

# HERITAGE SCOPING REPORT

For the proposed Vlakfontein Coal Mine, Mpumalanga Province, South Africa

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**EXECUTIVE SUMMARY**

BCR Coal (Pty) Ltd is proposing the development of the Vlakfontein Coal Mine, north of Ermelo, in the Mpumalanga Province. Environmental Management Assistance (Pty) Ltd has been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the requisite Environmental Impact Assessment (EIA) process for the Project who in turn contracted Beyond Heritage to assess the potential impact on heritage resources by the Project.

The assessment is to be undertaken in two phases, a scoping phase and a Heritage Impact Assessment (HIA) phase, this report concerns the scoping phase.

The aim of the scoping phase is to assess the study area at a desktop level to compile a background history of the study area, and to identify possible key heritage issues to be addressed during the EIA phase that should be avoided during development.

Key findings from the desktop review include:

- Heritage assessments in the larger geographical area recorded historical features, archaeological sites as well as burial sites (e.g., Van Vollenhoven, 2012; Pistorius, 2007; Van Wyk Rowe, 2014; Van Schalkwyk, 2003; Van der Walt, 2015; Coetzee, 2012; Van Schalkwyk, 2016). Similar sites can be expected in the Project area.
- Large sections of the study area are cultivated, and the Project area is considered to be of low archaeological potential.
- An assessment of historical maps and aerial photography highlighted several areas where buildings likely older than 60 years occur that would require mitigation before destruction. These areas are also sensitive for potential burial sites.
- The study area is of low to very high paleontological sensitivity and according to the SAHRIS palaeontological sensitivity map must be subjected to a palaeontological assessment in the impact assessment phase.

The scoping study did not identify any known heritage sites of high significance in the development footprint and it is expected that if any sites are identified within the development footprint during the field visit, the sites can be mitigated, either by avoidance or by a Phase 2 assessment.

To comply with the National Heritage Resources Act (NHRA) and with cognisance of known heritage resources in the greater area it is recommended that the study area should be subjected to a field-based Heritage Impact Assessment (HIA). During the study, the potential impact on heritage resources will be determined as well as the levels of significance of recorded heritage resources. The HIA should also provide management and mitigation measures should any significant sites be impacted, ensuring that all the requirements of the South African Heritage Resources Agency (SAHRA) are met. A Summary of sensitivity and plan of study is indicated below.

ASPECT	SCREENING TOOL SENSITIVITY	VERIFIED SENSITIVITY	OUTCOME STATEMENT/PLAN OF STUDY	RELEVANT SECTION MOTIVATING VERIFICATION
Palaeontology	High	Low	Paleontological Impact Assessment	Section 7.2. SAHRA Requirements

ASPECT	SCREENING TOOL SENSITIVITY	VERIFIED SENSITIVITY	OUTCOME STATEMENT/PLAN OF STUDY	RELEVANT SECTION MOTIVATING VERIFICATION
Cultural Heritage	Low	Low (with the exception of Grave sites that can occur anywhere on the landscape)	Heritage Assessment      Impact	Section 7.1. SAHRA Requirements

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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 recently)

Historic (approximately AD 1840 to 1950)

Historic building (over 60 years old)

Lithics: Stone Age artefacts



## **1. INTRODUCTION**

Beyond Heritage was contracted by Environmental Management Assistance (Pty) Ltd to conduct a heritage scoping study for the BCR Coal - Vlakfontein Mine that is located approximately 5 km south-east of Breyten, 7,5 km south-west of Chrissiesmeer and 14,5 km north east of Ermelo, Mpumalanga Province (Figure 1.1 to 1.3). The project is situated on Portion (Ptn.) 2, Ptn 11 and Ptn 21 of farm Vlakfontein 108 IT, Ptn 1, 7, 14, and 12 of farm Welgelegen 107 107 IT, Msukaligwa Municipality, Mpumalanga. The heritage scoping report informs the required Scoping Report as part of the process to apply for a mining right associated with the proposed Project.

The aim of the scoping report is to identify possible heritage resources within the Project area and to submit appropriate recommendations with regards to the responsible cultural resources management measures that might be required within the framework provided by Heritage legislation (National Heritage Resources Act (NHRA) 25 of 1999).

The report outlines the approach and methodology utilized 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.

