



PGS HERITAGE

THE PROPOSED ESKOM WITKOP-PIETERSBURG 132kV DISTRIBUTION POWERLINE (18KM), POLOKWANE LOCAL MUNICIPALITY, LIMPOPO PROVINCE.

Heritage Impact Assessment

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+27 (0) 12 332 5305



+27 (0) 86 675 8077



contact@pgsheritage.co.za



PO Box 32542, Totiusdal, 0134

Head Office:
906 Bergarend Streets
Waverley, Pretoria,
South Africa

Offices in South Africa, Kingdom of Lesotho and Mozambique

Directors: HS Steyn, PD Birkholtz, W Fourie

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page ii

REVISION HISTORY

Version	Issue Date	Description of Changes
1.0	25 July 2022	First draft
2.0	4 August 2022	Second draft – Edits were done on layout, styles and grammar with minor editing on the project scope description.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg 132kV Powerline	2.0	04/08/2022	Page iii

Declaration of Independence

- I, Nikki Mann, declare that –
- General declaration:
- I act as the independent heritage practitioner in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting heritage impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in section 38 of the NHRA when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- All the particulars furnished by me in this form are true and correct;
- I will perform all other obligations as expected from a heritage practitioner in terms of the Act and the constitutions of my affiliated professional bodies; and
- I realise that a false declaration is an offence in terms of regulation 71 of the Regulations and is punishable in terms of section 24F of the NEMA.

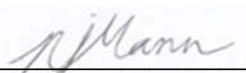
Disclosure of Vested Interest

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;

HERITAGE CONSULTANT: PGS Heritage (Pty) Ltd

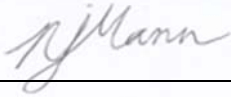


CONTACT PERSON: Nikki Mann - Archaeologist
 Tel: +27 (0) 12 332 5305
 Email: nikki@pgsheritage.co.za

SIGNATURE:



ACKNOWLEDGEMENT OF RECEIPT

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg 132kV Powerline	2.0	04/08/2022	Page iv

Report Title	The Proposed Eskom Witkop-Pietersburg 132kV Distribution Powerline (18km), Polokwane Local Municipality, Limpopo Province.		
Control	Name	Signature	Designation
Author	Nikki Mann		PGS Heritage – Archaeologist
Co-Author/Reviewer	Wouter Fourie		PGS Heritage – Director/ Principal Heritage Specialist
Reviewed	Ashleigh McKenzie		ACER (Africa) Environmental Management (EAP)

CLIENT: ACER (Africa) Environmental Consultants

CONTACT PERSON: Ashleigh McKenzie
Email: Ashleigh.mckenzie@acerafrica.co.za

SIGNATURE: _____

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg 132kV Powerline	2.0	04/08/2022	Page v

EXECUTIVE SUMMARY

PGS Heritage (Pty) Ltd (PGS) was appointed by ACER (Africa) Environmental Consultants (ACER), on behalf of Eskom Holding SOC LTD (Eskom), to conduct a Heritage Impact Assessment (HIA) as part of the Basic Environmental Assessment (BA) for the proposed Witkop-Pietersburg 132kV grid connection, within the Polokwane Local Municipality and the Capricorn District Municipality in the Limpopo Province.

Site Name

The proposed Eskom Witkop-Pietersburg 132kV Powerline.

Location

This is a linear development traversing the area between the Witkop substation and Pietersburg substation, to the west of Polokwane, Limpopo.

The study area incorporates the following farm portions:

Farm	No	Reg	Portion
Doornspruit or Thorncastle	741	LS	3
Duvenageskraal	689	LS	0
Leeuwkuil	691	LS	3
Morgenzon	690	LS	0/1A
Schanhauzen	737	LS	0
Sterkloop	688	LS	179
Uitval	693	LS	0/1/2

Description of the Proposed Development

It is anticipated that the proposed project will comprise a 18km long 132kV Kingbird power cable that will be strung on steel monopole structures, approximately 18 - 24m in height.

Heritage Resources Identified

A selective survey of the study area was conducted in June 2022. The fieldwork component consisted of a walkdown of the 18km alignment aimed at identifying heritage resources falling within the impact areas. Heritage resources are unique and non-renewable and as such any impact on such resources must be seen as significant.

The assessment has shown that the study area and surrounding area has some heritage resources situated within the proposed development boundaries. Through data analysis and a site investigation, the following issues were identified from a heritage perspective.

Archaeology, built environment and burial grounds and graves

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg 132kV Powerline	2.0	04/08/2022	Page vi

A field survey of the proposed development area was undertaken on foot and by a vehicle by two PGS archaeologists (Nikki Mann and Wynand van Zyl) between 21-22 June 2022. The fieldwork conducted for the evaluation of the possible impact of the 132kV grid connection has revealed the presence of four (4) heritage resources.

One (1) burial ground (**WP01**) and one (1) possible grave site (**WP02**) were rated as having **high heritage significance**.

One (1) pottery cluster (**WP03**) and one (1) low-density surface scatter/findspot (**WP04**) were rated as having **no heritage significance**.

Anticipated Impacts on Heritage Resources

The pre-construction and construction phase of the proposed development will entail extensive surface clearance (e.g., vegetation clearance approx. 4-8m either side of the powerline) as well as excavations into the superficial sediment cover and underlying bedrock (e.g., for powerline poles).

Burial grounds and graves

One (1) burial ground (**WP01**) and one (1) possible grave site (**WP02**) were identified within the proposed development areas. Burial grounds and graves have high heritage significance and are given a IIIA significance rating in accordance with the system described in **Section 4** of this document.

Burial grounds and graves are protected under Section 36 of the NHRA 25 of 1999. Thus, the sites are provisionally rated as having a high heritage significance with a heritage rating of IIIA. All graves have high levels of emotional, religious and in some cases historical significance. It is also important to understand that the identified graves could have significant heritage value to the relevant families.

The possible pre-construction impacts calculated on the tangible cultural heritage resources is overall **MODERATE NEGATIVE** rating but with the implementation of the recommended buffers and management guidelines will be reduced to a **LOW NEGATIVE** impact.

Iron Age site

One (1) pottery cluster (**WP03**) was assessed to have no heritage significance and is therefore not included in the impact assessment. The reason for this is that sites of low significance will not require mitigation.

Stone Age site

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page vii

One (1) low-density surface scatter/findspot (**WP04**) was assessed to have no heritage significance and is therefore not included in the impact assessment. The reason for this is that sites of low significance will not require mitigation.

Palaeontology

According to the Palaeosensitivity Map available on the South African Heritage Resources Information System database (SAHRIS), the Palaeontological Sensitivity of the proposed development area is rated as Insignificant/Zero. No further palaeontological studies are required.

Recommendations

The calculated impact as summarised in **Section 7** of this report confirms the impact of the proposed 132kV grid connection will be reduced with the implementation of the mitigation measures. This finding in addition to the implementation of a chance finds procedure, as part of the EMPr, will mitigate possible impacts on unidentified heritage resources. The following mitigation measures are listed in **Table 1**.

Table 1 - Heritage management recommendations.

Area and site no.	Mitigation measures
General project area	<ul style="list-style-type: none"> ▪ Implement a chance to find procedures in case where possible heritage finds are uncovered.
Burial ground (WP01) rated as high local heritage significance and had a heritage grading of IIIA.	<ul style="list-style-type: none"> ▪ The site should be demarcated with a 50-meter no-go-buffer-zone and the graves should be avoided and left in situ. ▪ A Grave Management Plan should be developed for the graves, to be implemented during the construction and operation phases (which needs approval by SAHRA). ▪ If the site is going to be impacted directly and the graves need to be removed, a grave relocation process for these sites is recommended as a mitigation and management measure. This will involve the necessary social consultation and public participation process before grave relocation permits can be applied for with SAHRA under the NHRA and National Health Act regulations.
Possible grave site (WP02) that was located within the proposed development area and was rated as high local heritage significance and had a heritage grading of IIIA.	<ul style="list-style-type: none"> ▪ Until such time that the presence of a grave at the site has been tested, the stone concentrations must be viewed as containing a grave. ▪ The possible graves should be demarcated with a 50-meter buffer and should be avoided and left in situ. <p>If the grave cannot be avoided:</p> <ul style="list-style-type: none"> ▪ A Grave Management Plan should be developed for the grave which also need to be approved by SAHRA BGG. ▪ If the site cannot be avoided, then an application to SAHRA will be required for a test excavation and/or GPR permit to determine if the site contains graves. ▪ If human remains are discovered, a grave relocation process is recommended as a mitigation and management measure. This will involve the necessary social consultation and public participation process before grave relocation permits can be

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page viii

Area and site no.	Mitigation measures
	<p>applied for with the SAHRA BGG, under the NHRA and National Health Act regulations.</p> <ul style="list-style-type: none"> ▪ If during test excavations, it is determined that the site does not contain graves, no further mitigation will be required.
Pottery cluster (WP03) rated to have no research potential or other cultural significance and had a heritage grading of NCW.	<ul style="list-style-type: none"> ▪ No mitigation is required.
Low-density surface scatter/findspot (WP04) rated to have no research potential or other cultural significance and had a heritage grading of NCW.	<ul style="list-style-type: none"> ▪ No mitigation is required.

