# Appendix G.8

## HERITAGE SCOPING REPORT

# HERITAGE SCOPING REPORT

**For the proposed Phefumula Emoyeni One Electrical Grid Infrastructure, Mpumalanga Province**

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## EXECUTIVE SUMMARY

Phefumula Emoyeni One (Pty) Ltd is proposing to develop the Phefumula Emoyeni One Electrical Grid Infrastructure to be integrated to the national Grid with a 400kV grid connection and establishing a new 400/132kV Main Transmission Substation (MTS) as well as three distribution substations / switching stations in order to support the Phefumula Emoyeni One Wind Energy Facility (WEF) near Ermelo, Mpumalanga Province. Beyond Heritage was appointed to assess the potential impacts to heritage resources by the Project. This report is for the scoping phase of the Project and is based on a desktop study that provides a brief review of the local heritage and potential sites to be avoided. Key findings include:

- Heritage resources in the study area consist of structures and ruins older than 60 years, burial sites and Iron Age stone walled settlements;
- The study area is indicated to be of high and very high palaeontological sensitivity according to SAHRIS but with the quaternary sand cover in the study area it is extremely unlikely that any fossils would be preserved;
- To comply with the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) and with cognisance of known heritage resources in the area, the development footprint should be subjected to a field-based Heritage Impact Assessment (HIA) of the final impact areas.

The table below provides information regarding the outcome of the Department of Forestry, Fisheries and the Environment (DFFE) Screening tool in terms of the Archaeological and Cultural Heritage as well as the Paleontological theme sensitivities associated with the proposed project and the specialist sensitivity verification (more detail is included in Appendix A).

| ASPECT | SCREENING TOOL SENSITIVITY | VERIFIED SENSITIVITY | PLAN OF STUDY | RELEVANT SECTION MOTIVATING VERIFICATION |
|---|---|---|---|---|
| Archaeological and Cultural Heritage | High | Medium to high | Phase 1 Heritage Impact Assessment | Section 38 NHRA Requirements |
| Palaeontology | Very high | Low to high | Paleontological Impact Assessment | Section 7.2. SAHRA Requirements<br><br>SAHRIS Paleontological Map |

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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 |
| EMPr: Environmental Management Programme |
| 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 |
| UNESCO: The United Nations Educational, Scientific and Cultural Organization |
| WEF: Wind Energy Facility |

**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)

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

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

Later 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

Beyond Heritage was contracted by WSP Group Africa (Pty) Ltd to conduct a heritage scoping study for the Phefumula Emoyeni One Electrical Grid Infrastructure located approximately 16km north of Ermelo in the Msukaligwa Local Municipality and Gert Sibande District Municipality, near the town of Ermelo, in the Mpumalanga Province of South Africa. The grid will be located over 10 farm portions and will be approximately 18.5km.

The report outlines the approach and methodology utilised for the scoping phase of the Project. Possible impacts are identified, as well as potential risks to the Project.

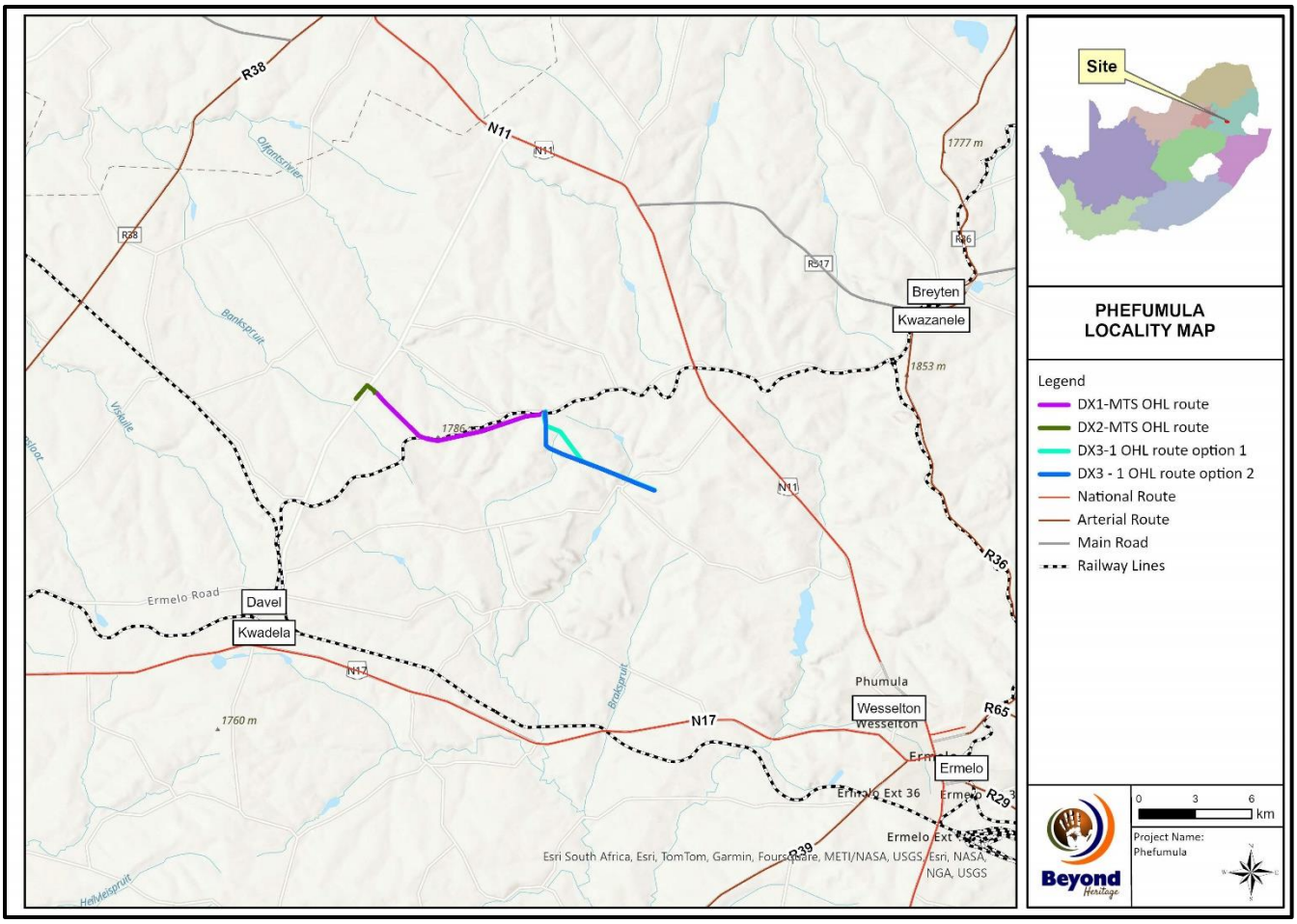


Figure 1.1. Regional setting of the study area.

### 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 might present a fatal flow 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;
    - 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 Impact Assessment (IA) 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 Heritage Legislation.