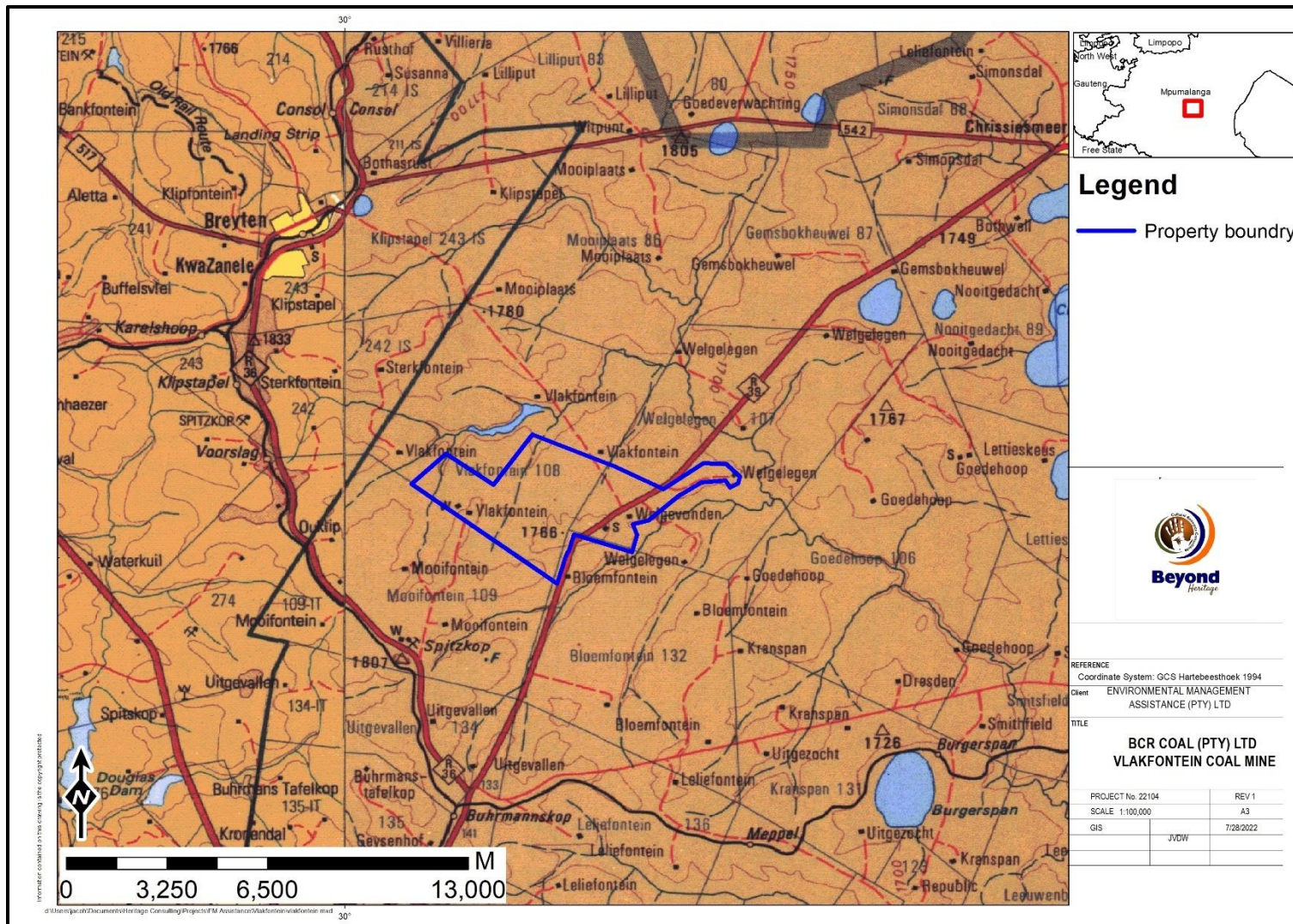


Figure 1.1. Regional setting of the study area.



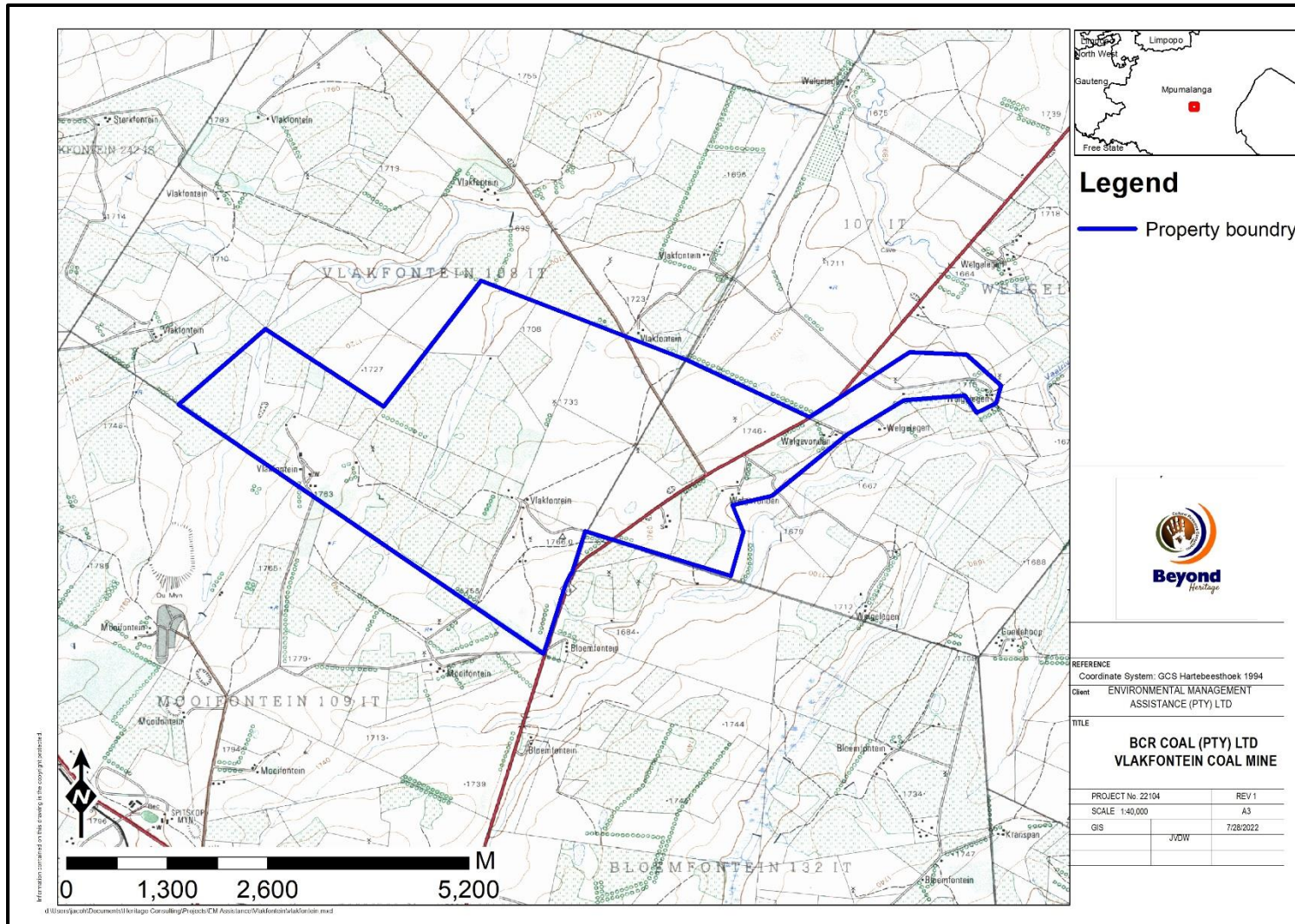


Figure 1.2. Local setting of the proposed Project.