General

If heritage resources are discovered during site clearance, construction activities must stop in the vicinity, and a qualified archaeologist must be appointed to evaluate and make recommendations on mitigation measures.

It is the author's considered opinion that the overall impact of the proposed grid connection on heritage resources is **Low**. Provided that the delineated no-go areas are avoided, and the recommended mitigations are applied, the impact would be acceptably Low or could be totally mitigated to the degree that the project could be approved from a heritage perspective. The management and mitigation measures as described in **Section 8** of this report have been developed to minimise the project impact on heritage resources.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page ix

TABLE OF CONTENTS

1	INTRODUCTION	1
1.1	Scope of the Study	2
1.2	Specialist Qualifications	2
1.3	Assumptions and Limitations	2
1.4	Legislative Context	3
1.4.1	<i>Statutory Framework: The National Heritage Resources (Act 25 of 1999)</i>	3
1.4.2	<i>Section 3 - National estate</i>	3
1.4.3	<i>Section 34 – Structures</i>	3
1.4.4	<i>Section 35 – Archaeology, Palaeontology and Meteorites</i>	4
1.4.5	<i>Section 36 – Burial Grounds & Graves</i>	4
1.4.6	<i>Section 38 HIA as a Specialist Study within the EIA in terms of Section 38(8)</i>	4
1.4.7	<i>Notice 648 of the Government Gazette 45421</i>	5
1.4.8	<i>NEMA – Appendix 6 requirements</i>	9
2	SITE LOCATION AND DESCRIPTION	11
2.1	Locality	11
2.2	Project Description	13
2.2.1	<i>Background</i>	13
2.2.1	<i>Project Motivation</i>	13
2.2.2	<i>Technical Specifications</i>	13
2.3	Project Alternatives	14
3	CURRENT STATUS QUO	15
3.1	Site description	15
4	ASSESSMENT METHODOLOGY	19
4.1	Methodology for Assessing Heritage Site Significance	19
4.1.1	<i>Site Significance</i>	19
4.1.2	<i>Archaeological specific methodology</i>	22
5	OVERVIEW OF STUDY AREA AND SURROUNDING LANDSCAPE	23
5.1	Archaeological Overview of the Study Area and Surroundings	23
5.1.1	<i>Early Stone Age (ESA) (2.5 million to 200 000 years ago)</i>	23
5.1.2	<i>Middle Stone Age (MSA) (300 000 to 40 000 years ago)</i>	23
5.1.3	<i>Later Stone Age (LSA) (40 000 to historic past (<2000BP))</i>	25
5.1.4	<i>Rock Art</i>	26
5.1.5	<i>Iron Age Sequence</i>	27
5.2	Historical Overview of the Study Area and Surroundings	28
5.3	Archival/historical maps	31

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page x

5.3.1	1: 50 000 Topographical Map 2329CD PIETERSBURG - First Edition 1968	31
5.4	Previous Archaeological and Heritage Studies from the General Region around the Study Area	34
5.5	Previous Archaeological and Heritage Study conducted for the powerline alignment	36
5.6	Palaeontology	36
5.7	Findings of the Historical Desktop Study	37
5.7.1	Heritage Sensitivity	37
6	FIELD WORK FINDINGS	39
6.1	Sites Identified During the Survey	43
6.2	Selected Photographic Record	44
7	IMPACT ASSESSMENT	46
7.1	Impact Assessment Methodology	46
7.2	General Observations	48
7.3	Impact Rating Tables	49
7.4	Cumulative Impacts	50
7.5	Overall Impact Rating	52
8	MANAGEMENT RECOMMENDATIONS AND GUIDELINES	53
8.1	Construction Phase	53
8.2	Chance Find Procedure	53
8.3	Possible finds during Construction	53
8.4	Timeframes	54
8.5	HERITAGE MANAGEMENT PLAN FOR EMPR IMPLEMENTATION	55
9	CONCLUSIONS AND RECOMMENDATIONS	59
9.1	Fieldwork	59
9.1.1	Heritage Resources	59
9.2	Anticipated Impacts on Heritage Resources	59
9.2.1	Burial grounds and graves	60
9.2.2	Iron Age site	60
9.2.3	Stone Age site	60
9.3	Palaeontology	60
9.4	Recommendations	60
9.5	General	62
10	REFERENCES	63

List of Figures

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page xi

<i>Figure 1 – Human and Cultural Timeline in Africa (Morris, 2008).</i>	<i>xvii</i>
<i>Figure 2 – Archaeology and Heritage screening map (Source: Department of Environmental Affairs).</i>	<i>7</i>
<i>Figure 3 - Palaeontology screening map (Source: Department of Environmental Affairs).</i>	<i>8</i>
<i>Figure 4 - Location of the proposed development area.</i>	<i>12</i>
<i>Figure 5 - View of a typical single steel pole (monopole) structure.</i>	<i>14</i>
<i>Figure 6 – Map illustrating the location of landscape photos taken whilst surveying the proposed route.</i>	<i>16</i>
<i>Figure 7 – A: Recently burnt grassland (facing east).</i>	<i>17</i>
<i>Figure 8 – B: Dense thorny vegetation cover.</i>	<i>17</i>
<i>Figure 9 – C: Marula trees.</i>	<i>17</i>
<i>Figure 10 – D: Tall grasslands (facing west).</i>	<i>17</i>
<i>Figure 11 – E: View of thorny vegetation.</i>	<i>17</i>
<i>Figure 12 – F: View towards existing powerline.</i>	<i>17</i>
<i>Figure 13 – G: Grazing lands.</i>	<i>17</i>
<i>Figure 14 – H: Informal dirt road within study area.</i>	<i>17</i>
<i>Figure 15 – I: Vultures on powerline.</i>	<i>18</i>
<i>Figure 16 – J: Moderately vegetated area.</i>	<i>18</i>
<i>Figure 17 – K: Wetland.</i>	<i>18</i>
<i>Figure 18 – L: Erosional gully.</i>	<i>18</i>
<i>Figure 19 – M: Cattle</i>	<i>18</i>
<i>Figure 20 – N: Dense vegetation growth adjacent to existing powerline.</i>	<i>18</i>
<i>Figure 21 - Enlarged section of 2329CD Ed 1 1968 sheet, depicting homesteads (red point), farmsteads (orange point) and structures (cyan point) adjacent to the study area.</i>	<i>32</i>
<i>Figure 22 - Enlarged section of 2329CD Ed 1 1968 sheet, depicting homesteads (red point) and farmsteads (orange point) adjacent to the study area.</i>	<i>33</i>
<i>Figure 23 - Extract of the 1: 250 000 SAHRIS Palaeosensitivity Map (Council of Geosciences). Approximate location of the proposed powerline (orange line).</i>	<i>36</i>
<i>Figure 24 – Key to the SAHRIS palaeontological map.</i>	<i>37</i>
<i>Figure 25 – Satellite Image showing the tracklog (yellow tracks) of the field survey.</i>	<i>40</i>
<i>Figure 26 – Satellite Image showing the finds identified during the fieldwork. See inset A below.</i>	<i>41</i>
<i>Figure 27 – Finds identified in the study area. Inset A.</i>	<i>42</i>
<i>Figure 28 – Formal grave observed at WP01.</i>	<i>44</i>
<i>Figure 29 – Informal grave observed at WP01.</i>	<i>44</i>
<i>Figure 30 - Undecorated pottery recorded at WP03.</i>	<i>45</i>
<i>Figure 31 - View of artefacts identified at WP04.</i>	<i>45</i>
<i>Figure 32 - View of WP01.</i>	<i>73</i>
<i>Figure 33 – Views of the fenced off formal grave recorded at WP01.</i>	<i>74</i>

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page xii

<i>Figure 34 – Views of the other formal grave recorded at WP01.</i>	<i>75</i>
<i>Figure 35 - Views of stone-packed graves recorded at WP01.</i>	<i>76</i>
<i>Figure 36 - Additional views of stone-packed graves at WP01.</i>	<i>77</i>
<i>Figure 37 - Views of the possible grave at WP02.</i>	<i>79</i>
<i>Figure 38 - Views of WP03.</i>	<i>81</i>
<i>Figure 39 - Undecorated pottery recorded at WP03.</i>	<i>82</i>
<i>Figure 40 - View of the gully erosion at WP04.</i>	<i>84</i>
<i>Figure 41 - View of artefacts identified at WP04.</i>	<i>85</i>