### 1.2 Nature of the development

#### 1.2.1. Project Details (as provided)

The proposed grid will be located over 10 farm portions and will be approximately 18.5km and comprises the following infrastructure:

- Construct 2 x 1 km (estimated) 400 kV loop-in-loop-out of the existing Camden – Duvha 400 kV line 1 to the new proposed Main Transmission Substation.
- Establish a new 400/132kV Main Transmission Substation (MTS), with 2 x 400 kV feeder bays. 17.4Ha footprint. The MTS will be equipped with
    - 132 kV double busbars,
    - 1 x 132 kV Bus coupler bay,
    - 1 x 400/132 kV transformer bay,
    - 1 x 500 MVA 400/132 kV transformer, and
    - 3x132 kV feeder bays (for IPP integration).
- Establish 3 x Distribution (DX) substations (one per each phase). The IPP substation will be constructed adjacent to the Dx substation (and forms part of the WEF EIA).
    - Dx1-approx.6.62Ha footprint
    - Dx2- approx.5.23Ha footprint
    - Dx3- approx.6.13Ha footprint
- 3 x 132kV overhead lines (OHL) from each Dx sub to the MTS (total length approx.18.2km)
    - Dx1-approx.9.58km
    - Dx2- approx.1.44km

- Dx3- approx.7.18km

- A 300m corridor (150m either side of centre line) must be assessed for each OHL.

The proposed project description is outlined in Table 1 and 2 below.

Table 1. Phefumula Emoyeni One Grid Technical Details

| DETAIL | INFORMATION |
|---|---|
| Applicant Name: | Phefumula Emoyeni One (Pty) Ltd |
| Municipalities | Msukaligwa Local Municipality<br>Gert Sibande District Municipality |
| Up to 400kV transmission line | ▪ 400kV Loop-In-Loop-Out (LILO) OHL.<br>▪ Servitude width for 1 x up to 400kV transmission line is 60m for Loop-In-Loop-Out<br>▪ Height of 1 x 400kV power line structure is on average 48m but may reach up to 50m in exceptional circumstances depending on the complexity and slope of the terrain.<br>▪ Minimum conductor clearance is between 8.1 and 12.6m.<br>▪ Span length between pylon structures is typically up to 100 - 250m apart, depending on complexity and slope of terrain.<br>▪ For up to 400kV structures footprint sizes may vary depending on design type up to 110m² (10.5m by 10.5m), with concrete foundations of up to 80m² and depths reaching up to 3.5m typically depending on the number and design of the foundations (to be determined during the detailed design engineering phase). The actual number of structures required will vary according to the final route alignment determined.<br>▪ Pylon structures will be either monopole or lattice structures depending on what is identified as appropriate during final design.<br><br>For safety reasons, transmission lines require certain minimum clearance distances. These are as follows:<br>▪ The minimum vertical clearance distance between the ground and the transmission line is 6.7m.<br>▪ The minimum vertical clearance to any fixed structure that does not form part of the transmission line is 9.4m - 11m. |

| DETAIL | INFORMATION |
|---|---|
| | ▪ The minimum distance between an up to 400kV transmission line and an existing road is 60m – 120m (depending on the type of road).<br>▪ Any farming activity can be practiced under the conductors provided that safe working clearances and building restrictions are adhered to. |
| Up to 132kV transmission lines | The servitude width for 1x up to 132kV transmission line is 31m. A 300m corridor must be assessed (150m on either side of the centre line) to allow for micro-siting. In the case of the Loop-In-Loop-Out alternative this servitude will apply to each of the two connecting power lines.<br>▪ The maximum height for an up to 132kV powerline structure is 40m.<br>▪ Pylon structures will be either monopole or lattice structures depending on what is identified as appropriate during final design.<br>▪ Pylon structures may require anchors with guy-wires or be anchorless.<br>▪ For up to 132kV structures, concrete foundation sizes may vary depending on design type up to 80m² (10m by 8m), with depths reaching up to 3.5m typically in a rectangular 'pad' shape.<br>▪ A working area of approximately 100m x 100m is needed for each of the proposed structures to be constructed. |
| Main Transmission substation (MTS) (Approx. 17.4Ha) | • A high voltage substation yard to allow for multiple 132kV and 400kV feeder bays and transformers, with infrastructure to allow for step-up to 400kV as required.<br>• Standard substation electrical equipment, including but not limited to transformers, busbars, office area, operation and control room, workshop, and storage area, feeder bays, transformers, busbars, stringer strain beams, insulators, isolators, conductors, circuit breakers, lightning arrestors, relays, capacitor banks, batteries, wave trappers, switchyard, metering and indication instruments, equipment for carrier current, surge protection and outgoing feeders, as may be needed.<br>• The control building, telecommunication infrastructure, oil dam(s) etc,<br>• Workshop and office area within the collector substation footprint,<br>• Fencing around the Substation,<br>• All the access road infrastructure to and within the substation |

| DETAIL | INFORMATION |
|---|---|
| Three Distribution Substations | • Dx1-approx.6.62Ha footprint<br>• Dx2- approx.5.23Ha footprint<br>• Dx3- approx.6.13Ha footprint |
| Temporary/ construction phase infrastructure | • Construction compound at the MTS (3ha) (site offices including conservancy tank for ablutions, stores, material laydown area, generator, fuel storage, etc.)<br>• 3 x construction compound / laydown areas, including site office of 3ha each at each of the Dx locations (150m x 200m each) (including conservancy tank for ablutions)<br>• Batch plant of 4-7 ha (unless a commercial source is used and concrete trucked to site, preferable to keep options open)<br>• Portable ablution facilities will be used along the powerline routes |

### 1.2.2. Project Alternatives

The following alternatives will be considered in the impact assessment:

**Layout Alternatives**

- The layout alternatives will be developed at the end of the Scoping Phase for assessment in the EIA Phase.

**No-Go Alternative**

- The no-go alternative, i.e. the Phefumula Emoyeni One Electrical Grid Infrastructure will not be developed.

### 1.3 The receiving environment

The study area is rural in character and sparsely developed. Infrastructure includes fences, windpumps, and access roads all associated with the farming activities in the study area. The Project area is undulating and used for cultivation and grazing.

## 2. APPROACH AND METHODOLOGY

The assessment is to be undertaken in two phases, a scoping phase and a Heritage Impact Assessment (HIA) phase, as part of the 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, 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 7 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 Resources 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 the Environmental Assessment Practitioner (EAP). 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 (GSSA)

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) (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.
i. Objects, structures and sites or 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 NHRA 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; and
» Potential to answer present research questions.

The criteria above will be used to place identified sites within SAHRA's (2006) system of grading of places and objects which form part of the national estate (Table 2). This system is approved by the Association of South African Professional Archaeologists (ASAPA) for the Southern African Development Community (SADC) region.

**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. REGIONAL OVERVIEW

## 4.1 General Information

### 4.1.1. Literature search

The reports indicated in Table 3 were conducted in the greater study area and were consulted for this report.