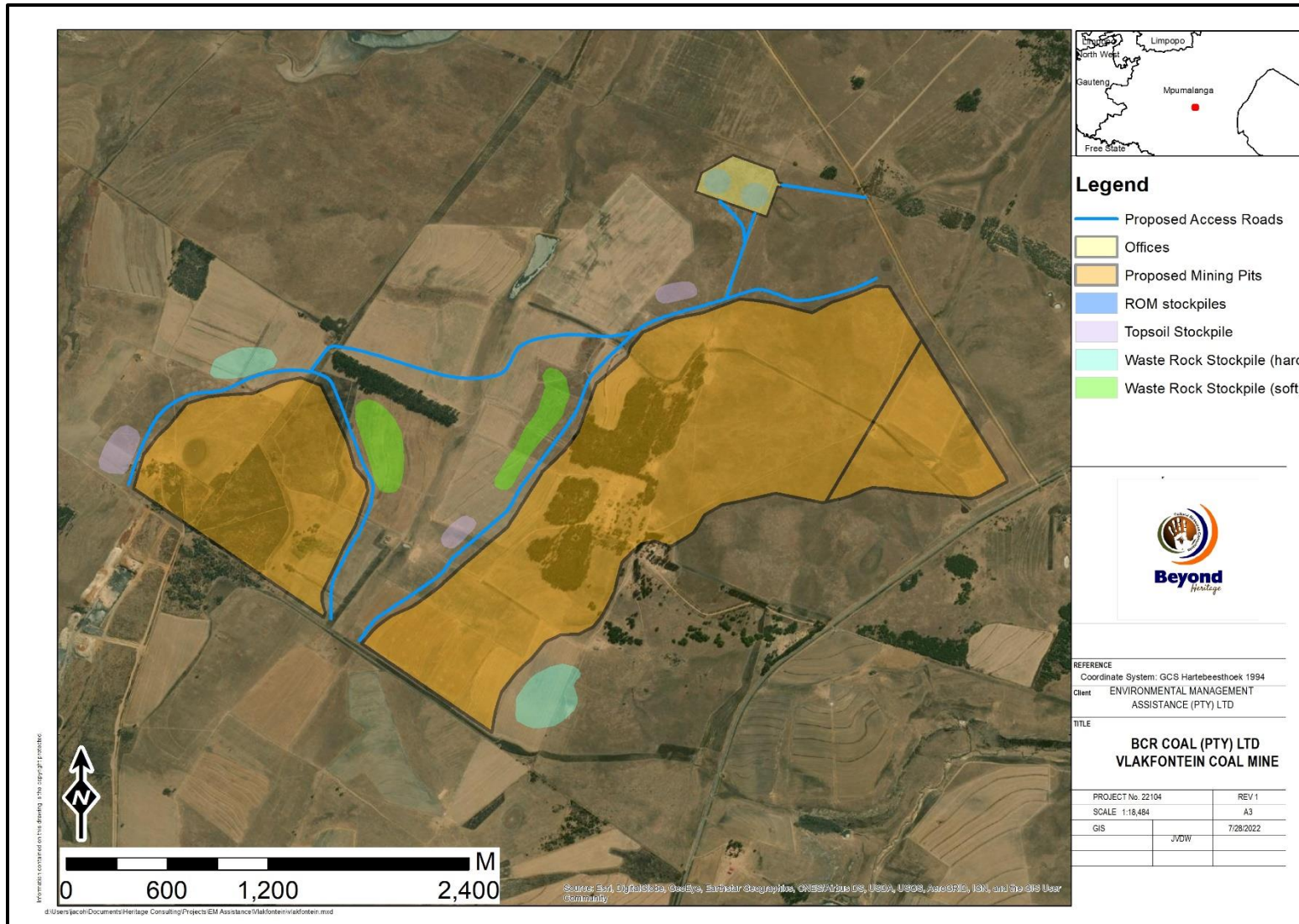


Figure 1.3. Aerial view of the Project components.

## 1.1 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 require further investigation during the EIA. 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 development footprint 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 desktop study, wherein potential issues associated with the proposed Project will be identified, and those issues requiring further investigation through the EIA Phase highlighted. Reporting will aim to identify the potential impacts of the proposed Project activity on heritage resources. 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 heritage resources in a responsible manner, in order to protect, preserve and develop them within the framework provided by the NHRA (Act 25 of 1999).



### 1.2 Nature of the development

BCR Coal (Pty) Ltd (the applicant) is proposing an open pit mining operation, referred to as the BCR Coal Vlakfontein Mine, as indicated in Table 1.

Table 1. Project details

<b>Farm Name:</b>	Ptn 2, Ptn 11 and Ptn 21 of farm Vlakfontein 108 IT; Ptn 1, 7, 14, and 12 of farm Welgelegen 107 107 IT.
<b>Application area (Ha) :</b>	397 ha for mining
<b>Magisterial district:</b>	Msukaligwa Municipality
<b>Distance and direction from nearest town:</b>	5 km south-east of Breyten, 7,5 km south-west of Chrissiesmeer and 14,5 km northe-east of Ermelo
<b>21 digit Surveyor General Code for each farm portion:</b>	<p>TOIT00000000010800002</p> <p>TOIT00000000010800009</p> <p>TOIT00000000010800011</p> <p>TOIT00000000010700001</p> <p>TOIT00000000010700007</p> <p>TOIT00000000010700012</p> <p>TOIT00000000010700014</p>
<b>Project activities:</b>	<p>The open pit planned applies a conventional opencast truck and shovel mining philosophy including the following steps:</p> <ul style="list-style-type: none"> <li>• Removal of topsoil and storing it at a designated position;</li> <li>• Removal of the overburden;</li> <li>• Drilling and blasting will be required to break the hard overburden;</li> <li>• The waste will be dumped in the pit behind the advancing face where possible with the remainder placed at the designated waste rock stockpile, separate from the topsoil;</li> <li>• Drilling and blasting of the coal seams;</li> <li>• Loading and hauling of the ore for stockpiling at the Run-of-Mine (ROM) pad and for transport to the preferred Washing Plant.</li> </ul>
<b>Infrastructure requirements:</b>	

The project footprint will require the support facilities and infrastructure in order to operate. The infrastructure requirements are:

- Access & Haul roads (with necessary security) including the upgrading of the access point to mining area;
- Contractor's Yard with septic/chemical ablution facilities;
- Offices;
- Weighbridge, workshop and stores (with septic/chemical ablution facilities);
- Diesel facilities and a hardstand;
- Power and Water;
- Stockpiles (topsoil, overburden (waste), subsoil/softs, ROM);
- Crushing and screening facility;
- Surface water management measures (stormwater diversion berms and trenches; pollution control dams etc);
- Medical station; and
- Diesel Generator

## 2. APPROACH AND METHODOLOGY

The assessment is to be undertaken in two phases, a scoping phase and an HIA phase as part of the required Scoping and Environmental Impact Assessment (S&EIA) process, this report concerns the scoping phase. The aim of the scoping phase is to assess the study area at a desktop level to compile a background history of the study area, and to identify possible key heritage issues to be addressed during the EIA phase that 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 search

A literature search was conducted utilising data from 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

South African Heritage Resource Information System (SAHRIS) was consulted to collect data from Cultural Resource Management (CRM) practitioners who undertook work in the area to provide the most comprehensive account of the history of the area where possible.

**2.3 Public consultation**

A full public consultation process will be facilitated by Environmental Management Assistance (Pty) Ltd. Any heritage concerns raised during this process will be addressed in the HIA.

**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****3.1 National Heritage Resources Act**

For this Project the National Heritage Resources Act, 1999 (Act No. 25 of 1999 Section3) 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. Graveyards and graves older than 60 years
- h. Meteorites and fossils
- 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
- 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 this 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.

Even though there is no protocol for Heritage and Palaeontology, both components are defined in the Screening Report For An Environmental Authorization As Required By The 2014 EIA Regulations –



Proposed Site Environmental Sensitivity and was therefore consulted as well as the required sensitivity verification and Appendix 6.