List of Tables

<i>Table 1 - Heritage management recommendations.</i>	<i>vii</i>
<i>Table 2 – List of abbreviations used in this report.</i>	<i>xvi</i>
<i>Table 3 - Reporting requirements for GN648.</i>	<i>5</i>
<i>Table 4 - Reporting requirements as per NEMA, as amended, Appendix 6 for specialist reports.</i>	<i>9</i>
<i>Table 5 - Table with Locality and Property Information</i>	<i>11</i>
<i>Table 6 - Rating system for archaeological resources</i>	<i>20</i>
<i>Table 7 - Rating system for built environment resources</i>	<i>21</i>
<i>Table 8 - Summary of findings.</i>	<i>28</i>
<i>Table 9 - Tangible heritage site in the study area</i>	<i>37</i>
<i>Table 10 - Landform type to heritage find matrix.</i>	<i>38</i>
<i>Table 11 - Heritage resources noted during the field assessment.</i>	<i>43</i>
<i>Table 12 – Cumulative Impact Table for heritage resources</i>	<i>51</i>
<i>Table 13 - Lead times for permitting and mobilisation.</i>	<i>54</i>
<i>Table 14 - Heritage Management Plan for EMPr implementation.</i>	<i>55</i>
<i>Table 15 - Heritage management recommendations.</i>	<i>61</i>

List of Appendices

- A Project team CV's*
- B Site Descriptions (incl. photographs)*

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page xiii

TERMINOLOGY AND ABBREVIATIONS

Archaeological resources

This includes:

- material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;
- rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
- wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which the SAHRA considers to be worthy of conservation;
- features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

Cultural significance

This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance

Development

This means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way result in a change to the nature, appearance or physical nature of a place or influences its stability and future well-being, including:

- construction, alteration, demolition, removal or change in use of a place or a structure at a place;
- carrying out any works on or over or under a place;
- subdivision or consolidation of land comprising a place, including the structures or airspace of a place;
- constructing or putting up for display signs or boards;
- any change to the natural or existing condition or topography of land; and
- any removal or destruction of trees, or removal of vegetation or topsoil

Earlier Stone Age

The archaeology of the Stone Age between ~300 000 and 3 300 000 years ago.

Fossil

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page xiv

Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.

Heritage

That which is inherited and forms part of the National Estate (historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999).

Heritage resources

This means any place or object of cultural significance and can include (but not limited to) the following (as stated under Section 3 of the NHRA):

- places, buildings, structures and equipment of cultural significance;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features of cultural significance;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds, and
- sites of significance relating to the history of slavery in South Africa

Holocene

The most recent geological time period commenced 10 000 years ago.

Later Stone Age

The archaeology of the last 30 000 years is associated with fully modern people.

Late Iron Age (Early Farming Communities)

The archaeology of the last 1000 years up to the 1800s, is associated with iron-working and farming activities such as herding and agriculture.

Middle Stone Age

The archaeology of the Stone Age between 30 000-300 000 years ago, is associated with early modern humans.

Palaeontology

Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page xv

Site

Site in this context refers to an area place where a heritage resource is located and not a proclaimed heritage site as contemplated under s27 of the NHRA.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page xvi

Table 2 – List of abbreviations used in this report

Abbreviations	Description
ACER	ACER (Africa) Environmental Consultants
AIA	Archaeological Impact Assessment
APHP	Association of Professional Heritage Practitioners
ASAPA	Association of South African Professional Archaeologists
BA	Basic Assessment
CA	National Competent Authority
CRM	Cultural Resource Management
DFFE	Department of Forestry, Fisheries and the Environment
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
EIAs practitioner	Environmental Impact Assessment Practitioner
ESA	Earlier Stone Age
GN	Government Notice
GPS	Global Positioning System
HIA	Heritage Impact Assessment
HWC	Heritage Western Cape
I&AP	Interested & Affected Party
IAIASA	International Association for Impact Assessment South Africa
LCTs	Large Cutting Tools
LSA	Late Stone Age
MSA	Middle Stone Age
NEMA	National Environmental Management Act, 1998 (Act No 107 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act No 25 of 1999)
NCW	Not Conservation Worthy
PGS	PGS Heritage (Pty) Ltd
PHRA	Provincial Heritage Resources Authority
PIA	Palaeontological Impact Assessment
SADC	Southern African Development Community
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page xvii

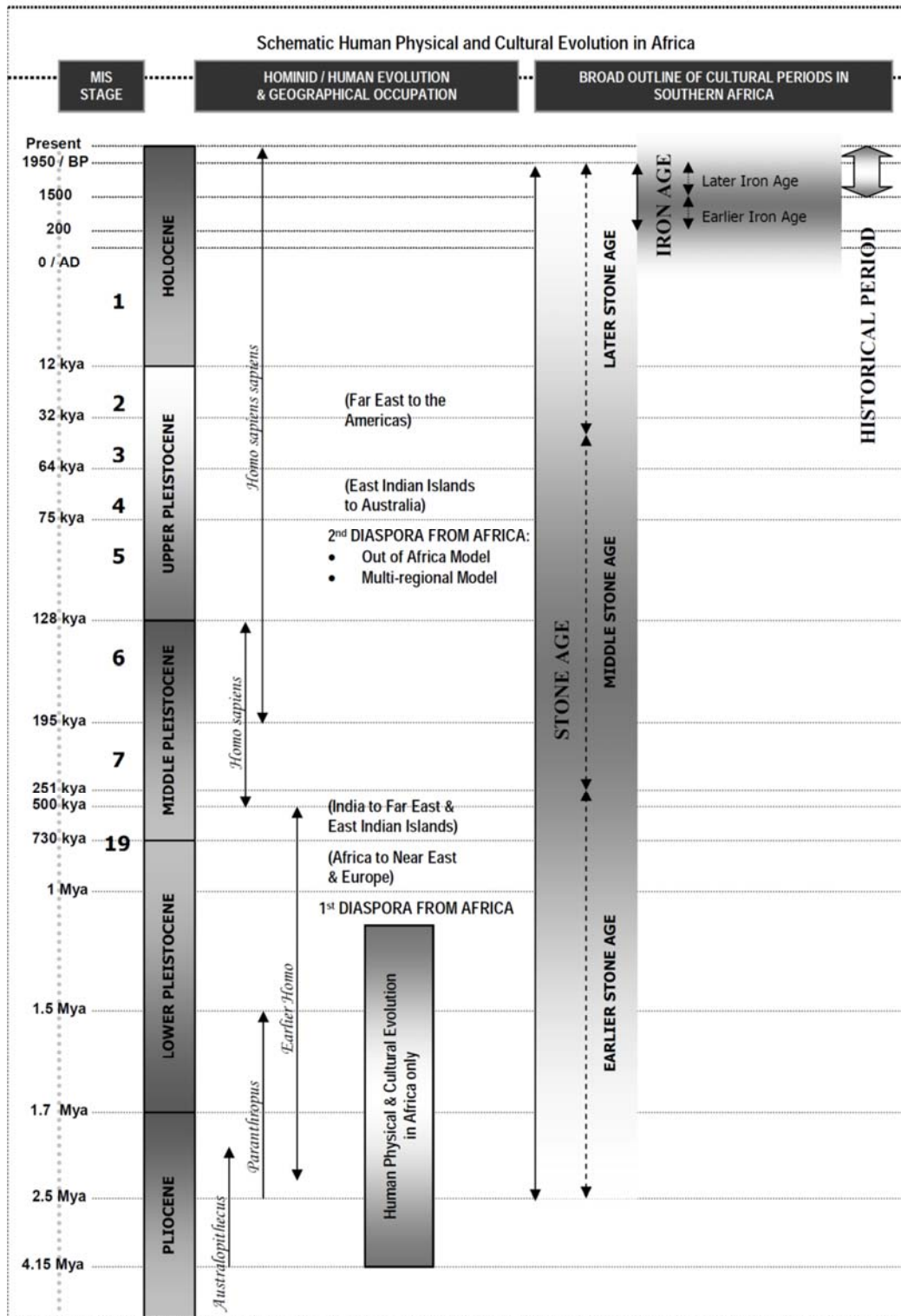


Figure 1 – Human and Cultural Timeline in Africa (Morris, 2008).

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 1

1 INTRODUCTION

PGS Heritage (Pty) Ltd (PGS) was appointed by ACER (Africa) Environmental Consultants (ACER), on behalf of Eskom Holding SOC LTD (Eskom), to conduct a Heritage Impact Assessment (HIA) as part of the of Basic Environmental Assessment (BA) for the proposed Witkop-Pietersburg 132kV grid connection, within the Polokwane Local Municipality and the Capricorn District Municipality in the Limpopo Province.