**Table 3. Heritage reports conducted in the greater study area.**

| Author | Year | Project | Findings |
|---|---|---|---|
| Van Schalkwyk, L. | 2006 | Heritage Impact Assessment for the Majuba-Umfolozi 765 KV Transmission Line in Mpumalanga and KwaZulu-Natal, South Africa, Pietermartizburg: eThembeni Cultural Heritage | Ancestral graves; Rock painting sites that were recorded along and below the eastern uKhahlamba escarpment; Stone Age open air sites; Stone walled settlements dating to the Late Iron Age; Battlefields of: Majuba (1887); Hlobane (1879); Holkrantz 1879); Khambula (1879 |
| Fourie, W. | 2008 | Camden Power Station Rail expansion project on portions of the farm Mooiplaats 290 IT and the farm Camden Power Station 329 IT, District Ermelo, Mpumalanga | The remains of a stone ruin were identified at this location. The structure consists of two rooms. Only the foundations and rubble remain of the structure. Recent historic |
| Gaigher, S. | 2011 | First Phase Heritage Impact Assessment for the Proposed Extension to the Camden Ash Disposal Facilities | Small graveyard (5 graves), historic farmland reservoirs, furrows, pathways. |
| Pistorius, J.C.C. | 2011 | Kusipongo Expansion Project: A Heritage Baseline Study for Proposed Adit Positions in a Project Area near the Heyshope Dam to the West of Piet Retief in the Mpumalanga Province of South Africa, KwaZulu-Natal: Environmental Resources Management (South Africa) Pty Ltd (ERM) | A single, historic informal grave with stone dressing. A single square cattle enclosure. Late Iron Age site with stone wall enclosures. historical graveyard demarcated with stone walling. A sandstone bank that may be associated with Stone Age sites. |
| Van Schalkwyk, J. | 2012 | Basic assessment and environmental management programme: Construction of a 132kV transmission Line from the Kliphoek to Panbult Substation and Kliphoek to Uitkoms Substation: Mpumalanga Province | Some farmsteads and other farming related features. A number of formal and informal cemeteries |
| Nel, J. & Karodia, S. | 2013 | Heritage Impact Assessment Report Kangra Coal | Historical structures and associated trees, cemeteries, sandstone outcrop with potential for Rock Art |
| Van der Walt, J. | 2015 | Camden Ash Disposal – Grave confirmation study | Four cemeteries and two historical structures as well as stone cairns. |
| Gaigher, S. | 2015 | Report on the Social Consultation Regarding the Relocation of Graves within the Proposed Development Area for the Camden Ash Disposal Facilities | Burial sites (19 graves, 7 graves 2 graves and 5 graves respectively). |
| 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. An old sheep dip constructed from concrete. |

| Author | Year | Project | Findings |
|---|---|---|---|
| Matenga, E. | 2020 | Heritage Impact Assessment for the proposed improvements to the existing waste reticulation system at Camden power station in Ermelo, Mpumalanga Province | None |
| Van der Walt, J. | 2022 | Heritage Impact Assessment for the proposed Camden I Wind Grid Connection, Mpumalanga Province | Burial sites and structural remains |
| Van der Walt, J. | 2022 | Heritage Impact Assessment for the Proposed Camden I Solar Energy Facility (100MW), Mpumalanga Province, South Africa | Burial sites and structural remains |
| Van der Walt, J. | 2022 | Heritage Impact Assessment for the Proposed Camden I Wind Energy Facility (up to 210MW), Mpumalanga Province, South Africa | Burial sites and structural remains |
| Van der Walt, J. | 2022 | Heritage Impact Assessment for the Proposed Camden II Wind Energy Facility (up to 210MW), Mpumalanga Province, South Africa. | Burial sites and structural remains |
| Van der Walt, J. | 2022 | Heritage Impact Assessment for the proposed Camden powerline and collector substation, Mpumalanga Province | Burial sites and structural remains |
| Van der Walt, J. | 2022 | Heritage Impact Assessment for the Hendrina South Wind Energy Facility | Burial sites and structural remains |
| Van der Walt, J. | 2022 | Heritage Impact Assessment for the Hendrina North Wind Energy Facility | Burial sites and structural remains |
| Van der Walt, J. | 2022 | Heritage Impact Assessment for the Hendrina South Grid Infrastructure | Burial sites and structural remains |
| Van der Walt, J. | 2022 | Heritage Impact Assessment for the Hendrina South Grid Infrastructure | Burial sites and structural remains |

### 4.1 2. Public consultation

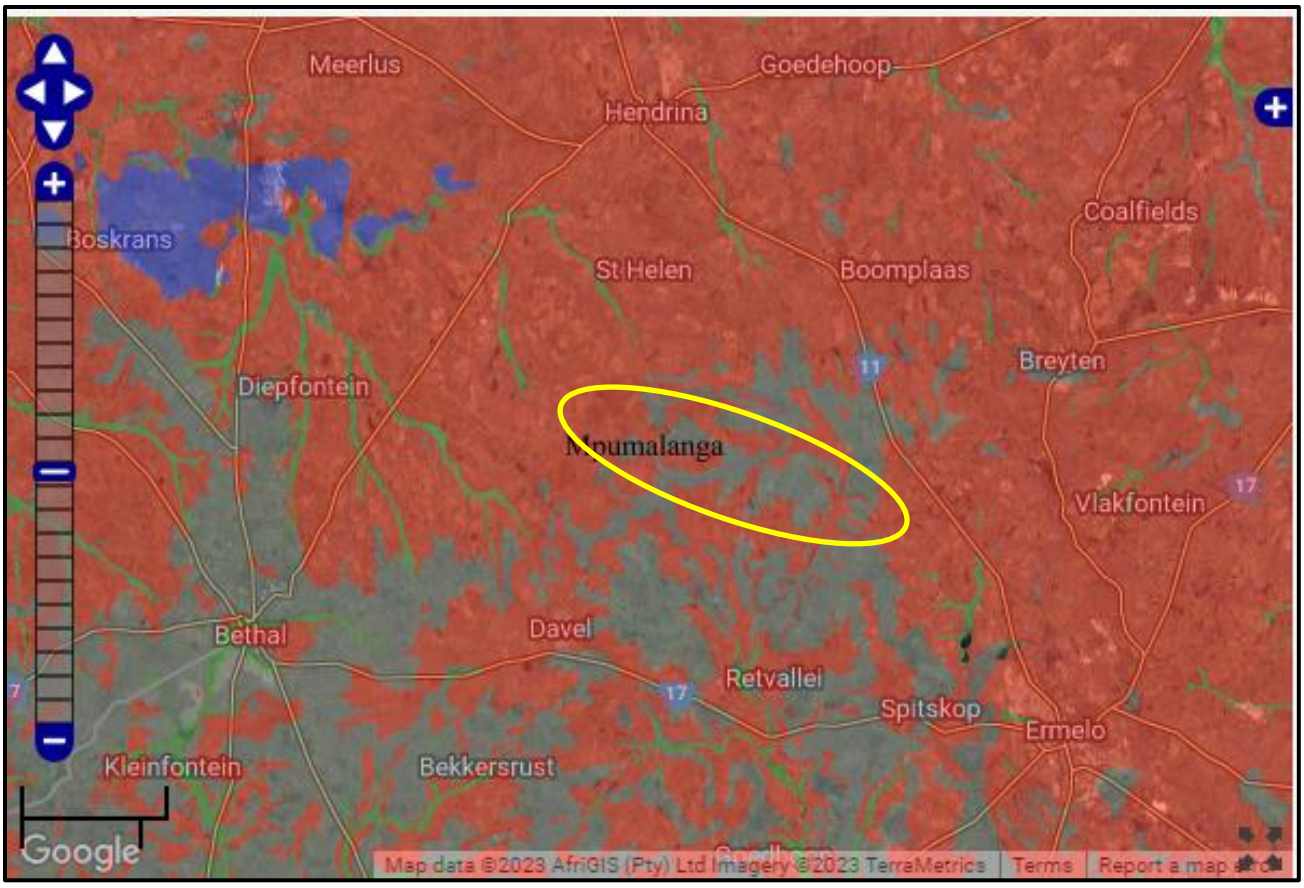
A public participation process is facilitated by the EAP and potential heritage concerns raised will be included in the HIA report.