### 3.2 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. The recommendations for each site should be read in conjunction with section 9 of this report.

Table 2. Heritage significance and field ratings

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. ARCHAEOLOGICAL AND HISTORICAL INFORMATION AVAILABLE ON THE STUDY AREA

The archaeological record for the greater study area consists of the Stone Age and Iron Age.

##### 4.3.1. Stone Age

The Stone Age of southern Africa starts when hominins (ancestral to modern-day humans) first started to produce crude tools made with stone. The Earlier Stone Age (2 million - 200 000 years ago) is associated with hominins such as *Homo habilis* and *Homo erectus* (Dusseldorp et al. 2013). Mpumalanga currently does not have an extensive Early Stone Age (ESA) archaeological record, at Maleoskop on the farm Rietkloof, only a few ESA artefacts have been found and stone tools consisted of Oldowan choppers, hand axes, and Acheulean cleavers (Esterhuysen & Smith 2007). Surface scatters of stone tool have been recorded near Piet Retief (Nel & Karodia 2013).

Middle Stone Age (MSA) artefacts represents archaic and modern humans that occupied the landscape between 300 000 to 40 000 before present. Later Stone Age (LSA) occupational sequences reflect San and Khoisan communities from 40 000 years ago until recently (Dusseldorp et al. 2013). Although the MSA and LSA has not been extensively studied in Mpumalanga, evidence for these periods has been excavated from Bushman Rock Shelter in the Ohrigstad District (Esterhuysen & Smith 2007, Lombard et al 2012) and it is known that San communities lived near Lake Chrissie as recently as the 1950s (e.g., Schlebusch et al. 2016). MSA and LSA surface scatters have also been investigated in the vicinity of Piet Retief, and De Wittekrans close to Ermelo is a Later Stone Age archaeological rock art site complex (Nel & Karodia 2013). A Later Stone Age archaeological rock art site complex can be found near Camden (Nel & Karodia 2013). Approximately 20km from Ermelo, the Welgelegen Shelter was excavated in 1967 with lower stratigraphic layers yielding Later Stone Age scrapers and flakes as well as recording of San rock art (Esterhuysen & Smith 2007). Areas around Chrissiesmeer shows evidence of the occupation of San people from the Later Stone Age until Historical periods (Potgieter 1955). Stone Age scatters could potentially be found within the project footprint, but due to the lack of more significant Stone Age sites, it is unlikely that the findings would be of high archaeological significance.

#### 4.3.2. Iron Age

The archaeology of farming communities of southern Africa encompasses three phases. The Early Iron Age (AD 200-900) represents the arrival of Bantu-speaking farmers in southern Africa. Living in sedentary settlements often located next to rivers, these farmers cultivated sorghum, beans, cowpeas, and kept livestock. The Middle Iron Age (AD 900-1300) is mostly confined to the Limpopo Valley in southern Africa with Mapungubwe Hill probably representing the earliest 'state' in this region (Huffman 2007).

The Late Iron Age (1300-1840s) marks the arrival and spread of ancestral Eastern Bantu-speaking Nguni and Sotho-Tswana communities into southern Africa. The location of Late Iron Age settlements is usually on or near hilltops for defensive purposes. The Late Iron Age as an archaeological period ended by 1840 CE, when the Mfecane caused major socio-political disruptions in southern Africa (Huffman 2007).

Dates from Early Iron Age sites indicated that by the beginning of the 5th century CE Bantu-speaking farmers had settled in the Mpumalanga lowveld. Subsequently, farmers continued to move into and between the lowveld and highveld of Mpumalanga. The Highveld was occupied by Late Iron Age communities around the 12<sup>th</sup> century (Esterhuysen & Smith 2007). Huffman (2007), states that Maguga facies making communities would have inhabited areas of Mpumalanga potentially as early as AD1100 onwards into the Later Iron Age. The upper stratigraphic layers of the Welgelegen Shelter excavations yielded a myriad of Iron Age artefacts such as bone, eggshell, and glass beads, pottery, bone implements, as well as metal artefacts (Esterhuysen & Smith 2007). Some stratigraphic layers argue for a co-existence of both LSA and Iron Age communities for a period of time around AD 1200. On Tafelkop Mountain, the Tafelkop Settlement consists of various settlement complexes with over 100 corbelled huts in numerous clusters on the mountain top (Esterhuysen & Smith 2007). Numerous stone walled sites have been identified from Bethal to Ermelo as well as north-east of Ermelo (Bergh 1999). Iron Age scatters could occur within the study area as has been seen in heritage reports in the greater area, but they are unlikely to be of high archaeological significance. Outside of the study footprint, the Provincial Heritage site of the "Stonehut Settlement" can be found. The site was declared a Provincial Heritage site by SAHRA in 1982. The site is located to the Southwest of the project area and is approximately 15 km from the study area.

#### 4.3.3. Historical information

In the early 1800s the Phuthing, a Sotho group, occupied western regions of southern Mpumalanga until the Difaquane when the Ndebele of Mzilikazi entered the landscape and settled there (Bergh 1999). This resulted in the fleeing of the Phuthing to southern regions. During this time the Swazi also started inhabiting regions of Mpumalanga. In 1853, white farmers started inhabiting the area traded from the Swazi (Bergh 1999). Thereafter in 1880 the town of Ermelo was established (Pistorius 2007). Many developments within Mpumalanga have been in conjunction with coal mining in the province. Most finds within the project footprint and surrounding are of Historical context as well as historical graves, as such there is a higher potential for graves and historical finds within the project footprint.

#### 4.3.4. Battlefields and war history

Due to the proximity of Ermelo to the Nederlandsche Zuid-Afrikaansche Spoorweg-Maatskappij railway line linking Pretoria with Lourenço Marques (Maputo), the area was subject to various skirmishes during the Anglo-Boer War of 1899-1902. At the time there were about 100 families residing in the town and many women and children were sent to British concentration camps. The British occupied Ermelo in 1900 and erected blockhouses in lines between Standerton and Ermelo, between Amsterdam and Ermelo, as well as between Ermelo and Carolina (Bergh 1999). In 1901, British troops burnt the town down due to their scorched earth policy, and Ermelo was rebuilt in 1903 (Moody 1977, Greyling 2017). During the Anglo-Boer War (1899-1902),

#### 4.3.6. Cultural Landscape

Regionally the area is mostly cultivated, and forms part of a landscape characterised by wide scale cultivation and mining activities. Development in the study area is limited to farming infrastructure such as access roads, fences, and agricultural developments. The study area is part of a large cultural landscape dating from the Iron Age period to historical homesteads with farming activities and more recently to mining activities (Figure 4.1 and 4.2).

