meteorites. Section 36(3) of the National Heritage Resources Act, deals with human remains older than 60 years. Unidentified/unknown graves are also handled as older than 60 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;
- » Potential to answer present research questions.

The criteria above will be used to place identified sites with in SAHRA's (2006) system of grading of places and objects which form part of the national estate. This system is approved by ASAPA for the SADC region.

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 (GP.A) A	-	High/medium significance	Mitigation before destruction
Generally Protected (GP.B) B	-	Medium significance	Recording before destruction
Generally Protected (GP.C) C	-	Low significance	Destruction

4. REGIONAL OVERVIEW

4.1 Earlier Stone Age

Hominids began to make stone tools about 2.6 million years ago. Known as the Oldowan industry, most of the earliest tools were rough cobble cores and simple flakes. The flakes were used for such activities as skinning and cutting meat from scavenged animals. These early artefacts are difficult to recognize and have so far only been found in rock shelters such as the Sterkfontein Caves (Kuman, 1998); they are unlikely to occur in the study area.

At about 1.4 million years ago hominids started producing more recognizable stone artefacts such as hand axes, cleavers and core tools (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. Therefore, the project is unlikely to disturb a significant site. The presence and significance of finds can be determined by a field investigation.

4.2 Middle Stone Age

By the beginning of the Middle Stone Age (MSA), tool kits 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, they may be sites of archaeological significance.

MSA artefacts have been found in the Oliboompoort Cave to the south of Lephalale (Mason, 1962; M. van der Ryst, 2006) and in the river gravels of the Limpopo, northwest of the project area (Pistorius, 2007). A large scale survey of almost 9000ha in 2011 by Huffman and v d Walt found that Middle Stone Age sites were associated with pans and ancient drainage systems throughout the project area. It is assumed that same scenario will repeat itself in the current study area especially around large and prominent pans in the study area.

4.3 Later Stone Age

By the beginning of the Later Stone Age (LSA), human behaviour was undoubtedly modern. Uniquely human traits, such as rock art and purposeful burials with ornaments, became a regular practice. These people were the ancestors of the San (or Bushmen).

San rock art has a well-earned reputation for aesthetic appeal and symbolic complexity (Lewis-Williams, 1981). There is a single known rock art site (S23.65132 E27.58651 in the greater area, on Nelsonskop 464 LQ to the east (Pistorius, 2007, van Schalkwyk 2011).

In addition to art, LSA sites contain diagnostic artefacts, including microlithic scrapers and segments made from very fine-grained rock (Wadley, 1987). Spear hunting probably continued, but LSA people also hunted small game with bows and poisoned arrows. Important LSA deposits have been excavated in Oliboompoot Cave (Mason, 1962) and other sites in the Waterberg to the south (Van der Ryst, 1998). Sites in the open are usually poorly preserved and therefore have less value than sites in caves or rock shelters.

4.4 The Iron Age (AD 400 to 1840)

Bantu-speaking people moved into Eastern and Southern Africa about 2,000 years ago (Mitchell, 2002). These people cultivated sorghum and millets, herded cattle and small stock and manufactured iron tools and copper ornaments. Because metalworking represents a new technology, archaeologists call this period the Iron Age. Characteristic ceramic styles help archaeologists to separate the sites into different groups and time periods. The first 1,000 years is called the Early Iron Age.

As mixed farmers, Iron Age people usually lived in semi-permanent settlements consisting of pole-and-daga (mud mixed with dung) houses and grain bins arranged around a central area for cattle (Huffman, 1982). Usually, these settlements with the 'Central Cattle Pattern' (CCP) were sited near water and good soils that could be cultivated with an iron hoe. For the project area, archaeological sites such as these are unlikely to occur except along river terraces.

Archaeologists have not yet resolved the role of a special pottery, known as Bambata, in the spread of pastoralism and mixed farming (Huffman, 2007). Some believe that Bambata pottery represents the vanguard of the Early Iron Age, or alternatively, Khoe pastoralists, while others believe it was acquired by LSA people through trade. This pottery has been found at Oliboompoot in LSA deposits (Mason, 1962; Van der Ryst, 2006) and is thus believed to exist in the general region.