The study area incorporates the following farm portions:

Farm	No	Reg	Portion
Doornspruit or Thorncastle	741	LS	3
Duvenageskraal	689	LS	0
Leeuwkuil	691	LS	3
Morgenzon	690	LS	0/1A
Schanhauzen	737	LS	0
Sterkloop	688	LS	179
Uitval	693	LS	0/1/2

An Environmental Authorisation (EA) was issued by the national Department of Environmental Affairs and Tourism to Eskom Distribution (Northern Region) on 26 September 2011 (12/12/20/2243). This EA was for the construction of a 33 km 132kV powerline from Witkop substation to Pietersburg substation, located to the west of the city of Polokwane in the Capricorn District Municipality of Limpopo Province. The original EA, valid for a period of 5 years from the date of authorisation, was further extended for 3 years, 3 years and 4 years respectively, by the competent authority, after the validity period lapsed. The EA has again expired and will not be further extended by the Department of Forestry, Fisheries, and the Environment (DFFE). Eskom is thus required to submit a new application and start a new BA process to obtain environmental authorisation for the proposed line.

Importantly, it should be noted that the length of the line currently proposed is approximately 18 km and not 33 km, as per the original application, as the line will tie into existing infrastructure before reaching Witkop Substation.

In terms of the Environmental Impact Assessment (EIA) Regulations, which were published on 04 December 2014 [GNR 982, 983, 984 and 985] and amended on 07 April 2017 [promulgated in Government Gazette 40772 and Government Notice (GN) R326, R327, R325 and R324 on 7 April 2017], various aspects of the proposed development are considered listed activities under GNR 327 and GNR 324 which may have an impact on the environment and therefore require authorisation from the National Competent Authority (CA), namely the DFFE, prior to the commencement of such activities. Specialist studies have been commissioned to assess and verify the project under the new Gazetted specialist protocols.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 2

1.1 Scope of the Study

The aim of the study is to identify possible heritage sites and finds that may occur in the proposed development area. The assessment then aims to assist the developer in managing the discovered heritage resources in a responsible manner, to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act (Act 25 of 1999) (NHRA).

1.2 Specialist Qualifications

This assessment was compiled by PGS.

The staff at PGS have a combined experience of nearly 90 years in the heritage consulting industry. PGS and its staff have extensive experience in managing HIA processes. PGS will only undertake heritage assessment work where they have the relevant expertise and experience to undertake that work competently.

Wouter Fourie, the Project Coordinator, is registered with the ASAPA as a Professional Archaeologist and is accredited as a Principal Investigator; he is further an Accredited Professional Heritage Practitioner with the Association of Professional Heritage Practitioners (APHP).

Nikki Mann, the author of this report, graduated with her Master's degree (MSc) in Archaeology and is registered as a Professional Archaeologist with ASAPA.

Wynand van Zyl, field archaeologist holds a BA (Hons) in Archaeology.

1.3 Assumptions and Limitations

A detailed field survey was undertaken on the proposed development footprint area as per the KML file received from the client. At times, the archaeological visibility of the area was not ideal for surveying due to dense grass and thorny vegetation cover.

Not detracting in any way from the comprehensiveness of the research undertaken, it is necessary to realise that the heritage resources located during the desktop research and fieldwork do not necessarily represent all the possible heritage resources present within the area. Various factors account for this, including the subterranean nature of some archaeological sites and vegetation cover. Should they be uncovered during the preconstruction or construction phase, such observed or located heritage features and/or objects may not be disturbed or removed in any way until such time that the heritage specialist has been able to make an assessment as to the significance of the site (or material) in question. This applies to graves and cemeteries as well.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 3

1.4 Legislative Context

1.4.1 Statutory Framework: The National Heritage Resources (Act 25 of 1999)

The NHRA has applicability, as the HIA is required in terms of the provisions of Section 34, 35, 36 and 38 of the NHRA. The study serves to identify key heritage resources, informants, and issues relating to the palaeontological, archaeological, built environment and cultural landscape.

The NHRA is utilized as the basis for the identification, evaluation, and management of heritage resources and in the case of Cultural Resource Management (CRM), those resources are specifically impacted by development as stipulated in Section 38 of NHRA. This study falls under s38(8) and requires comment from the SAHRA.

1.4.2 Section 3 - National estate

3) Without limiting the generality of subsections (1) and (2), a place or object is to be considered part of the national estate if it has cultural significance or other special value because of—

- a) its importance in the community, or pattern of South Africa's history;
- b) its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- c) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- d) its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- f) its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- g) its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- h) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
- i) sites of significance relating to the history of slavery in South Africa.

1.4.3 Section 34 – Structures

According to Section 34 of the NHRA, no person may alter, damage or destroy any structure, which forms part of the site built environment, that is older than 60 years without the necessary permits from the relevant provincial heritage authority.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 4

1.4.4 Section 35 – Archaeology, Palaeontology and Meteorites

According to Section 35 (Archaeology, Palaeontology and Meteorites) and Section 38 (Heritage Resources Management) of the NHRA, Palaeontological Impact Assessments (PIA) is required by law in the case of developments in areas underlain by potentially fossiliferous (fossil-bearing) rocks, especially where substantial bedrock excavations are envisaged, and where human settlement is known to have occurred during prehistory and the historic period.

1.4.5 Section 36 – Burial Grounds & Graves

A section 36 permit application is made to the SAHRA or the competent provincial heritage authority which protects burial grounds and graves (BGG) that are older than 60 years and must conserve and generally care for BGG protected in terms of this section, and it may make such arrangements for their conservation as it sees fit. SAHRA must also identify and record the graves of victims of conflict and any other graves which it deems to be of cultural significance and may erect memorials associated with these graves and must maintain such memorials. A permit is required under the following conditions:

Permitting requirements for BGG older than 60 years to the SAHRA:

- a) destroy, damage, alter, exhume, or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves.
- b) destroy, damage, alter, exhume, remove from its original position, or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
- c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.
- d) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction or damage of any burial ground or grave referred to in subsection (3)(a) unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant.

1.4.6 Section 38 HIA as a Specialist Study within the EIA in terms of Section 38(8)

The NHRA Section 38 (Heritage Impact Assessments) application to SAHRA is required when the proposed development triggers one or more of the following activities:

Permitting requirements for demolition of built environment features:

- a) the construction of a road, wall, power line, pipeline, canal or other similar forms of linear development or barrier exceeding 300m in length;
- b) the construction of a bridge or similar structure exceeding 50 m in length;
- c) any development or other activity which will change the character of a site,
 - i. exceeding 5 000 m² in extent; or

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 5

- ii. involving three or more existing erven or subdivisions thereof; or
- iii. involving three or more erven or divisions thereof which have been consolidated within the past five years; or
- iv. the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- d) the re-zoning of a site exceeding 10 000 m² in extent; or
- e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority

In this instance, the heritage assessment for the property is to be undertaken as a component of the BA process for the project. Provision is made for this in terms of Section 38(8) of the NHRA, which states that:

An HIA report is required to identify, and assess archaeological resources as defined by the Act, assess the impact of the proposal on the said archaeological resources, review alternatives and recommend mitigation (see methodology above).

Section 38 (3) Impact Assessments are required, in terms of the statutory framework to conform to basic requirements as laid out in Section 38(3) of the NHRA. These are:

- The identification and mapping of heritage resources in the area affected
- The assessment of the significance of such resources
- The assessment of the impact of the development on the heritage resources
- An evaluation of the impact on the heritage resources relative to sustainable socio/economic benefits
- Consideration of alternatives if heritage resources are adversely impacted by the proposed development
- Consideration of alternatives

1.4.7 Notice 648 of the Government Gazette 45421

Although the minimum standard for archaeological (2007) and palaeontological (2012) assessments were published by SAHRA, Government Notice (GN) 648 requires sensitivity verification for a site selected on the national web-based environmental screening tool for which no specific assessment protocol related to any theme has been identified. The requirements for this GN are listed in **Table 3** the applicable section in this report noted.

Table 3 - Reporting requirements for GN648.

GN 648	Relevant section in report	Where not applicable in this report
2.2 (a) a desk top analysis, using satellite imagery;	Section 5	

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 6

GN 648	Relevant section in report	Where not applicable in this report
2.2 (b) a preliminary on-site inspection to identify if there are any discrepancies with the current use of land and environmental status quo versus the environmental sensitivity as identified on the national web-based environmental screening tool, such as new developments, infrastructure, indigenous/pristine vegetation, etc.	Section 3	-
2.3(a) confirms or disputes the current use of the land and environmental sensitivity as identified by the national web-based environmental screening tool;	Section 3	-
2.3(b) contains a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity;	Section 3 provides a description of the current use and confirms the status in the screening report	

An assessment of the Environmental Screening tool provides the following sensitivity ratings for archaeological and heritage resources as low (**Figure 2**) and palaeontological resources as medium (**Figure 3**).