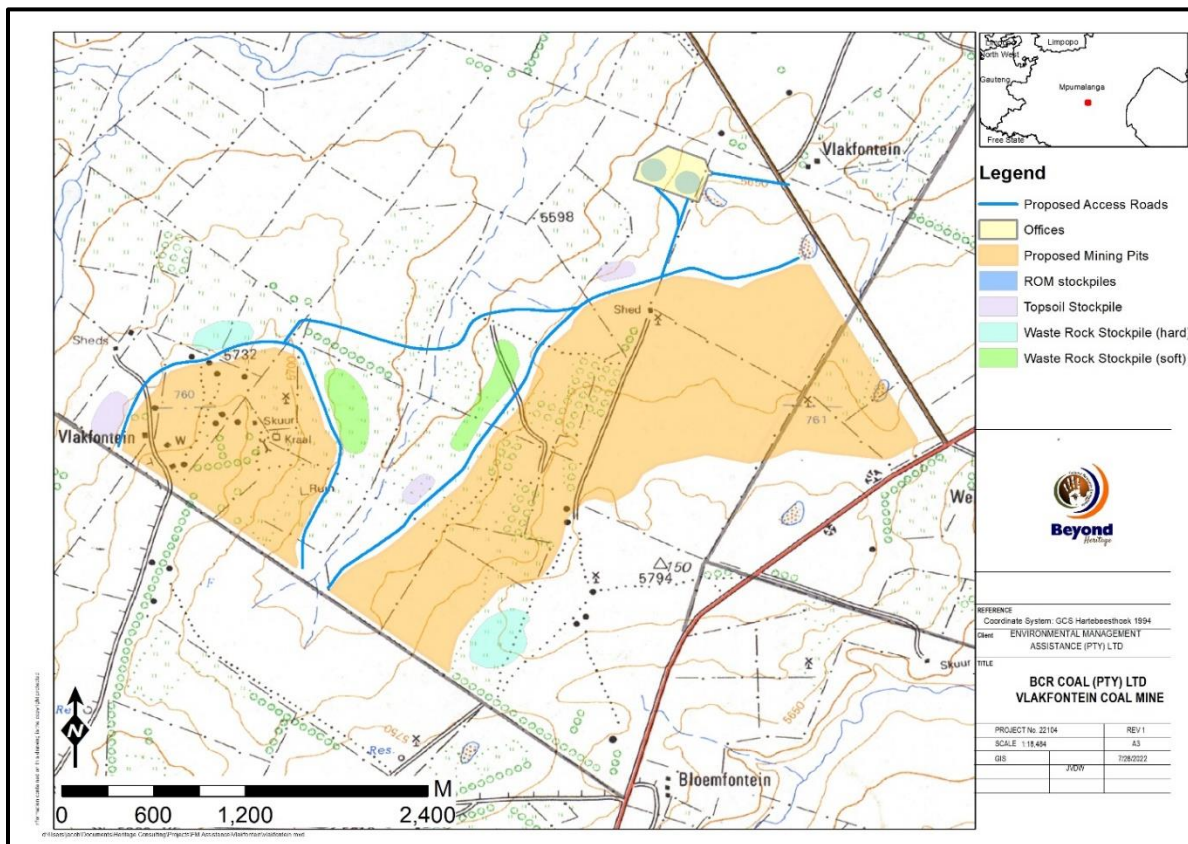


Figure 4.1. 1968 Topographic map of the study area. Structures are indicated in the proposed mining pits. The area is also indicated as largely cultivated.

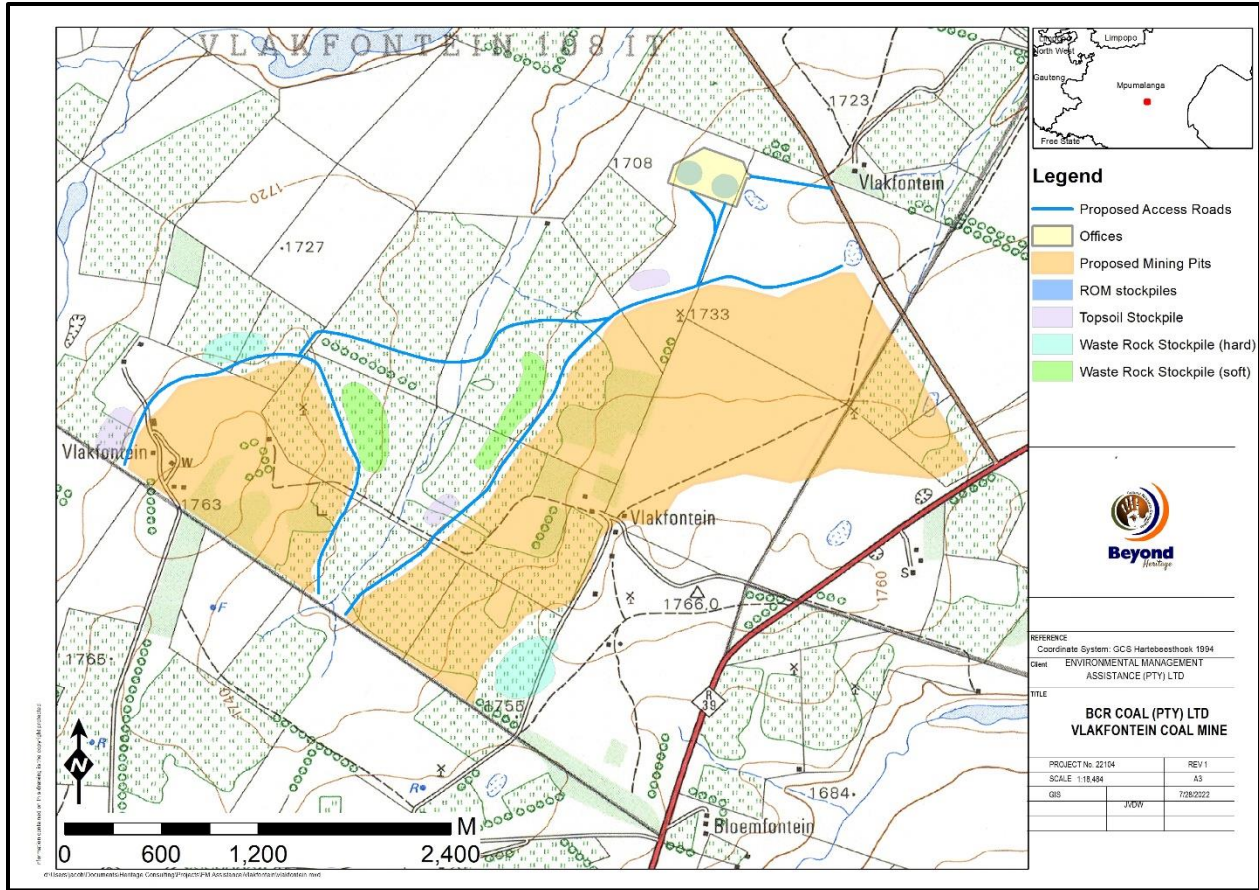


Figure 4.2. 1985 Topographic map of the study area. The area is cultivated, and fewer structures are indicated.