Some Iron Age settlements are on record for the general area, for instance alongside the Matlabas River (Aukema in Huffman, 1990) and in Botswana (Biemond, 2005) and south of the Limpopo close to Steenbokpan (Huffman & vd Walt 2011). These sites are recognized by distinctive pottery known as the Letsibogo facies of Moloko (Huffman, 2007). It is possible that some Moloko sites could lie within the project area.

The Little Ice Age began at about AD 1300, and its impact on farming societies was particularly severe. Another major drought occurred at about AD 1650, and it is unlikely that Iron Age people lived in the project area at these times.

4.5. Historical Background

Voortrekkers crossed the Vaal River in 1836, and within a few years, began to spread north. Much of the Limpopo Province contained tsetse fly, and so early Boer farmers didn't settle immediately in the area. European settlement of the region began at the beginning of the

last century. Some of the first settlers, D.P. van der Westhuizen and C. Ricks, both arrived in about 1901. The study area is close to the ox-cart route to Botswana that crossed the Limpopo a few kilometres upstream from the modern border post. Some of pans were used as outspans along the route. Because the area was not suitable for grain agriculture, African farmers did not live in the area, and labour had to come from far afield. Rather the area was used primarily for hunting. Even now, the general region is a big-game area (Huffman & vd Walt 2011).

5. KNOWN SITES

Several CRM studies have been conducted for developments in the greater area. Studies were conducted by Pistorius (2007 and 2010), Van der Walt (2012 & 2014), Huffman & Van der Walt (2008a, b, 2011, 2012) and van Schalkwyk (2005a, 2005b, 2006, 2008). These studies recorded a number of known sites including grave sites, historical ruins, MSA and Iron Age sites. Sites within a 7 km radius of the study area indicated in relation to the proposed study area (Figure 3).