The field work in the study area demonstrates that graves of heritage significance warrant conservation. The low rating as provided by the Environmental Screening Tool possibly reflects scarcity of heritage reports conducted in the region.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 7

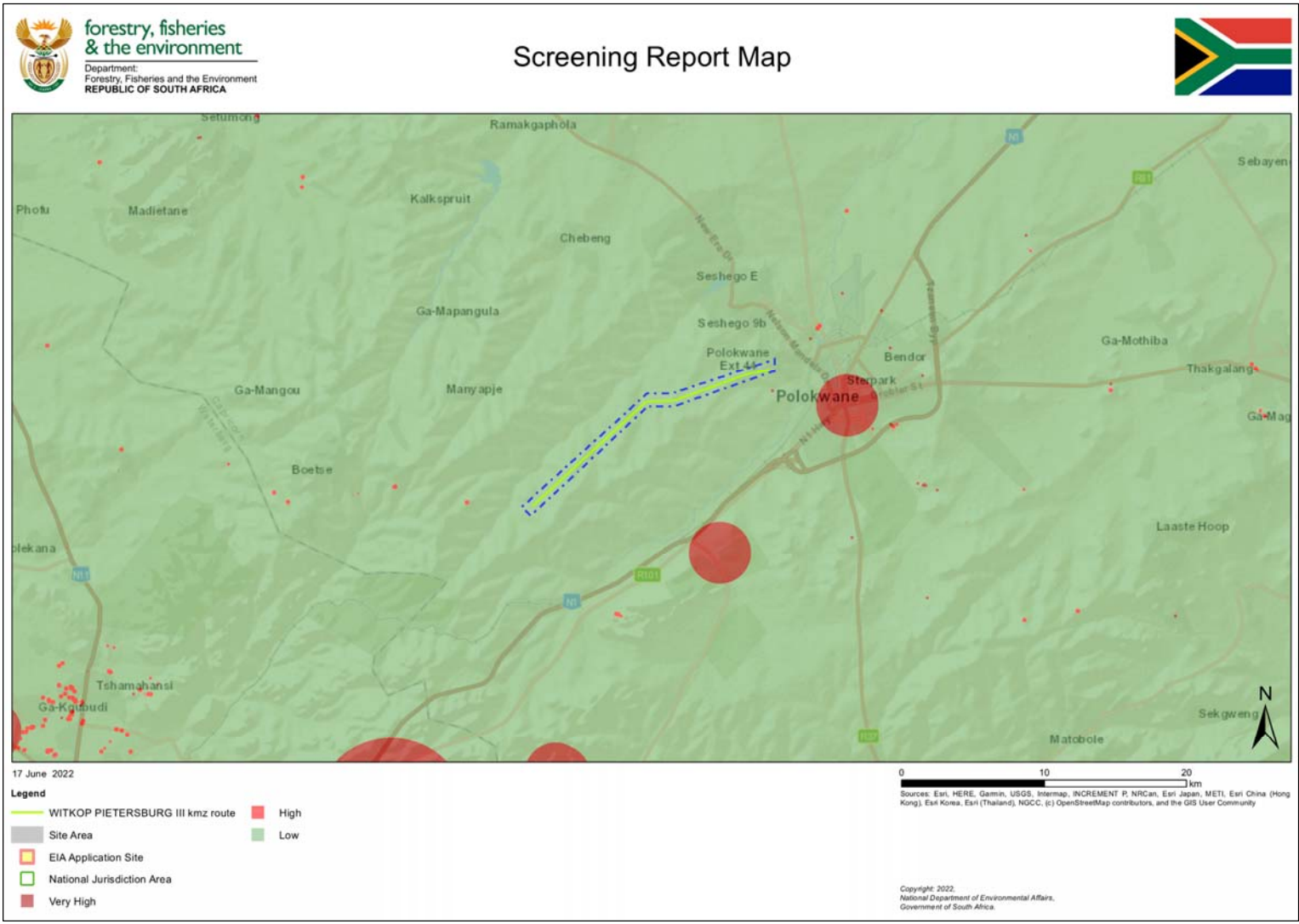


Figure 2 – Archaeology and Heritage screening map (Source: Department of Environmental Affairs).

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 8

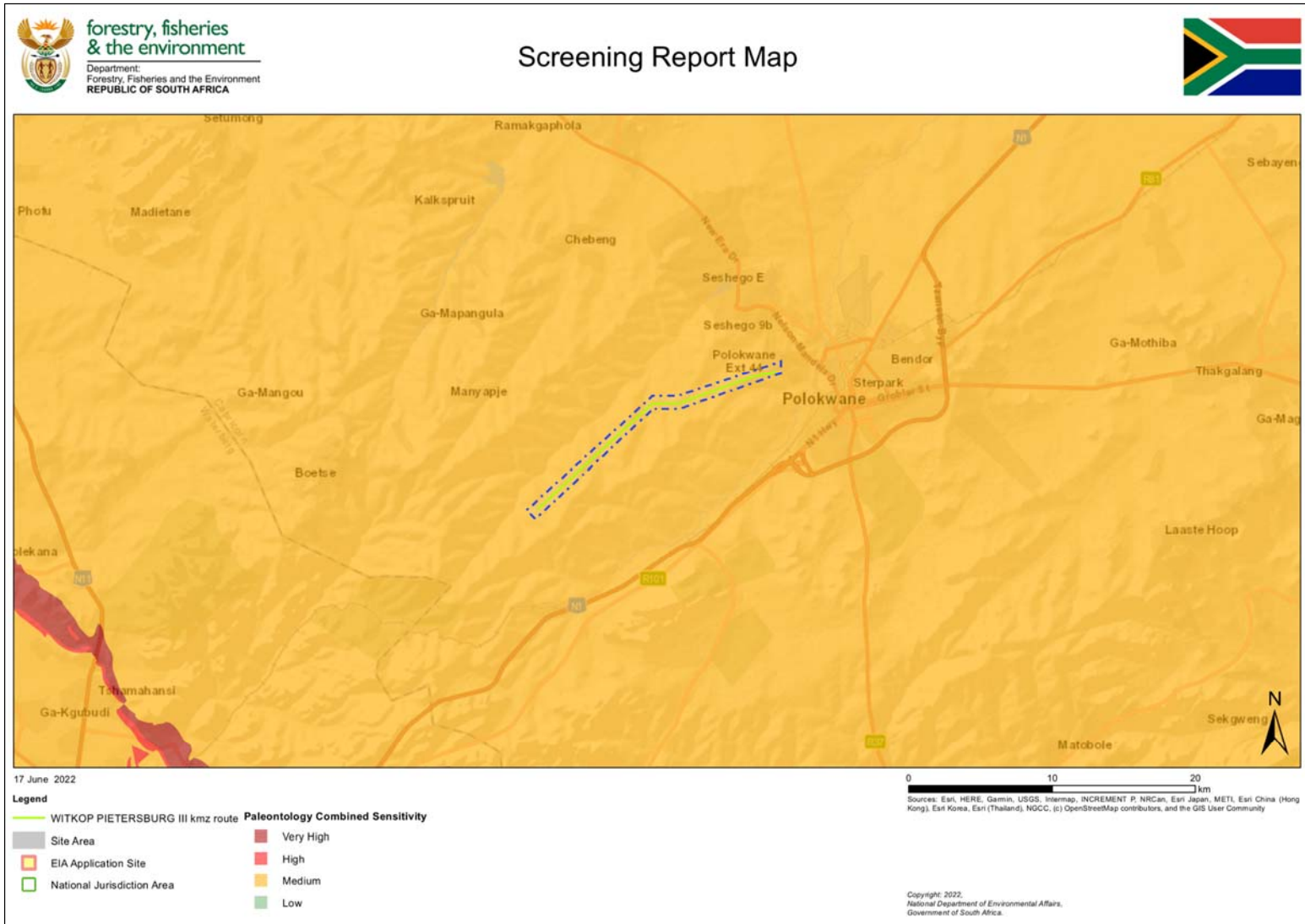


Figure 3 - Palaeontology screening map (Source: Department of Environmental Affairs).

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 9

1.4.8 NEMA – Appendix 6 requirements

The HIA report has been compiled considering the National Environmental Management Act (Act No. 107 of 1998) (NEMA) and Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) Appendix 6 requirements for specialist reports as indicated in the table below. For ease of reference, the table below provides cross-references to the report sections where these requirements have been addressed. It is important to note, that where something is not applicable to this HIA, this has been indicated in the table below.

Table 4 - Reporting requirements as per NEMA, as amended, Appendix 6 for specialist reports.