### 4.1.3. Google Earth and mapping survey

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

### 4.2. Palaeontology

The study area is of insignificant and very high palaeontological sensitivity (Figure 4.1) and further studies will be required in the EIA phase. Previous assessments by Bamford (2022 and 2023) concluded that based on the fossil record and confirmed by site visits, there were NO FOSSILS of the *Glossopteris* flora even though fossils have been recorded from rocks of a similar age and type in South Africa. It is extremely unlikely that any fossils would be preserved in the overlying soils and sands of the Quaternary. There is a very small chance that fossils may occur below the ground surface in the shales of the Vryheid Formation (Ecca Group, Karoo Supergroup) so a Fossil Chance Find Protocol should be added to the EMPr. An independent study will have to be conducted for this project in the IA 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 4.1. Palaeontological sensitivity map of the approximate study areas (yellow polygon).

### 4.3. Archaeology of the greater study area

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

#### 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 (ESA 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 ESA archaeological record, at Maleoskop on the farm Rietkloof, only a few ESA artefacts have been found and stone tools consisted of choppers (Oldowan), hand axes, and cleavers (Acheulean) (Esterhuysen & Smith 2007) and some surface scatters have been recorded near Piet Retief (Nel & Karodia 2013).

Middle Stone Age (MSA) artefacts represent 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 nearby Camden is a Later Stone Age archaeological rock art site complex (Nel & Karodia 2013).

#### 4.3.2. Iron Age

The archaeology of farming communities of southern Africa encompasses three phases. The Early Iron Age (200-900 CE) 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 (900-1300 CE) 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 (LSA - 1300-1840s CE) 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). Close to Ermelo, on Tafelkop Mountain, is the well-known LIA Tafelkop Settlement. It consists of various settlement complexes with over 100 corbelled huts in numerous clusters on the mountain top (Esterhuysen & Smith 2007; Figure 3). The site was declared a Provincial Heritage Site.

Dates from Early Iron Age sites indicated that by the beginning of the 5$^{th}$ 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. Iron Age sites such as Welgelegen Shelter, Robertsdrift situated 50-100 km west of Camden dates from the 12$^{th}$ to the 18$^{th}$ century (Derricourt & Evers 1973; Esterhuysen & Smith 2007).

During the mid-17$^{th}$ century Europeans started to settle in modern-day Cape Town. During and after the conflict caused by the Mfecane (1820-1840), during the reign of king kaSenzangakhona Zulu, known as Shaka, Dutch-speaking farmers started to migrate to the interior regions of South Africa. A period that is marked by various skirmishes and battles between the local inhabitants, Dutch settlers and the British (Giliomee & Mbenga 2007).

### 4.3.3. Historical context of Camden

Camden power station was commissioned in 1967 (Gaigher 2011; Matenga 2020). However, the nearby town of Ermelo has a rich history. The earliest record for settlers in Ermelo is from 1860, when the area was under the jurisdiction of Zulu-speaking Nhlapo communities (Nhlapo 1945). The construction of the town of Ermelo was initiated by the Dutch Reform Church, which purchased the eastern part of the farm Nooitgedacht on 26 May 1879. The town was officially proclaimed on 12 February 1880 by William Owen Lanyon, the Administrator of the Transvaal (Greyling 2017).

### 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. In 1901, British troops burnt the town down due to their scorched earth policy, and Ermelo was rebuilt in 1903 (Moody 1977; Pretorius 2000; Van Schalkwyk 2012; Greyling 2017).

### 4.3.5. Graves and Burial sites

Numerous burial sites are indicated by the Genealogical Society of South Africa (GSSA) for the larger area (Figure 4.2). The known cemetery closest to the OHL is indicated Table 4.

Table 4. Cemeteries indicated by the GSSA.

| Cemetery | Location | Number of Graves |
|---|---|---|
| **Nooitgedacht 237** | 26°21'17.64"S; 29°48'26.16"E | 1 |

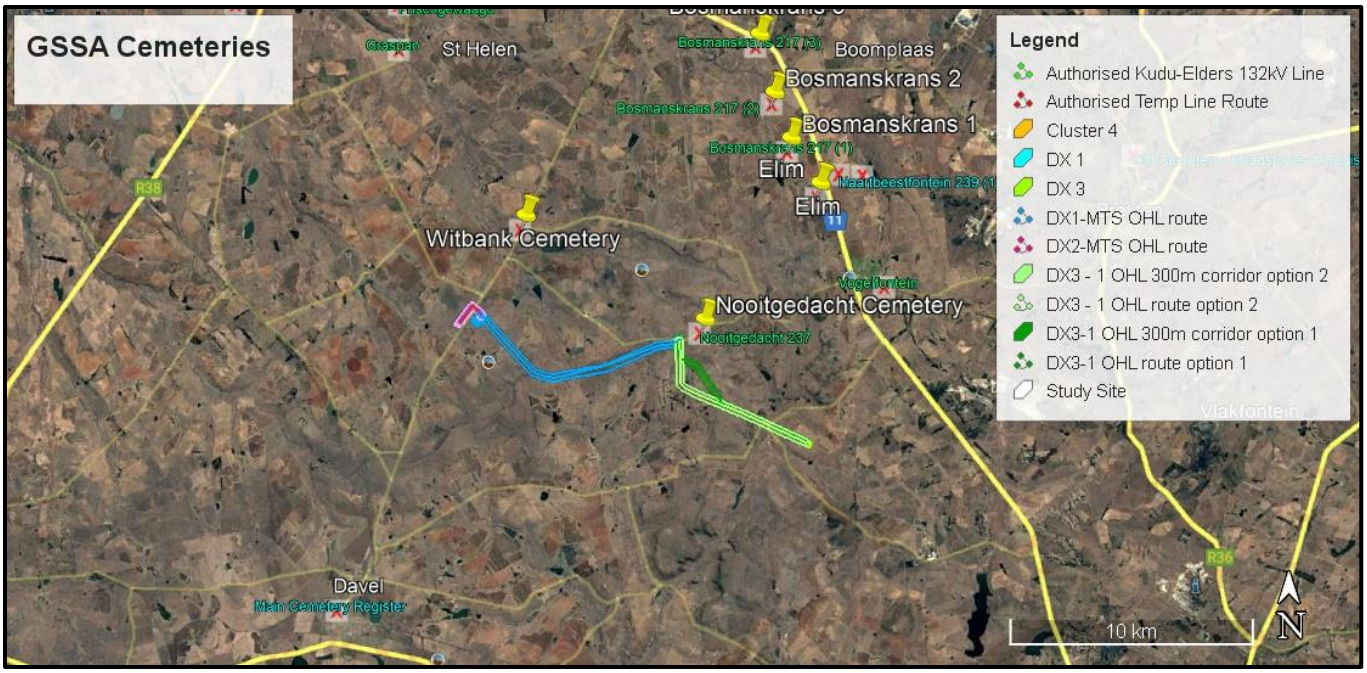



Figure 4.2. Cemeteries indicated on the GSSA database close to the study area.

### 4.3.6. Cultural Landscape

The surrounding and most of the impact area are 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 clusters of trees around farmsteads are generally planted to protect the houses from wind and they form part of the cultural landscape.