## 4.1 General Information

### 4.1.1. Literature search (SAHRIS)

A brief survey of available literature was conducted to extract data and information on the area in question, to provide general heritage context into which the development would be set. This literature search included published material, unpublished commercial reports, and online material, including reports sourced from the South African Heritage Resources Information System (SAHRIS) outlined under Table 3:

Table 3. Previous Heritage and Archaeological impact assessments studies consulted for the compilation of this report.

Author	Year	Project	Findings
Birkholtz, P.D., & Steyn, H.S.	2012	Phase 1 Heritage Impact Assessment as part of the Scoping Report for the Proposed Voorslag Siding for SA Coal Mining Holdings on the Farm Farm Voorslag 274 IS Portion 10 Ptn of Ptn 5 in the Vicinity of Local Municipality: Msukaligwa Local Municipality, District Municipality: Gert Sibande District Municipality, South Africa.	No archaeological findings were recorded.
Van Vollenhoven, A.	2012	A Report on a Heritage Impact Assessment for a Proposed Opencast Coal Mine on the Farms Joubertsvele 260 IT and Meppel 264 IT, Close to Ermelo, Mpumalanga Province.	Farm house, an old wagon house, and numerous grave sites.
Pistorius, J.C.C.	2003	A Heritage Impact Assessment Study for Eskom's Proposed New Power Line on the Farms Driefontein 114IT and Lettieskeus 105IT Near Chrissiemeer in the Mpumalanga Province of South Africa.	No archaeological findings were recorded.
Pistorius, J.C.C.	2007	A Phase I Heritage Impact Assessment (HIA) Study for the Proposed New 88kV Power Line Running from the Majuba Power Station Near Amersfoort to the Camden Power Station Near Ermelo in the Mpumalanga Province of South Africa.	Homesteads, stone walled kraals, and graves.
Van Wyk Rowe, C.	2014	Phase 1 Archaeological / Heritage Impact Assessment for the Proposed Bahlangene Residential Township Establishment on Portion 2 of the Farm. Langverwacht 293, Ermelo Mpumalanga Province.	Historical ruin and graves.
Van Schalkwyk, J.	2003	Archaeological Survey of a Section of the Secunda-Mozambique Gas Pipeline, Carolina District, Mpumalanga.	Rock art and numerous graves.
Van der Walt, J.	2015	Camden Ash Disposal – Grave confirmation study	Four cemeteries and two historical structures as well as stone cairns.
Coetzee, T.	2012	Archaeological Impact Assessment for the Extension of Development for Coal Mining for Vunene Mining (PTY) LTD on Portions 3, 4, 6, 9, 14 and 15 Of The Farm Jan Hendriksfontein 263 IT, Portions 2, 8, 9, 11,17 and 21 of The Farm Witpunt 267 IT, Portions 5, 6, 7, 8 Of The Farm Vlaktefontein 266 It, Holbank 265 It, Roodewal 270 IT, Twyfelaar 298 IT, Vlaktefontein 269 IT and Mooiplaats 290 IT in the District Municipality: Gert Sibande Mpumalanga Province South Africa.	Historical homestead, graves, stone walling, brick structures.
Van Schalkwyk, J.	2016	Cultural Heritage Impact assessment for the planned borrow pits and quarries for the improvement of the national route N2, km 60 (Leiden) to km 87.4 (Camden), Gert Sibande District Municipality, Mpumalanga Province	Historic informal cemetery with more than 35 graves, three old railway culverts that formed part of the original railroad alignment which was constructed in 1911, and an old sheep dip constructed from concrete.
Matenga, E.	2020	Heritage Impact Assessment for the proposed improvements to the existing waste reticulation system at Camden power station in Ermelo, Mpumalanga Province.	No archaeological findings were recorded.



#### 4.1 2. Public consultation

A public participation process is facilitated by Environmental Management Assistance (Pty) Ltd as per the EIA process with reference to the NHRA and potential heritage concerns will be included in the HIA. During the early stages of the consultation Mr. Athol Stark from Highveld Tourism expressed concerns regarding the impact of the Project on the following sites:

- On Farm Welgelegen there's two major heritage cave sites;
- Mushroom rock or murder rock; and
- Heritage buildings along the N17

None of these sites will be directly affected by the project as they are located well away from the area currently under assessment. The secondary impacts will however be further addressed during the impact assessment phase.

#### 4.1.3. Google Earth and The Genealogical Society of South Africa (Graves and burial sites)

The Goedehoop Cemetery is indicated approximately 6,74 km from the study area. The declared heritage site 'Natural Rock Bridge – Goedehoop is located approximately 8 km to the South East of the project area.

### 5. 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.

#### » Palaeontological landscape

Fossil remains. *Medium probability.*

#### » 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: *Low Probability*  
MSA: *Low to Medium Probability*  
LSA: *Low to Medium Probability*  
LSA –Herder: *Low Probability*

#### » **Iron Age finds**

EIA: *Low Probability*  
MIA: *Low Probability*

*LIA: Low -Medium Probability*

» **Historical finds**

Historical period: *Medium to High Probability*  
 Historical dumps: *Low to Medium Probability*  
 Structural remains: *Medium to High Probability*  
 Cultural Landscape: *Low probability*

» **Living Heritage**

For example, rainmaking sites: *Low Probability*

» **Burial/Cemeteries**

Burials over 100 years: *Medium to High Probability*  
 Burials younger than 60 years: *Medium to High Probability*

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

## 6. ASSUMPTIONS AND LIMITATIONS

The study area was not subjected to a field survey, and this will be conducted in the EIA phase. It is assumed that information obtained for the wider area is applicable to the study area and the authors acknowledge that the brief literature review is not exhaustive on the literature of the area. Due to the subsurface nature of cultural deposits, the possibility exists that some features or artefacts may only be discovered/recorded during the survey, similarly the possible occurrence of graves not recorded here, and other cultural material cannot be excluded. This study did not assess the impact on medicinal plants and intangible heritage as it is assumed that these components would be highlighted through the public consultation process if relevant. It is possible that new information could come to light in future, which might change the results of this scoping report.