Requirements of Appendix 6 – GN R326 EIA Regulations of 7 April 2017	Relevant section in report	Comment where not applicable
1.(1) (a) (i) Details of the specialist who prepared the report	Page iii of Report – Contact details and company	-
(ii) The expertise of that person to compile a specialist report including a curriculum vita	Section 1.2 – refer to Appendix A	-
(b) A declaration that the person is independent in a form as may be specified by the competent authority	Page iii of the report	-
(c) An indication of the scope of, and the purpose for which, the report was prepared	Section 1.1	-
(cA) An indication of the quality and age of base data used for the specialist report	Sections 3, 4 and 5	-
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Sections 6 and 7	-
(d) The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment	Sections 3 and 4	-
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used	Section 4	-
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Sections 5, 6 and 7	-
(g) An identification of any areas to be avoided, including buffers	Section 8.5	-
(h) A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Section 6	
(i) A description of any assumptions made and any uncertainties or gaps in knowledge;	Section 1.3	-
(j) A description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives, on the environment	Executive Summary, Sections 6, 7 and 8	
(k) Any mitigation measures for inclusion in the EMPr	Section 8	
(l) Any conditions for inclusion in the environmental authorisation		Non required
(m) Any monitoring requirements for inclusion in the EMPr or environmental authorisation	Section 8	
(n)(i) A reasoned opinion as to whether the proposed activity, activities or portions thereof should be authorised and	Executive Summary	
(n)(iA) A reasoned opinion regarding the acceptability of the proposed activity or activities; and		

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 10

Requirements of Appendix 6 – GN R326 EIA Regulations of 7 April 2017	Relevant section in report	Comment where not applicable
(n)(ii) If the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	Sections 7, 8 and 9	-
(o) A description of any consultation process that was undertaken during the course of carrying out the study		Not applicable. A public consultation process was handled as part of the BA and EMPr process.
(p) A summary and copies if any comments that were received during any consultation process		Not applicable. To date no comments regarding heritage resources that require input from a specialist have been raised.
(q) Any other information requested by the competent authority.		Not applicable.
(2) Where a GN by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	NEMA Appendix 6 and GN648 SAHRA guidelines on HIAs	

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 11

2 SITE LOCATION AND DESCRIPTION

2.1 Locality

Table 5 - Table with Locality and Property Information

Study Area Coordinates	Powerline	Northern Point S -23.8907435° E 29.4030581°		Eastern Point S -23.8907435° E 29.4030581°	
		Southern Point S -23.9693606° E 29.2534373°		Western Point S -23.9693606° E 29.2534373°	
Location	This is a linear development traversing the area between the Witkop substation and Pietersburg substation, to the west of Polokwane, within the Polokwane Local Municipality and the Capricorn District Municipality in the Limpopo Province. (Figure 4). The closest main rads are Percy Fyfe Ga-Mashashane Road and Matlala Road.				
Property	Farm	No	Reg	Portion	
	Doornspruit or Thorncastle	741	LS	3	
	Duvenageskraal	689	LS	0	
	Leeuwkuil	691	LS	3	
	Morgenzon	690	LS	0/1A	
	Schanhauzen	737	LS	0	
	Sterkloop	688	LS	179	
	Uitval	693	LS	0/1/2	
Topographic Map	2329CD PIETERSBURG				

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg 132kV Powerline	2.0	04/08/2022	Page 12



Figure 4 - Location of the proposed development area.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 13

2.2 Project Description

The following description has been supplied by ACER.

2.2.1 Background

An EA was issued by the national Department of Environmental Affairs and Tourism to Eskom Distribution (Northern Region) on 26 September 2011 (12/12/20/2243). This EA was for construction of a 33 km 132kV powerline from Witkop substation to Pietersburg substation, located to the west of the city of Polokwane in the Capricorn District Municipality of Limpopo Province. The authorised alignment runs within a registered servitude and parallel to an existing 132 kV powerline. Construction of the authorised project has, however, not yet commenced. The original EA, valid for a period of 5 years from the date of authorisation, was further extended for 3 years, 3 years and 4 years respectively, by the competent authority, after the validity period lapsed. The EA has again expired and will not be further extended by the DFFE. Eskom is thus required to submit a new application and start a new BA process to obtain environmental authorisation for the proposed line. Importantly, it should be noted that the length of line currently proposed is approximately 18 km and not 33 km, as per the original application, as the line will tie into existing infrastructure before reaching Witkop Substation.

2.2.1 Project Motivation

This development forms part of the upgrading of Eskom's electrical infrastructure which is necessary to improve capacity and enable Eskom to address the demand for electrification of rural households in the Capricorn District Municipality.

2.2.2 Technical Specifications

The proposed line will be an approximately 18 km, 132 kV Kingbird power cable, strung on single steel pole structures (**Figure 5**), approximately 18 - 24m in height (height can vary depending on terrain) with a permanent servitude of 15.5 m on either side of the electrical cable. Vegetation clearance under the cable is required for a distance of 4 - 8m either side of the cable. The minimum height clearance under the line is 6 m. The proposed 132 kV distribution line will run parallel to the existing Pietersburg- Witkop line 2 132 kV distribution powerline within a registered servitude. It is proposed to be located at a distance of 21m to the north of the existing line. At its end point, it will tie into the existing Witkop PPRust North 132 kV powerline line.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 14



Figure 5 - View of a typical single steel pole (monopole) structure.

2.3 Project Alternatives

Two route alternatives were investigated during the original BA process and a preferred alignment was selected and subsequently authorised. The current line proposed is situated along the same preferred alignment and is intended to be in the existing registered and vacant servitude running parallel to the existing PTB Witkop 132 kV line. The area surrounding Polokwane city is traversed by numerous powerlines, and it is increasingly difficult to find suitable vacant land for new servitudes. For this project, the proposed alignment has been previously investigated, assessed, and approved by the route planners and environmental authority. There are currently no compelling reasons to find new route corridors and it is unwarranted to investigate and negotiate new alignments on new properties.

Therefore, it is the opinion of the EAP that route alternatives need not be investigated in the current BA process unless the findings of the specialist studies indicate that the environmental status quo has changed along the existing, registered, and vacant servitude, to an extent that deems it necessary to find an alternative alignment. It must be noted, however, that the corridor investigated will extend beyond the registered servitude (500 m either side of the line). This will allow room for any deviations that may be required to avoid sensitive features (if relevant).

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 15

3 CURRENT STATUS QUO

3.1 Site description

A site visit was conducted by archaeologists from PGS in June 2022. The general vicinity of the proposed development area was assessed as per the KML file received from the client. At times, the archaeological visibility of the area was not ideal for surveying due to dense grass and thorny vegetation cover.

“The proposed line will extend in a south-westerly direction from the Pietersburg substation on the western outskirts of Polokwane city, tying into the existing network approx. 18 km to the south-west. Pietersburg substation is located opposite the residential township, Polokwane Ext 44. Roughly near its midpoint, the line will cross the Percy Fyfe Ga Mashashane Road. The proposed route traverses privately owned farms predominantly under natural veld (Polokwane Plateau Bushveld) and farmed for livestock (cattle, goats, game, pigs). It skirts the northern boundary of the area known as Leeuwkuil which is semi-rural, with numerous smallholdings undertaking a mix of land uses (livestock, block making, farmstalls and other uses) as well as some residential estates. The area is flat to gently undulating. The line will cross a few watercourses/drainage lines, some of them extensively eroded. The line appears to cross within 500 m of a wetland in the vicinity of Ibis Piggeries.” (ACER, 2022).

The study area can be accessed via the Percy Fyfe Ga-Mashashane Road, Matlala Road, and informal roads. Portions of the study area, have been disturbed by the construction of farm roads, grazing and natural erosion (incl. sheet erosion, slope erosion, gully erosion and animal burrows). Existing infrastructure includes fences and powerlines.

The general landscape of the proposed development area comprised of hills (koppies), valleys, rock outcrops, gullies (numerous streams) and flat alluvial plains that were mostly covered in moderate to dense vegetation. In some areas, the terrain has undergone erosion and/or have been excavated.

In terms of geology and soils, the area is characterised by the Goudplaats-Hout River Gneiss Suite (Light to dark grey migmatitic tonalite, trondhjemite, granodiorite, monzodiorite, leucogneiss) (Council of Geoscience, 2022).

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg 132kV Powerline	2.0	04/08/2022	Page 16



Figure 6 – Map illustrating the location of landscape photos taken whilst surveying the proposed route.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 17



Figure 7 – A: Recently burnt grassland (facing east).



Figure 8 – B: Dense thorny vegetation cover.



Figure 9 – C: Marula trees.



Figure 10 – D: Tall grasslands (facing west).



Figure 11 – E: View of thorny vegetation.



Figure 12 – F: View towards existing powerline.



Figure 13 – G: Grazing lands.



Figure 14 – H: Informal dirt road within study area.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 18



Figure 15 – I: Vultures on powerline.



Figure 16 – J: Moderately vegetated area.



Figure 17 – K: Wetland.



Figure 18 – L: Erosional gully.



Figure 19 – M: Cattle



Figure 20 – N: Dense vegetation growth adjacent to existing powerline.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 19

4 ASSESSMENT METHODOLOGY

The section below outlines the assessment methodologies utilised in the study.