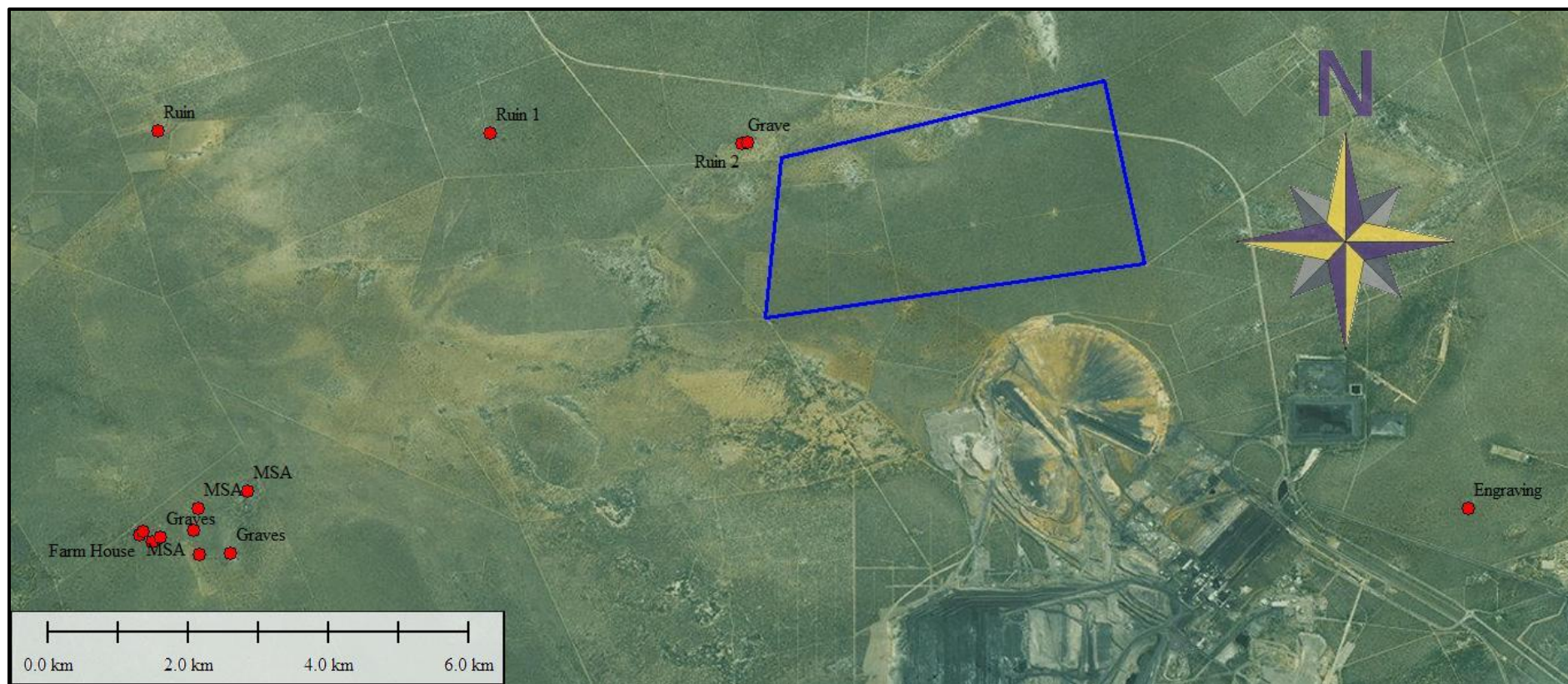


Figure 3. Known sites in relation to the study area

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 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 and 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 having 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 area:

» Stone Age finds

ESA:	<i>Medium Probability</i>
MSA:	<i>High Probability</i>
LSA:	<i>Medium Probability</i>
LSA –Herder:	<i>Low Probability</i>

» Historical finds

Historical period:	<i>Medium –High Probability</i>
Historical dumps:	<i>Medium –High Probability</i>
Structural remains:	<i>High Probability</i>
Cultural Landscape:	<i>Medium probability</i>

» Living Heritage

For example rainmaking sites: *Low Probability*

» Burial/Cemeteries

Burials over 100 years:	<i>Medium Probability</i>
Burials younger than 60 years:	<i>High Probability</i>

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

7. ASSUMPTIONS AND LIMITATIONS

The study area was not subjected to a field survey. It is assumed that information obtained for the wider area is applicable to the study area.

8. FINDINGS

No red flags were identified for any of the project components during this scoping study. These assumptions will have to be verified during the field work and Impact Assessment Phase of the project but the following heritage resources can be expected for the project.

8.1. Archaeology

8.1.1 Archaeological finds

There is a low likelihood of finding MSA sites scattered over the study area due to the substantial sand cover. There is however a high likelihood of finding Stone Age material around pans where the calcrete base is exposed (Figure 4). This calcrete formed during a cold period with alternating wet and dry episodes that allowed calcium carbonate to precipitate out at the top of the land surface. To the north west of the study area artefacts occurred in the calcrete, and so they predate the geomorphological formation. These artefact assemblages typically included radial cores, triangular points, convergent scrapers, and flakes. These sites represent what is called a Post Howison's Poort Industry and thus probably date to between 60,000 and 40,000 years ago. These Post Howison's Poort artefacts were made from quartz and quartzite pebbles that formed part of the laterite horizon found underneath the calcrete. This laterite, or fericrete, is an iron-rich formation derived from the Waterberg sandstone to the south. If Early Stone Age artefacts occur in the study area, they will lay under this laterite horizon (Huffman & vd Walt 2011).

Iron Age sites in the region is characterised by decorated pottery belonging to a stylistic facies known as *Letsibogo*. This style dates to between 1550 AD and 1750 AD and was made by Sotho-Tswana people (Huffman 2007: 186-189). There is a low to medium likelihood of finding sites of this period close to pans and rivers representing cattle posts. These cattle posts were articulated with farming villages in the Limpopo river valley a short distance away.