## 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. 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*.

*Archaeologica*l remains dating to the following periods can be expected within the study area:

» **Stone Age finds**

ESA: *Low Probability*
MSA*: Low Probability*
*LSA: Low to Medium Probability*
*LSA –Herder: Low Probability*
*Rock Art Sites – Medium to high Probability*

» **Iron Age finds**

*EIA*: *Low Probability*
*MIA: Low Probability*
*LIA: High Probability*

» **Historical finds**

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

» **Living Heritage**
For example, rainmaking sites: *Low Probability*

» **Burial/Cemeteries**

Burials over 100 years: *Medium Probability*
Burials older than 60 years*: High Probability*

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

## 6. ASSUMPTIONS AND LIMITATIONS

The following assumptions and limitations apply to this assessment:

- The authors acknowledge that the brief literature review is not exhaustive of the literature of the area.
- Due to the nature of heritage resources and pedestrian surveys, the possibility exists that some features or artefacts may not have been discovered/recorded and the possible occurrence of graves and other cultural material cannot be excluded. This limitation is successfully mitigated with the implementation of a Chance Find Procedure (CFP) and monitoring of the study area by the Environmental Control Officer (ECO).
- This report only deals with the footprint area of the proposed development and consisted of non-intrusive surface surveys.
- Field data were recorded by handheld GPS and Mobile GPS applications. It must be noted that during the process of converting spatial data to final drawings and maps the accuracy of spatial data may be compromised. Printing or other forms of reproduction might also distort the spatial distribution in maps. Due care has been taken to preserve accuracy
- 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

Based on areal imagery and a desktop assessment the study area includes heritage sensitive areas that specifically relate to historical occupation of the Project area and associated burial sites. Archaeological sites in the form of LIA stone walled settlements are also considered to be sensitive. Known sites close to the area consist of Shelters with Rock Art sites and LIA stone walled settlements (Van der Walt 2023). During the field survey numerous heritage sites were recorded. Identified sites are indicated in Figure 7.1 and included in Table 5. A Site Sensitivity Verification based on the DFFE Screening tool is included as Appendix A.

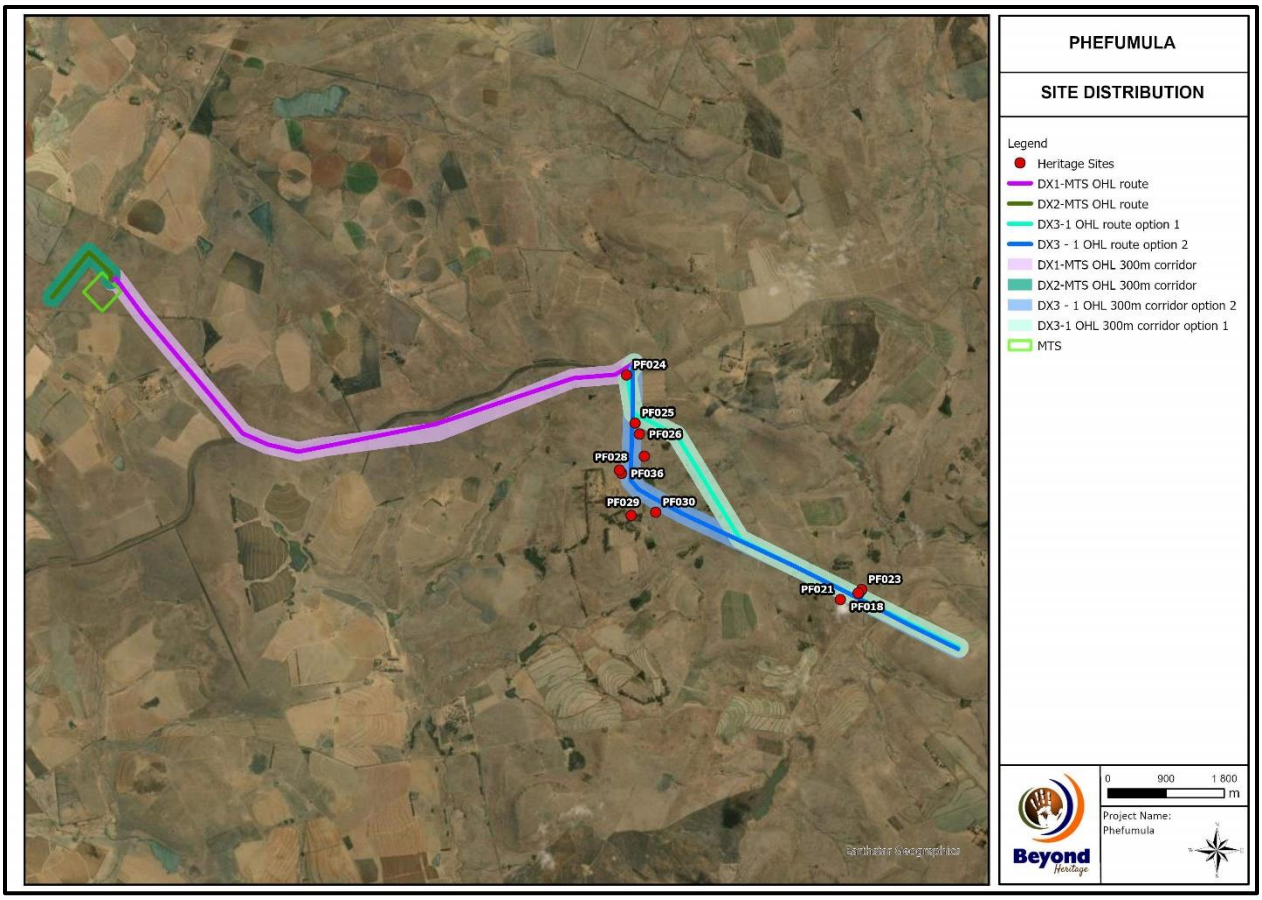



Figure 7.1. Heritage features in relation to Project.

Table 5. Heritage sensitivities for the Phefumula OHL.

| Label | Description | Sensitivity | Location |
|---|---|---|---|
| **PF025** | Ruins/Broken down structure | Low | 29°47' 58.84448640" E 26°21' 54.98638200" S |
| **PF026** | Modern school structure/Abandoned | Low | 29°48' 01.63807560" E 26°22' 00.50868120" S |
| **PF036** | Large broken down informal settlement/Building rubble | Low | 29°47' 52.40034600" E 26°22' 20.52124680" S |
| **PF030** | Historical Packed stone kraal | Low | 29°48' 12.49921080" E 26°22' 39.16930440" S |
| **PF018** | Packed stone ruins/Circular packed stone walling | Low | 29°50' 07.74964320" E 26°23' 15.76687560" S |
| **PF021** | Packed stone ruins/ Stone foundations | Low | 29°49' 57.56532600" E 26°23' 19.21555680" S |
| **PF023** | Packed stone ruins /Circular packed stone walling and enclosures | Low | 29°50' 09.32989920" E 26°23' 13.72554600" S |
| **PF029** | Historical farmstead | Med | 29°47' 58.85494080" E 26°22' 41.35558440" S |
| **PF024** | Large Burial site 85+ Graves | High | 29°47' 53.13118200" E 26°21' 31.13286120" S |
| **PF028** | Burial site 2 graves | High | 29°47' 51.11881800" E 26°22' 18.92288640" S |
| **PF017** | Burial site | High | 29°50' 07.40896800" E 26°23' 15.59276520" S |

## 8. POTENTIAL SIGNIFICANCE OF HERITAGE RESOURCES

Based on the current information obtained for the area at a desktop level, it is anticipated that apart from the burial sites, any other heritage resources that occur within the development areas could have a Generally Protected B (GP. B) or lower field rating and should be mitigatable. Graves are of high social significance (Field rating GP A) and should preferably be preserved *in situ*.