4.1 Methodology for Assessing Heritage Site Significance

This report was compiled by PGS for the proposed powerline. The applicable maps, tables, and figures are included as stipulated in the NHRA and the NEMA. The assessment process consisted of three phases:

Phase I –Desktop Study: A detailed archaeological and historical overview of the study area and surroundings were undertaken. This work was augmented by an assessment of reports and data contained on the SAHRIS. Additionally, an assessment was made of the available historic topographic maps. All these desktop study components were undertaken to support the fieldwork.

Phase II – Physical Survey: The fieldwork was conducted on 21-22 June 2022. The fieldwork team consisted of two archaeologists, Nikki Mann and Wynand van Zyl. Throughout the fieldwork, hand-held GPS devices were used to record the tracklogs showing the routes followed by the archaeological fieldwork team. All sites identified during the fieldwork were photographically and qualitatively recorded, and their respective localities were documented using a hand-held GPS device. The proposed 132kV powerline route was surveyed as per the KML file received from the client.

Phase III – The final step involved the recording and documentation of relevant heritage resources, the assessment of resources in terms of the report criteria and report writing, as well as mapping and constructive recommendations.

4.1.1 Site Significance

The significance of heritage sites was based on four main criteria:

- Site integrity (i.e. primary vs. secondary context),
- Amount of deposit, range of features (e.g., stonewalling, stone tools and enclosures),
- Density of scatter (dispersed scatter)
 - Low - <10/50m²
 - Medium - 10-50/50m²
 - High - >50/50m²
- Uniqueness; and
- Potential to answer present research questions.

Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be expressed as follows:

A - No further action necessary;

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 20

- B - Mapping of the site and controlled sampling required;
- C - No-go or relocate development activity position;
- D - Preserve site, or extensive data collection and mapping of the site; and
- E - Preserve site.

Site significance classification standards use is based on the heritage classification of s3 in the NHRA and developed for implementation keeping in mind the grading system approved by SAHRA for archaeological impact assessments. The update classification and rating system as developed by Heritage Western Cape (2016) is implemented in this report

Site significance classification standards prescribed by the Heritage Western Cape (HWC) Guideline (2021), were used for the purpose of this report (**Table 6** and **Table 7**).

Table 6 - Rating system for archaeological resources

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
I	Heritage resources with qualities so exceptional that they are of special national significance. Current examples: Langebaanweg (West Coast Fossil Park), Cradle of Humankind	May be declared as a National Heritage Site managed by SAHRA. Specific mitigation and scientific investigation can be permitted in certain circumstances with sufficient motivation.	Highest Significance
II	Heritage resources with special qualities which make them significant, but do not fulfil the criteria for Grade I status. Current examples: Blombos, Paternoster Midden.	May be declared as a Provincial Heritage Site managed by SAHRA. Specific mitigation and scientific investigation can be permitted in certain circumstances with sufficient motivation.	Exceptionally High Significance
III	Heritage resources that contribute to the environmental quality or cultural significance of a larger area and fulfils one of the criteria set out in section 3(3) of the Act but that does not fulfil the criteria for Grade II status. Grade III sites may be formally protected by placement on the Heritage Register.		
IIIA	Such a resource must be an excellent example of its kind or must be sufficiently rare. Current examples: Varschedrift; Peers Cave; Brobartia Road Midden at Bettys Bay	Resource must be retained. Specific mitigation and scientific investigation can be permitted in certain circumstances with sufficient motivation.	High Significance
IIIB	Such a resource might have similar significances to those of a Grade III A resource, but to a lesser degree.	Resource must be retained where possible where not possible it must be fully investigated and/or mitigated.	Medium Significance
IIIC	Such a resource is of contributing significance.	Resource must be satisfactorily studied before impact. If the recording already done (such as in an HIA or permit application) is not sufficient, further recording or even mitigation may be required.	Low Significance
NCW	A resource that, after appropriate investigation, has been determined to not have enough heritage significance to be	No further actions under the NHRA are required. This must be motivated by the applicant or the	No research potential or other cultural significance

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 21

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
	retained as part of the National Estate.	consultant and approved by the authority.	

Table 7 - Rating system for built environment resources

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
I	Heritage resources with qualities so exceptional that they are of special national significance. Current examples: Robben Island	May be declared as a National Heritage Site managed by SAHRA.	Highest Significance
II	Heritage resources with special qualities which make them significant in the context of a province or region, but do not fulfil the criteria for Grade I status. Current examples: St George's Cathedral, Community House	May be declared as a Provincial Heritage Site managed by SAHRA.	Exceptionally High Significance
II	Such a resource contributes to the environmental quality or cultural significance of a larger area and fulfils one of the criteria set out in section 3(3) of the Act but that does not fulfil the criteria for Grade II status. Grade III sites may be formally protected by placement on the Heritage Register.		
IIIA	Such a resource must be an excellent example of its kind or must be sufficiently rare. These are heritage resources which are significant in the context of an area.	This grading is applied to buildings and sites that have sufficient intrinsic significance to be regarded as local heritage resources; and are significant enough to warrant that any alteration, both internal and external, is regulated. Such buildings and sites may be representative, being excellent examples of their kind, or may be rare. In either case, they should receive maximum protection at local level.	High Significance
IIIB	Such a resource might have similar significances to those of a Grade III A resource, but to a lesser degree. These are heritage resources which are significant in the context of a townscape, neighbourhood, settlement or community.	Like Grade IIIA buildings and sites, such buildings and sites may be representative, being excellent examples of their kind, or may be rare, but less so than Grade IIIA examples. They would receive less stringent protection than Grade IIIA buildings and sites at local level.	Medium Significance
IIIC	Such a resource is of contributing significance to the environs. These are heritage resources which are significant in the context of a streetscape or direct neighbourhood.	This grading is applied to buildings and/or sites whose significance is contextual, i.e. in large part due to its contribution to the character or significance of the environs. These buildings and sites should, as a consequence, only be regulated if the significance	Low Significance

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 22

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
		of the environs is sufficient to warrant protective measures, regardless of whether the site falls within a Conservation or Heritage Area. Internal alterations should not necessarily be regulated.	
NCW	A resource that, after appropriate investigation, has been determined to not have enough heritage significance to be retained as part of the National Estate.	No further actions under the NHRA are required. This must be motivated by the applicant and approved by the authority. Section 34 can even be lifted by SAHRA for structures in this category if they are older than 60 years.	No research potential or other cultural significance

4.1.2 Archaeological specific methodology

Additional to the preceding methodological description the archaeological methodology included fulfilling the requirements of the NHRA (Section 35 and 36) that protects the following features in the landscape:

- Material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;
- Rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
- Graves and burial grounds, including ancestral graves, royal graves, graves of traditional leaders, graves of victims of conflict, historical graves and cemeteries, and other human remains not covered by the National Health Act (61 of 2003).

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 23

5 OVERVIEW OF STUDY AREA AND SURROUNDING LANDSCAPE

The high-level archival research focused on available information sources that were used to compile a general background history of the study area and surrounds.

5.1 Archaeological Overview of the Study Area and Surroundings

5.1.1 Early Stone Age (ESA) (2.5 million to 200 000 years ago)

The Earlier Stone Age (ESA) is the first phase identified in South Africa's archaeological history. Early stages include simple flakes struck from cobbles core and pebble tools; later stages include intentionally shaped handaxes, cleavers and picks; final or transitional stages have tools that are smaller than the preceding stages and include large blades (Lombard et al., 2012).

Phases of the ESA:

- **Oldowan:** The earliest phase dates to approximately 1.5 to >2 million years ago. Technological characteristics: crude flakes (cobble, core, or flake tools) with little retouch and hammerstones, manuports, cores and polished bone fragments/tools (Lombard et al., 2012).
- **Acheulian:** The second phase dates to approximately 300 thousand to 1.5 million years ago. Technological characteristics: more refined and better-made stone artefacts such as the cleaver and bifacial hand axe; large flakes (some with deliberate retouch; some show core preparation). They are generally found in disturbed open-air locations (Lombard et al., 2012).
- **ESA-MSA transition:** 200 to 600 thousand years ago. Technological characteristics: Described at some sites as Fauresmith. These assemblages have large blades, points, Levallois technology and the remaining ESA components have small bifaces (Lombard et al., 2012).

The Limpopo province is not as well known for its ESA resources. The closest occurrences of major finds from this time period are located at the Cave of Hearths (Herries, 2011), which has been dated to 1.1-1.4 Ma (best age estimates interpreted from contexts of direct/associated dates) and characterised by Acheulian assemblages.

Several Stone Age sites have previously been identified in the Capricorn District but no ESA sites have been identified (Bergh, 1999).