8.1.2 Nature of Impact

The construction phase of the project could directly impact on surface and subsurface archaeological sites.

8.1.3 Extent of impact

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

8.2. Historical period

8.2.1 Historical finds: I

Historical finds include middens, structural remains (beacons, kraals etc.) and cultural landscape. Most of the historical sites are expected close to water sources (pans) and at least 3 complexes are indicated on the topographical maps of the area (Figure 3 & 4). The desktop study highlighted the fact that the area was occupied at least from the early 1900's and features dating to this period associated with farming can occur.

8.2.2 Nature of Impact

The construction of the project can directly impact on both the visual context and sense of place of historical sites. There are few structures identified in the study area

8.2.3 Extent of impact

The project could have a low – medium 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.

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.

9. POTENTIAL SIGNIFICANCE OF HERITAGE RESOURCES

Based on the current information obtained for the area at a desktop level it is anticipated that archaeological sites that occur within the proposed development area will be of low heritage significance and have a Generally Protected B (GP.B) field rating and it should be possible to mitigate these sites. However pans and shelters could be archaeologically sensitive (due to archaeological deposit and rock art) and should rather be avoided. These sites are provisionally given a field rating of Local Significance (LS) or Generally Protected A (GP.A). Elements relating to the build environment are expected in the study area and it is anticipated that these will be of local significance only. These assumptions will have to be tested by a field visit. Grave sites are of high social significance and should be avoided.