## 7. FINDINGS

### 7.1. Heritage resources

The study area is flat without focal points that would have attracted occupation in antiquity and is considered to be of low archaeological potential concurring with the Department Forestry Fisheries and the Environment (DFFE) screening tool that indicated the study area as of low heritage sensitivity (Figure 7.1) but with a provincial heritage site indicated to the southeast. The site is located well away from the impact area and will not be impacted on. However, heritage resources including structures older than 60 years as well as graves and burial sites can be expected around farmsteads as indicated on historical topographic maps (Figure 4.1 and 4.2) and potential sensitive areas are indicated in Figure 7.2.





Figure 7.1. Sensitivity of the study area based on the DFFE screening tool. The study area is of low sensitivity. The red area to the Southeast indicates the area where the Provincial Heritage Site the Goedehoop Natural Stone Bridge is located.

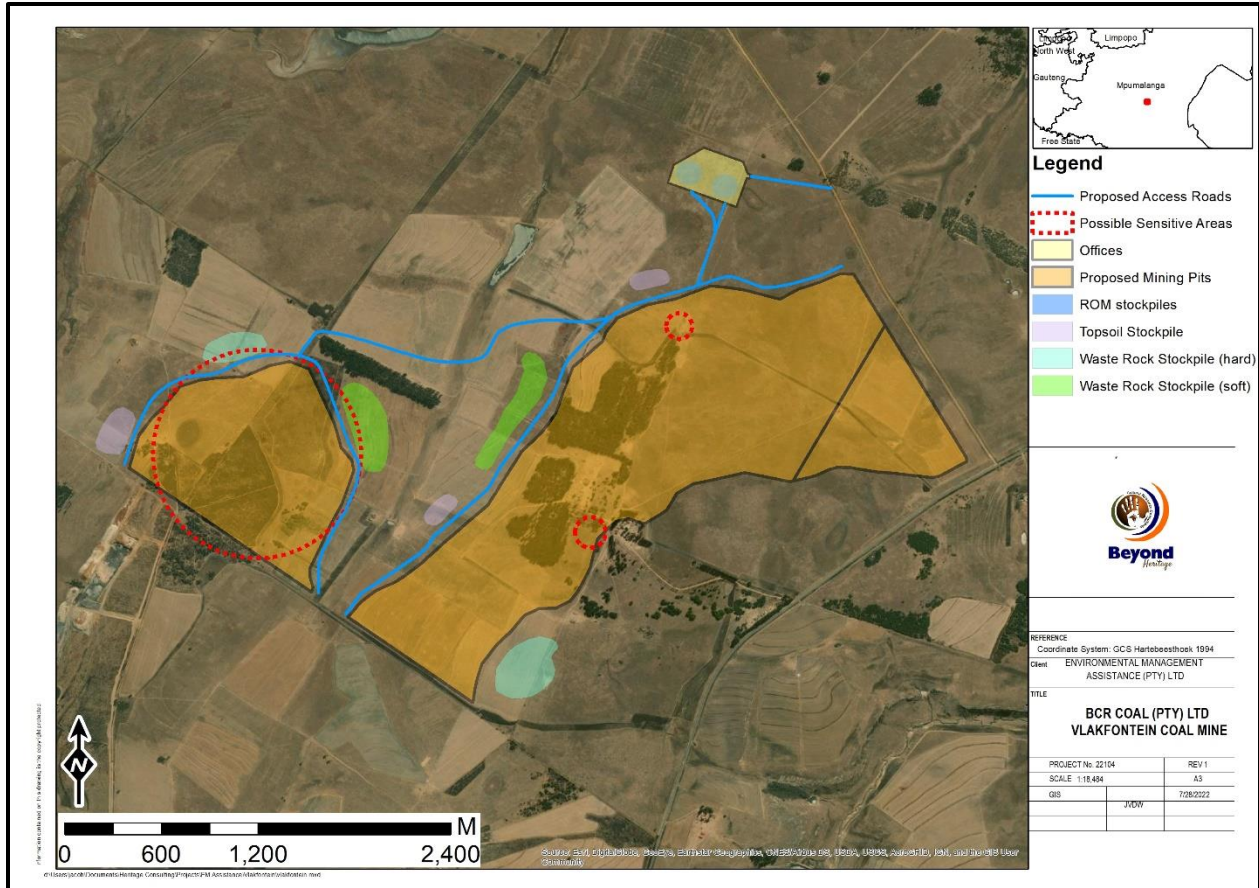


Figure 7.2. Potentially heritage sensitive areas in relation to the Project area and project components.

## 7.2. Palaeontology

The study area ranges from insignificant to moderate to very high palaeontological sensitivity (Figure 7.3) on the SAHRA palaeontological map. This concurs with the DFFE Screening tool (Figure 7.4). The general project area is mainly comprised of Jurassic dolerite dykes, the Vryheid Formation, Ecca Group, and Karoo Supergroup (Bamford 2020). Based on a palaeontological impact assessment by Bamford (2020), in Camden, the sediments are old enough to allow for the presence of fossils but are covered by more recent sediments that fossiliferous rocks would only be likely to occur roughly 8m below the surface level. The dolerite dykes are known for the lack of fossil preservation as they destroy potential fossiliferous materials (Bamford 2020). A survey in Camden, close to Ermelo by Bamford (2022), recorded no *Glossopteris* flora fossils in the area. Another palaeontological impact assessment in Ermelo by Millstead (2014), also stated the unlikelihood of fossiliferous material being found. The Vryheid Formation is the most fossiliferous group in the area. Further studies will be required in the EIA phase.



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 7.3. Palaeontological sensitivity map of the approximate study area (yellow polygon).