## 9. CONCLUSION AND PLAN OF STUDY FOR EIA

The area has historically been occupied and although the cultural landscape attests to more recent occupation, heritage resources such as structures (including farmsteads/ruins and associated burial sites) and associated landscape elements older than 60 years are of importance and are protected by Section 34 & 36 of the NHRA. Iron Age stone walled settlements also occur in the study area and is protected by Section 35 of the NHRA.

To comply with the NHRA and with cognisance of known heritage resources in the area, it is recommended that the final footprint should be subjected to a HIA. During this study, the potential impact on heritage resources will be determined as well as levels of significance of recorded heritage resources. The HIA should also provide management and mitigation measures, ensuring that all the requirements of the SAHRA are met. To compile an integrated HIA, the following requirements apply:

- The study area is of high paleontological sensitivity and additional studies are required for the EIA phase;
- The visual impact of the Project on the farmsteads that is older than 60 years and archaeological sites should be assessed by the Visual Specialist considering the sense of place and impact on the cultural landscape;
- Known burial sites should be demarcated and avoided with a minimum of 30m buffer zone. A grave management plan must be developed and implemented for the sites including an access protocol for family;
- Iron Age stone walled settlements should also be preserved *in situ* and avoided with a 30m buffer zone, alternatively a Phase 2 mitigation project will be required; and
- During the public participation and stakeholder consultation process facilitated by the EAP, advertisements & site notices must reference the NHRA and address heritage concerns from stakeholders.

## 10. LIST OF PREPARERS

Lara Kraljevic (Archaeologist)

Ruan van der Merwe (Archaeologist)

## 11. STATEMENT OF COMPETENCY

Lara Kraljević completed her masters in archaeology at the University of Pretoria specialising in chemical and mineralogical studies of Iron Age ceramics. She has authored and co-authored over 100 impact assessments in Gauteng, Limpopo, Mpumalanga, Northern Cape, Eastern Cape, and North West Provinces in South Africa.

## 12. STATEMENT OF INDEPENDENCE

I, Lara Kraljevic 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 the EAP, other than fair remuneration for work performed on this project.

**SIGNATURE:** 

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## Appendix A – SSVR

# *HERITAGE* SITE SENSITIVITY VERIFICATION REPORT

*Beyond Heritage* was appointed to conduct a *Heritage Assessment* as part of the Scoping and Environmental Impact Assessment (EIA) (S&EIA) process for the proposed Phefumula Emoyeni One Electrical Grid Infrastructure near Ermelo in the Mpumalanga Province.

This report serves as the *Heritage and Palaeontological* Site Sensitivity Verification Report for the proposed project.

This *Heritage and Palaeontological* site sensitivity verification report relates to the Screening Tool Report completed for the entire Phefumula Project including the Project area in September 2023. A desktop study and field survey was conducted to inform the specialist reports required for the proposed project and confirm the site sensitivity.

The table below provides information regarding the outcome of the Screening tool in terms of the *Heritage* theme sensitivities associated with the proposed project and the specialist sensitivity verification.

*Table 1: Heritage theme sensitivity for the Phefumula Emoyeni One OHL Project.*

| ENVIRONMENTAL THEME | DFFE SCREENING TOOL SENSITVITY | VERIFIED SENSITIVITY | APPLICABLE PROTOCOL | SPECIALIST SENSITVITY VERIFICATION (PLAN OF STUDY) |
|---|---|---|---|---|
| **Heritage (archaeological and cultural sensitivity)** | Low | Medium to high | Section 38 NHRA Requirements | Phase 1 Heritage Impact Assessment |
| **Palaeontology** | Very High and Medium | Low to high | Section 7.2.<br>SAHRA Requirements | Palaeontological Impact Assessment |

**HERITAGE SENSITIVITY**

Based on the DFFE Screening tool the area is of low sensitivity.

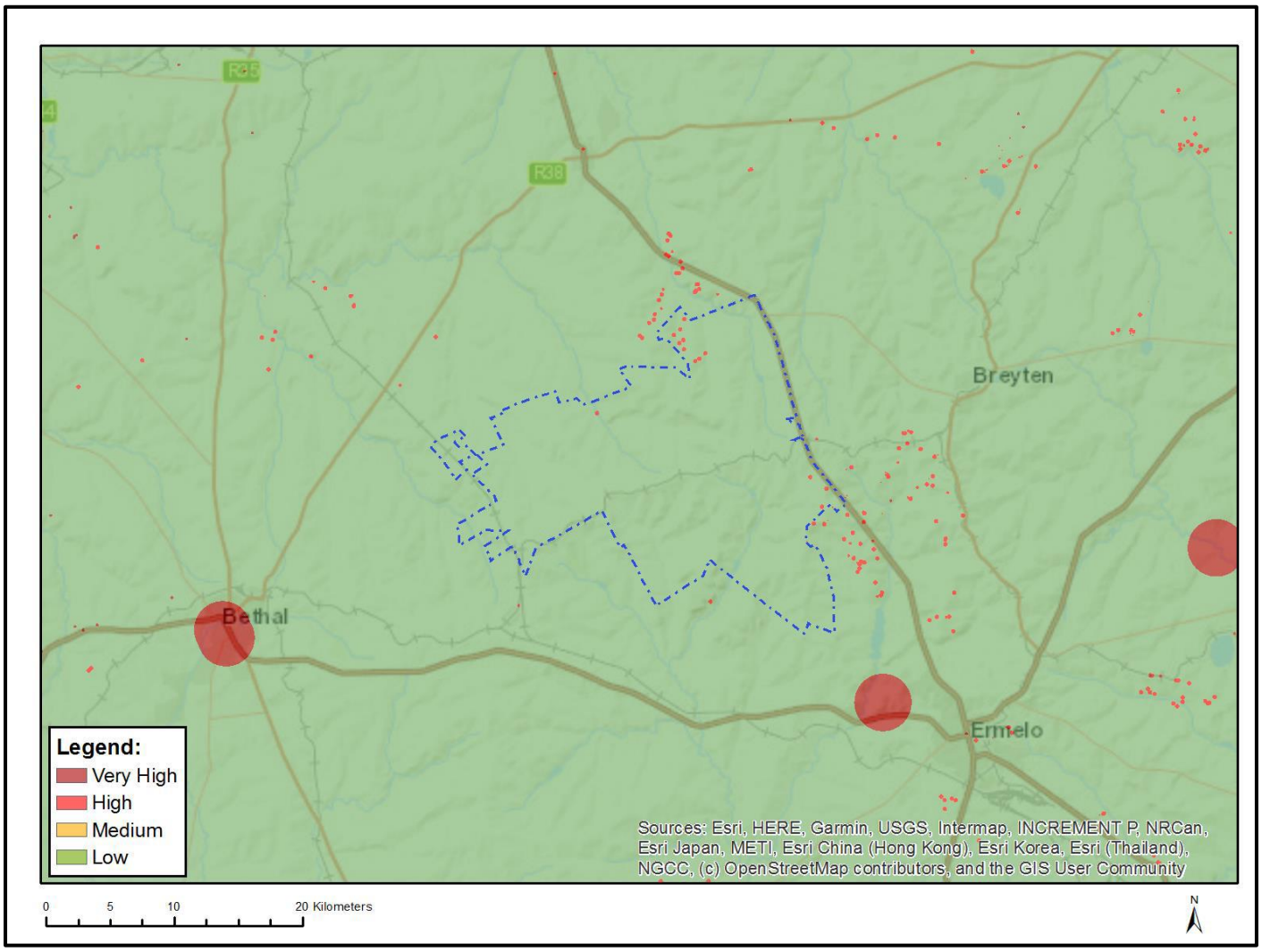


***Figure 1.*** **DFFE Heritage Sensitivities for the entire Phefumula One Project area.**

| ***Sensitivity Features: Sensitivity*** | ***Feature(s)*** |
|---|---|
| *High* | *Within 150m of a Grade IIIa Heritage site* |
| *High* | *Within 100m of a Grade IIIb Heritage site* |
| *High* | *Within 50m of a Grade IIIc Heritage site* |
| *Low* | *Low sensitivity* |

Burial sites are indicated by the Genealogical Society of South Africa (GSSA) just outside of the study area and additional burial sites were recorded during the field survey. These sites would have a field rating of Grade IIIA. Burial sites are of high social significance and should be avoided in the development. Recorded sites of low and medium significance include stone packed features, farmsteads and structural remains (Figure 2 and Tabel 2).