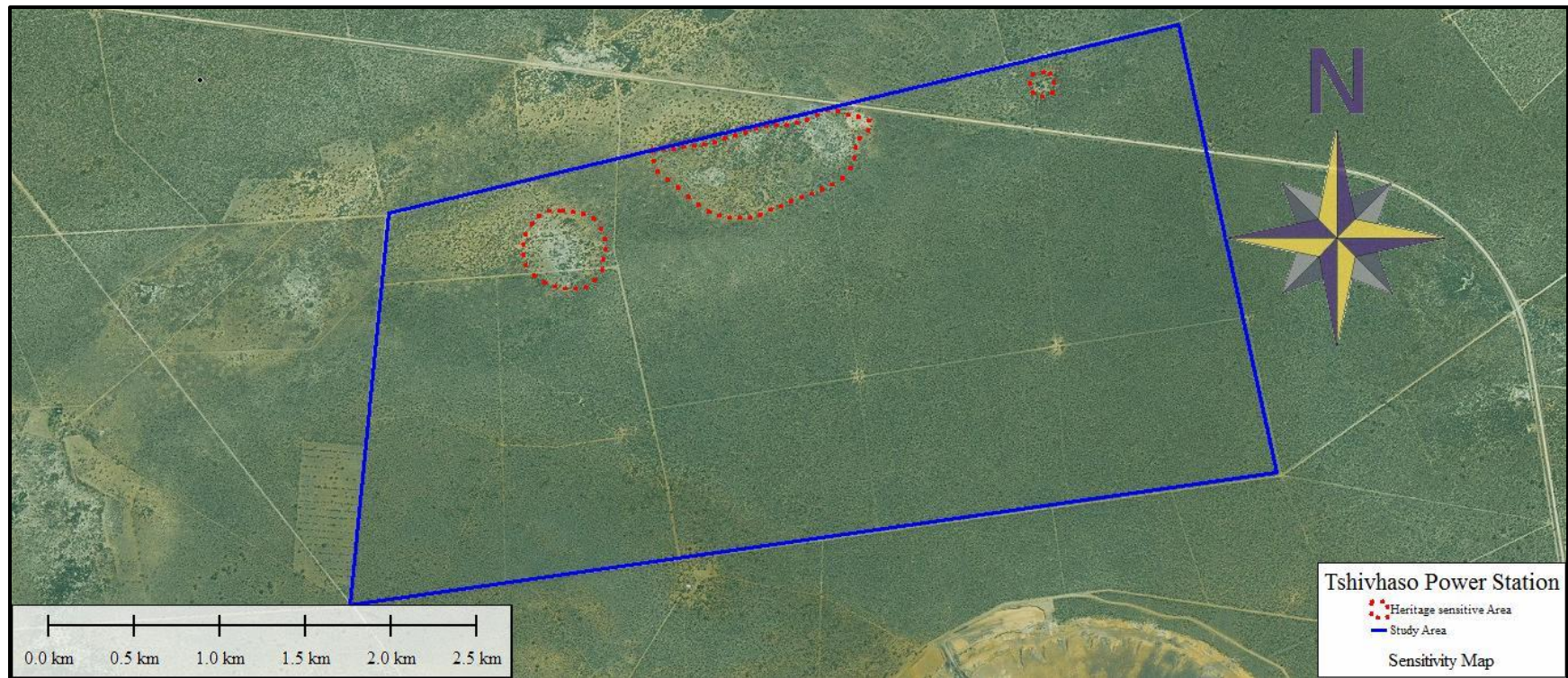


Figure 4: Heritage Sensitivity Map

10. CONCLUSIONS AND RECOMMENDATIONS

This report endeavoured to give a brief account of the history of the study area and the range of heritage resources that could be expected. Some particulars could be traced regarding landscape use and the general history of human settlement in the study area.

Furthermore the study revealed that a range of heritage sites occur in the region and similar sites can be expected for the study area. Pans and shelters could be archaeologically sensitive and best avoided. Based on maps of the area, structures older than 60 years can be expected as well as associated infrastructure. Although no known grave sites are on record some are expected for the study area. Every site is relevant to the Heritage Landscape, but it is anticipated that few (rock art and archaeological deposit and graves) could have conservation value. The following conclusions are applicable to the following sites:

» Archaeological sites

All sites could be mitigated either in the form of conservation of the sites with in 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

It is not anticipated that the built environment will be severely impacted upon as very little structures occur within the study area and could be younger than 60 years. This assumption will how ever have to be verified in the field.

» Burials and cemeteries

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

» General

It is recommended that as part of the public consultation process the presence of graves, archaeological and historical sites should be determined.

11. PLAN OF STUDY

The development triggers the NHRA in the following areas and a Phase 1 study is required:

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	Infrastructure for the project
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	Re-zoning from agricultural to industrial
Any other development category, public open space, squares, parks or recreational grounds	No	

In order to comply with the National Heritage Resources Act (Act 25 of 1999) a Phase 1 Archaeological Impact Assessment should 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 SAHRA are met.

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 has been involved in research and contract work in South Africa, Botswana, Mozambique, Zimbabwe, Tanzania as well as the Democratic Republic of the Congo 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. REFERENCES

Biemond, W.M., 2005. The Iron Age sequence around a Limpopo River floodplain on Basinghall Farm, Tuli Block, Botswana, during the Second Millennium AD. Proceedings of the 12th Congress of the Pan African Archaeological Association for Prehistory and Related Studies, July, Gaborone, Botswana.

Deacon, H.J. & Deacon, J. 1999. Human Beginnings in South Africa: Uncovering the Secrets of the Stone Age. Cape Town: David Phillips Publishers.

Huffman, T.N., 1982. Archaeology and ethnohistory of the African Iron Age. Annual Review of Anthropology 11, 133-50.

Huffman, T.N., 1990. The Waterberg research of Jan Aukema. South African Archaeological Bulletin 45, 61-70.

Huffman, T.N. 2007. Handbook to the Iron Age: The Archaeology of Pre-Colonial Farming Societies in Southern Africa. University of KwaZulu-Natal Press, Scottsville.

Huffman, T.N., Van der Walt, J. 2008a. Mafutha EBA: Cultural Heritage and Archaeology Report. A field study prepared for Environmental Resources Management. Archaeological Resources Management, Johannesburg.