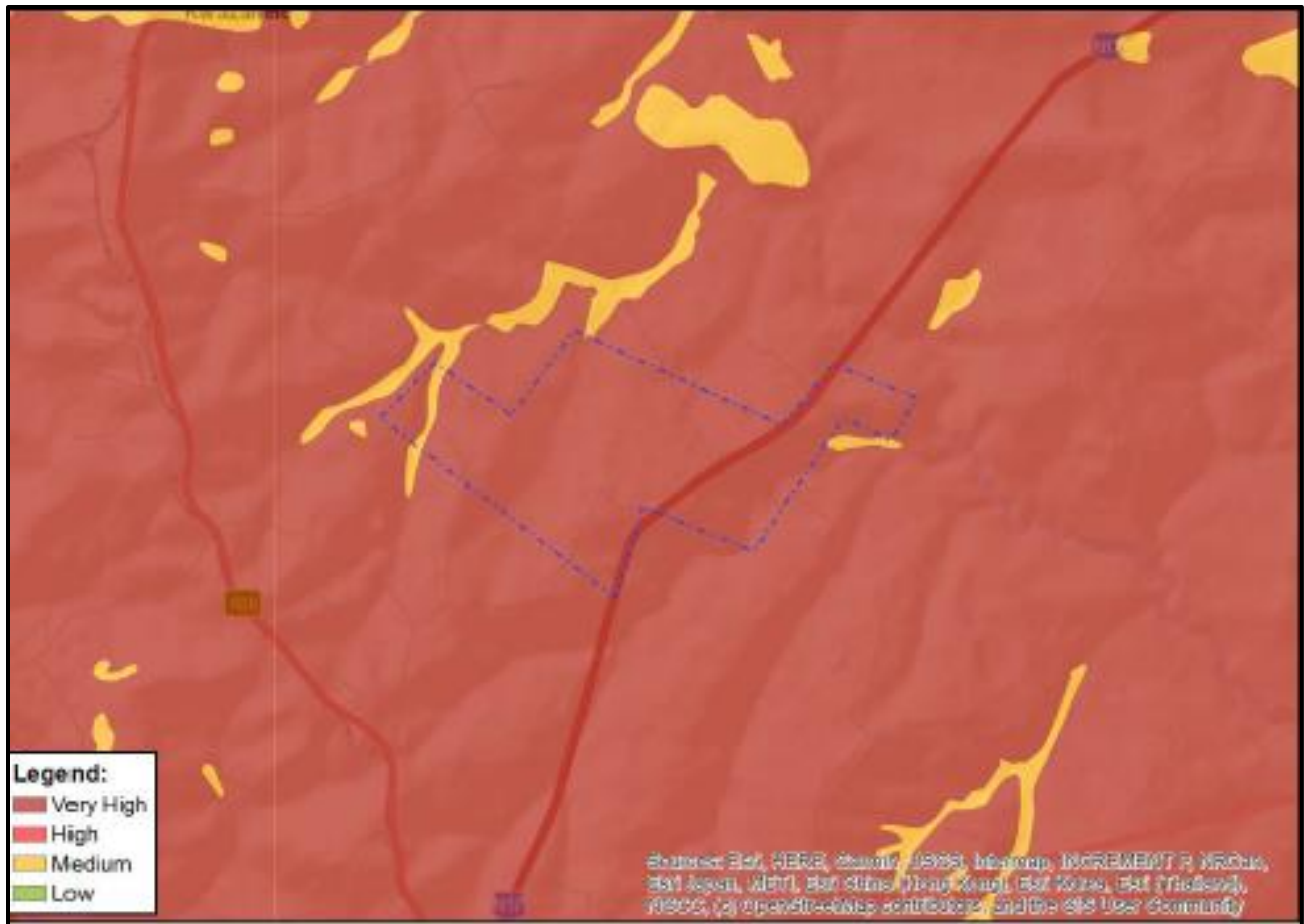


Figure 7.4. Paleontological sensitivity of the study area as per the DFFE screening tool.



**8. POTENTIAL SIGNIFICANCE OF HERITAGE RESOURCES**

Based on the current information obtained for the area at a desktop level it is anticipated that any heritage resources that occur within the proposed development area will have a Local Significance (LS), Grade 3B or lower field rating and all sites should be mitigatable. Graves are of high social significance (Field rating GP A) and can be expected anywhere on the landscape.

Table 4. Expected impact on heritage resources.

<b>Impact on Heritage resources</b>			
The construction of the proposed project could directly impact on graves, archaeological sites and historical sites.			
<b>Issue</b>	<b>Nature of Impact</b>	<b>Extent of Impact</b>	<b>No-Go Areas</b>
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.	Where known graves occur
<b>Description of expected significance of impact</b>			
Significance rating of sites, mitigation measures and magnitude of possible impacts can only be determined after the field based HIA but based on the current information the impact on heritage resources can be mitigated to an acceptable level.			
<b>Gaps in knowledge &amp; recommendations for further study</b>			
It is recommended that a field based HIA should be conducted to comply with Section 38 (8) of the National Heritage Resources Act.			

## 9. CONCLUSION AND PLAN OF STUDY FOR EIA

### 9.1. Summary of Desktop Verification Outcome

The scoping study did not identify any fatal flaws for the proposed BCR Coal - Vlakfontein Mine. The study area is of insignificant to moderate to very high paleontological sensitivity and according to the SAHRIS palaeontological sensitivity map must be subjected to a palaeontological assessment in the impact assessment phase

### 9.2. Plan of Study for EIA

To comply with the National Heritage Resources Act (Act 25 of 1999) it is recommended that a Phase 1 HIA including a paleontological impact assessment must be undertaken for the study area. During this assessment the potential impact on heritage resources will be determined as well as levels of significance of recorded heritage resources. The HIA will also provide management and mitigation measures should any significant sites be impacted upon, ensuring that all the requirements of the SAHRA are met. During the Public participation and stakeholder consultation process (advertisements & site notices) must reference the National Heritage Resources Act.

### 9.3. Reasoned opinion regarding the acceptability of the proposed activity

Based on the current information obtained for the area at a desktop level no red flags were identified, and it is anticipated that any heritage resources that occur within the proposed development area will have local cultural significance and would be graded with a Grade 3B or lower field rating. All cultural heritage resources should be mitigatable to an acceptable level but will be confirmed during the field based impact assessment phase.

Table 5. Summary of sensitivity and plan of study

ASPECT	SCREENING TOOL SENSITIVITY	VERIFIED SENSITIVITY	OUTCOME STATEMENT/PLAN OF STUDY	RELEVANT SECTION MOTIVATING VERIFICATION
Palaeontology	High	Low	Paleontological Impact Assessment	Section 7.2. SAHRA Requirements
Cultural Heritage	Low	Low (with the exception of Grave sites that can occur anywhere on the landscape)	Heritage Impact Assessment	Section 7.1. SAHRA Requirements

## 10. LIST OF PREPARERS

Jaco van der Walt (Archaeologist and Project Manager)

## 11. 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 (#159): Iron Age Archaeology, Colonial Period Archaeology, Stone Age Archaeology and Grave Relocation. He is also a member of the Association of Professional Heritage Practitioners (#114). Jaco is also an accredited CRM Archaeologist with SAHRA and AMAFA.

Jaco has been involved in research and contract work in South Africa, Afghanistan, Botswana, Mozambique, Zimbabwe, Zambia, Guinea, Nigeria, Tanzania, Afghanistan, and the DRC and conducted well over 700 AIAs and HIAs since he started his career in CRM in 2000. This involved several mining operations, Eskom transmission and distribution projects, and renewable energy developments. The results of several of these projects were presented at international and local conferences.

**12. STATEMENT OF INDEPENDENCE**

I, Jaco van der Walt as duly authorised representative of Beyond Heritage, hereby confirm my independence as a specialist and declare that neither I nor the Beyond Heritage 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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