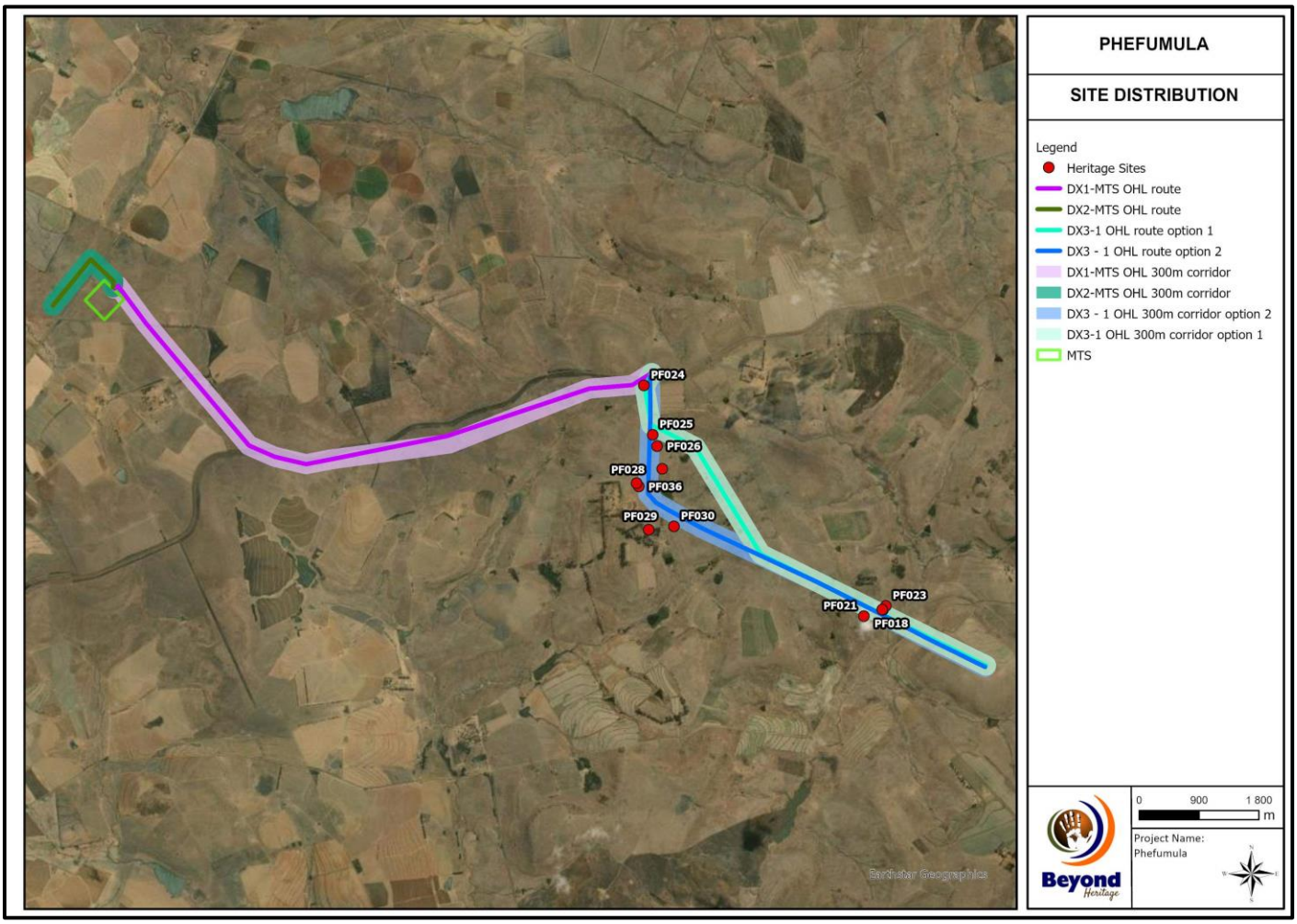


***Figure 2.*** **Verified Heritage Sensitivities (Phefumula OHL) – Cultural Heritage.**

Table 2. Recorded observations and sensitivity ratings.

| Label | Description | Sensitivity | Location |
|---|---|---|---|
| **PF025** | Ruins/Broken down structure | Low | 29°47' 58.84448640" E<br>26°21' 54.98638200" S |
| **PF026** | Modern school structure/Abandoned | Low | 29°48' 01.63807560" E<br>26°22' 00.50868120" S |
| **PF036** | Large broken down informal settlement/Building rubble | Low | 29°47' 52.40034600" E<br>26°22' 20.52124680" S |
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The area has historically been occupied and although the cultural landscape attests to more recent occupation, heritage resources such as structures (including farmsteads/ruins and associated burial sites) and associated landscape elements older than 60 years are of importance and are protected by Section 34 & 36 of the NHRA. Iron Age stone walled settlements and Rock Art sites also occur in the study area and surrounding area and is protected by Section 35 of the NHRA. There are no fatal flaws and high significance sites are localised and can be mitigated.

## PALEONTOLOGICAL SENSITIVITY

The paleontological sensitivity is indicated as of medium to high on the DFFE screening tool (Figure 3).