Huffman, T.N., Van der Walt, J. 2008b. Mafutha Road Widening Project. A field study prepared for Environmental Resources Management. Archaeological Resources Management, Johannesburg.

Huffman, T.N., Van der Walt, J. 2011 FINAL MAFUTA HERITAGE REPORT A field study prepared for Environmental Resources Management, Sasol Technology, SRK Consulting and Sustainable Environmental Solutions

Kuman, K., 1998. The earliest South African Industries. In: Lower Palaeolithic Settlement of the Old World. Eds by M.D. Petraglia and R. Korisetter, pp 151-186. Routledge Press, London.

Lewis-Williams, J.D., 1981. Believing and Seeing: Symbolic Meanings in southern San Rock Paintings. Academic Press, London.

Mason, R.J., 1962. The Prehistory of the Transvaal. Witwatersrand University Press, Johannesburg.

Mitchell, P., 2002. The Archaeology of Southern Africa. Cambridge University Press, Cambridge.

Mucina, L. & Rutherford, M.C. 2006. The Vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19. South African National Biodiversity Institute. Pretoria.

National Heritage Resources Act NHRA of 1999 (Act 25 of 1999)

National Archives of South Africa

Depot: SAB, Source MNW, Volume 515, Reference MM1713/20, Date 1920

Depot: SAB, Source MNW, Volume 535, Reference MM2827/20, Date 1920

SAHRA Report Mapping Project Version 1.0, 2009

Volman, T.P. 1984. Early prehistory of southern Africa. In R.G. Klein (ed.) *Southern African Prehistory and Palaeoenvironments*: 169-220. Rotterdam: Balkema.

Pistorius, J.C.C. 2007. A Phase 1 Heritage Impact Assessment Study for the Eskom Mmamabula Delta Project near Lephalale in the Limpopo Province of South Africa. Prepared for PBA International.

Pistorius, J., 2010. *A Phase 1 Heritage Impact Assessment Study for Exxaro's Proposed New Thaba Metsi Open Cast Coal Mine near Lephalale in the Limpopo Province of South Africa*. Unpublished report: Dr JCC Pistorius Archaeology & Heritage Management Consultant

Van der Ryst, M.M., 1998. The Waterburg Plateau in the Northern Province, Republic of South Africa, in the Later Stone Age. BAR International Series 715, Oxford.

Van der Ryst, M.M., 2006. Seeking Shelter: Later Stone Age Hunters, Gatherers and Fishers of Oliboompoort in the western Waterberg south of the Limpopo. Unpublished doctoral thesis, University of the Witwatersrand, Johannesburg

Van Schalkwyk, J.A. 2005. Heritage Impact Scoping Report for the Proposed New Matimba B Power Station. Lephalale District, Limpopo Province. An unpublished report by the National Cultural History Museum on file at SAHRA as: 2005-SAHRA-0106.

Van Schalkwyk, J. 2009. Heritage Scoping Assessment For The Proposed Development Of Coal Mining Activities West Of Lephalale, Limpopo Province. Unpublished Report for Cabanga Concepts.

Van Schalkwyk, J. 2011. Heritage Impact Report for the proposed establishment of the Exxarro PV Plant on the farm Nelsonskop, North West of Lephalale, Limpopo Province. Unpublished report for Savannah Environmental (Pty) Ltd.

Van Vollenhoven, A.C. 2010. A Report On The Assessment Of A Possible Grave Site On The Farm Smitspan 306 Lq, Close To Lephalale In The Limpopo Province. Unpublished Report for Cabanga Concepts.

Volman, T.P., 1984. Early prehistory of southern Africa. In: *Southern African Prehistory and Palaeoenvironments*. Ed by R.G. Klein, pp. 169-220. A.A. Balkema, Rotterdam.

Wadley, L., 1987. Later Stone Age Hunters and Gatherers of the southern Transvaal. BAR International Series 380, Oxford.

Wits Archaeological Database