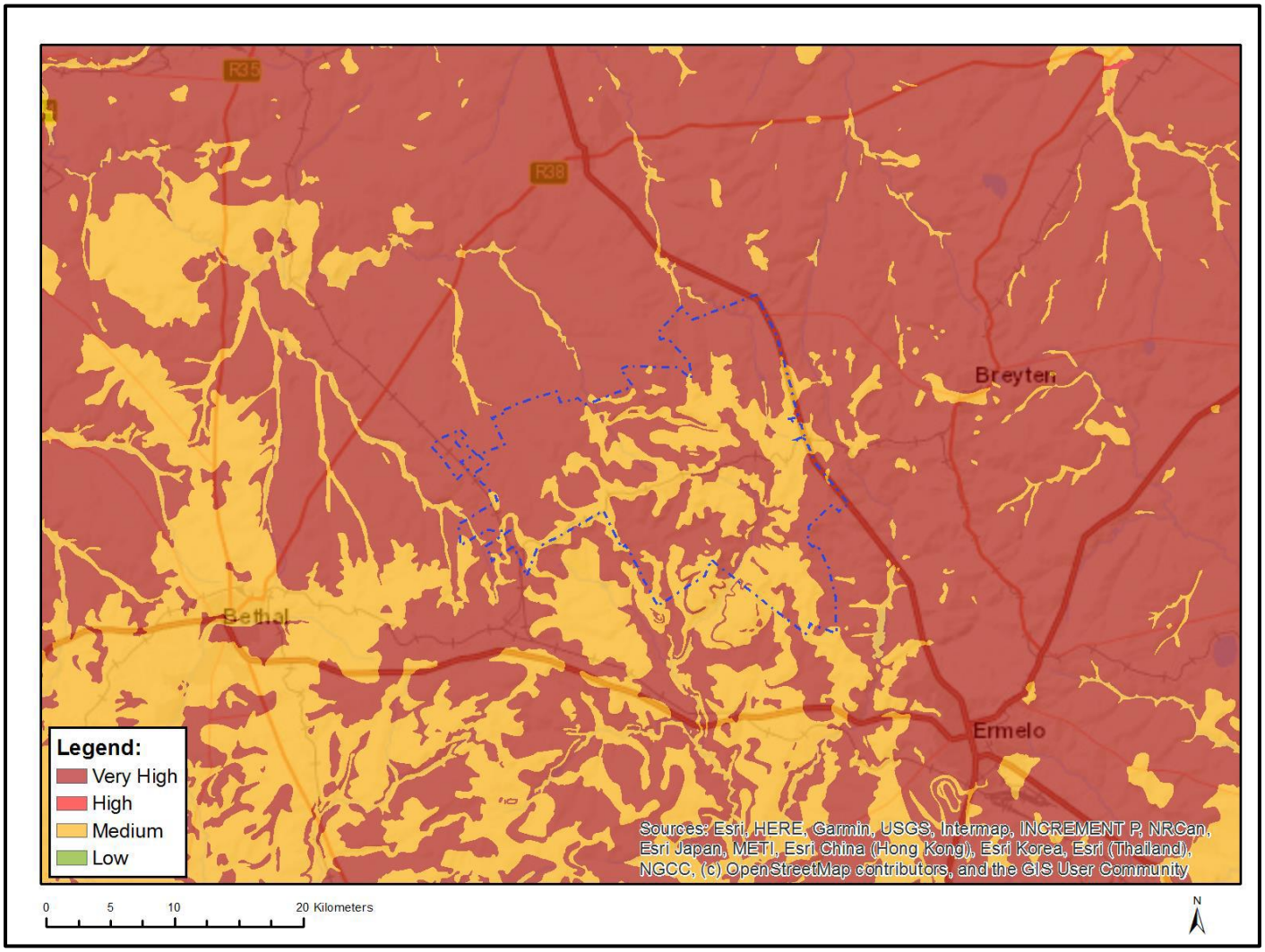
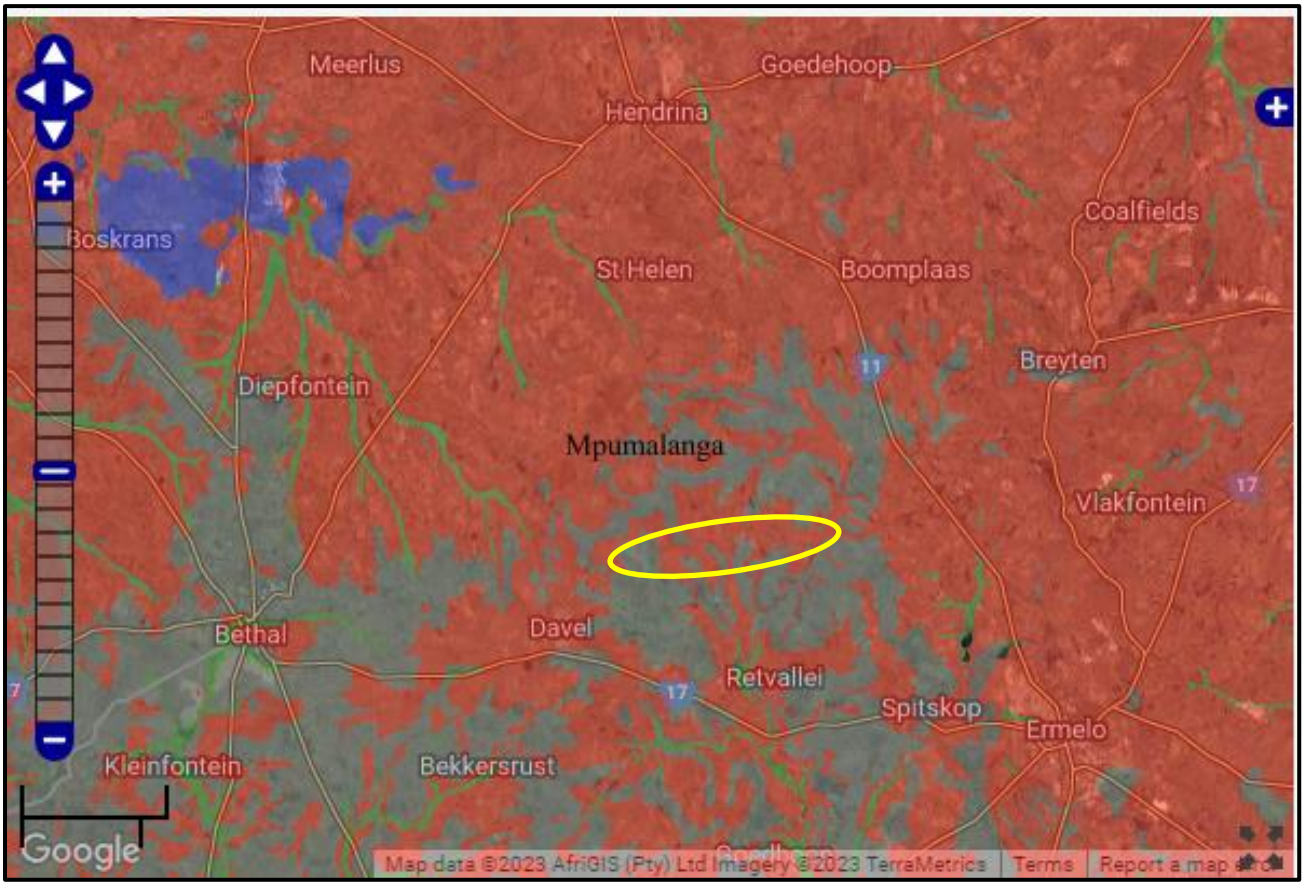



***Figure 3. DFFE Paleontological Sensitivities of the Phefumula project.***

| ***Sensitivity*** | ***Feature(s)*** |
|---|---|
| *Medium* | *Features with a Medium paleontological sensitivity* |
| *Very High* | *Features with a Very High paleontological sensitivity* |




| 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 4. Preliminary verified sensitivities – Palaeontology.***

The study area is of insignificant and very high palaeontological sensitivity based on the SAHRA Paleontological Sensitivity Map (Figure 4) and further studies will be required in the EIA phase. Previous assessments in the area by Bamford (2022 and 2023) concluded that based on the fossil record and confirmed by site visits, there were NO FOSSILS of the *Glossopteris* flora even though fossils have been recorded from rocks of a similar age and type in South Africa. It is extremely unlikely that any fossils would be preserved in the overlying soils and sands of the Quaternary. There is a very small chance that fossils may occur below the ground surface in the shales of the Vryheid Formation (Ecca Group, Karoo Supergroup) so a Fossil Chance Find Protocol should be added to the EMPr.

This site sensitivity verification was undertaken by *Ruan van der Merwe* from *Beyond Heritage on 7 June 2024.*