5.1.2 Middle Stone Age (MSA) (300 000 to 40 000 years ago)

The Middle Stone Age (MSA) is the second oldest phase identified in South Africa's archaeological history. This phase is associated with flakes, points and blades manufactured by means of the so-called 'prepared core' technique.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 24

Phases of the MSA:

- **Early MSA:** The phase dates to approximately 130 to 300 thousand years. Technological characteristics: Includes discoidal and Levallois flake technologies, blades from volumetric cores and a generalised toolkit (Lombard et al., 2012).
- **Klasies River:** The phase dates to approximately 105 to 130 thousand years ago. Technological characteristics: Includes recurrent blade and convergent flake production; end products are elongated and relatively thin, often with curved profiles; platforms are often small with diffused bulbs; low frequencies of retouch; and denticulated pieces (Lombard et al., 2012).
- **Mossel Bay:** The phase dates to approximately 77 to 105 thousand years ago. Technological characteristics: Includes recurrent unipolar Levallois point and blade reduction; products have straight profiles; percussion bulbs are prominent and often splintered or ring-cracked; formal retouch is infrequent and restricted to sharpening the tip or shaping the butt (Lombard et al., 2012).
- **Still Bay:** The phase dates to approximately 70 to 77 thousand years ago. Technological characteristics: Thin (<10mm), bifacially worked foliate or lanceolate points; semi-circular or wide-angled pointed butts; and could include blades and finely serrated points (Lombard et al., 2012).
- **Howieson's Poort:** The phase dates to approximately 58 to 66 thousand years ago. Technological characteristics: small baked tools (segments, scrapers, trapezes and backed blades), denticulated blades and pointed forms are rare or absent (Lombard et al., 2012).
- **Sibudu:** The phase dates to approximately 45 to 58 thousand years ago. Technological characteristics: Most points are produced using Levallois technique, side scrapers, unifacial points, plain butts and backed pieces are rare (Lombard et al., 2012).
- **Final MSA:** The phase dates to approximately 20 to 40 thousand years ago. Characterised by high regional variability that may include, e.g. bifacial tools, bifacially retouched points, hollow-based points; triangular flake and blade industries; small bifacial and unifacial; Sibudu point characteristics: short, stout, lighter in mass compared to points from the Sibudu technocomplex, but heavier than those from the Still Bay; can be microlithic; can include bipolar technology; and could include backed geometric shapes such as segments, as well as side scrapers (Lombard et al., 2012).

Most MSA sites in Limpopo Province are caves or rock shelters, the best-known being Cave of Hearths (Mason, 1962, 1988; Sampson, 1974; Sinclair, 2009), Olieboomspoor (Mason, 1962; Van der Ryst, 2006), Bushman Rock Shelter (Plug 1981; Porraz et al., 2015), Grace Dieu, the Wonder crater and Mwulu's Cave close to Polokwane (Tobias, 1949; Sampson, 1974; Phillipson, 1985; Bergh, 1999; Mitchell, 2002).

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 25

5.1.3 Later Stone Age (LSA) (40 000 to historic past (<2000BP))

The Later Stone Age (LSA) is the third archaeological phase. Variability between assemblages; a wide range of formal tools, particularly scrapers (microlithic and macrolithic), backed artefacts, evidence of hafted stone and bone tools, borers, bored stones, upper and lower grindstones, grooved stones, ostrich eggshell (OES) beads and other ornaments, undecorated/decorated OES fragments, flasks/flask fragments, bone tools (sometimes with decoration), fishing equipment, rock art, and ceramics in the final phase (Lombard et al., 2012).

Phases of the LSA:

- **Early LSA:** The phase dates to approximately 18 to 40 thousand years ago. Technological characteristics: Characterised by unstandardised, often microlithic, pieces and includes the bipolar technique; described at some sites, but not always clear whether assemblages represent a real archaeological phase or a mixture of LSA/MSA artefacts (Lombard et al., 2012).
- **Robberg:** The phase dates to approximately 12 to 18 thousand years ago. Technological characteristics: Characterised by systematic bladelet production, scaled pieces, significant numbers of unretouched bladelets and bladelet cores, few formal tools and some sites have significant macrolithic element (Lombard et al., 2012).
- **Oakhurst:** The phase dates to approximately 7 to 12 thousand years ago. Technological characteristics: Flake-based industry, characterised by round, end and D-shaped scrapers and adzes, wide range of polished bone tools and few or no microliths (Lombard et al., 2012).
- **Wilton:** The phase dates to approximately 4 to 8 thousand years ago. Technological characteristics: Fully developed microlithic tradition with numerous formal tools, highly standardised backed microliths and small convex scrapers, OES and ochre is common and bone, shell and wooden artefacts occur (Lombard et al., 2012).
- **Final LSA:** The phase dates to approximately 1 hundred to 4 thousand years ago. Technological characteristics: Much variability can be expected; variants include macrolithic (similar to Smithfield [Sampson, 1974]) and/or microlithic (similar to Wilton) assemblages; assemblages are mostly informal (Smithfield); often characterised by large untrimmed flakes (Smithfield); sometimes microlithic with scrapers, blades and bladelets, backed tools and adzes (Wilton-like); worked bone is common; OES is common; Ochre is common; iron objects are rare; ceramics are absent (Lombard et al., 2012).
- **Ceramic final LSA:** Generally, <2 thousand years ago. Contemporaneous with, and broadly similar to, final LSA, but includes ceramics - Economy may be associated with hunter-gatherers or herders -Technological characteristics: Stone tool assemblages are often microlithic; in some areas they are dominated by long end scrapers and few backed microliths and in others formal tools are absent or rare; grindstones are common, ground stone artefacts, stone bowls and boat-shaped grinding grooves may occur; includes grit- or grass-tempered pottery; ceramics can be coarse, or well-fired and thin-walled;

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 26

sometimes with lugs, spouts and conical bases; sometimes with decoration; sometimes shaped as bowls; Ochre and OES is common; metal objects, glass beads and glass artefacts also occur (Lombard et al., 2012).

Major LSA sites occurring in the Limpopo Province include: Balerno Main Shelter (Van Doornum, 2007a), Goergap 113 KR (Van der Ryst, 1998), New Belgium (Van der Ryst, 1998), Schurfpoot 112 KR (Van der Ryst, 1998) and Tshisiku Shelter (Van Doornum, 2007b).

LSA sites have been identified at an area to the south of Polokwane and at Makgabeng (Bergh, 1999; Inskeep, 1978).

5.1.4 Rock Art

By the beginning of the LSA, human behaviours were undoubtedly modern (Huffman, 2007). Uniquely human traits, such as rock art and purposeful burials with ornaments, became regular practice (Huffman, 2007). South Africa's rock art tradition is the engravings and paintings produced by forager or San communities (Smith & Ouzman 2004). Though considered predominantly shamanistic and symbolic, San rock art also concerns gender, landscape, and politics (Smith & Ouzman 2004).

In addition, Bantu-speaking farmers' rock art also exists that was made by groups that appeared in southern Africa about 2,000 years ago (Vogel 1995) from East and Central Africa (e.g., Ten Raa, 1974; B. Smith, 1995, 1997, 2002). This art has several distinct traditions, among them the northern Sotho initiation and protest rock arts (Smith & van Schalkwyk 2002, van Schalkwyk & Smith 2004), the rock engravings of Late Iron Age settlements (e.g., Maggs, 1995), and the boys' initiation rock art of the southern Sotho and Zulu. Most of these traditions are informed by oral history, and some may continue to be practiced (Smith & Ouzman 2004).

Four areas known from the northern part of the country where rock art clusters are found, comprise the Limpopo River Valley, the Makabeng-Blouberg Mountains, the Soutpansberg Mountains and the Waterberg. Each of these areas has its own distinct iconography but also shares several common qualities that make it different from the south-eastern mountain complex (Blundell & Ferreira 2017). These common attributes are:

- A greater representation in the art of diverse animal species. The rock art of the south-eastern mountain complex, as well as other parts of South Africa, heavily emphasizes eland. After eland, reedbuck and hartebeest are the most numerically important animal-images. Images of felines, elephant, domestic animals and other species do occur but are generally numerically poorly represented, both at a single site (only a single feline may be present at a site, whereas hundreds of images of eland might be present for example) and

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 27

as a category of images within the corpus of rock art for a region. The rock art of the northern part of South Africa differs from that of the south-eastern mountains because there is greater species variability and numerical representation of those species both at a single shelter and throughout the corpus of rock art. Giraffe, elephant, hartebeest/tsessebe, kudu and other animals are commonly found at rock art sites. The numerical dominance of eland appears to wane in the northern parts of the country (Blundell & Ferreira 2017).

- A greater proportion of images of women when compared to other parts of South Africa. Women typically make up between 2% and 14% of identifiable human images in the rock art of most parts of South Africa but in the northern parts of the country, this increases dramatically to 31% (Blundell & Ferreira 2017).
- A widespread emphasis at rock art sites of images of clothing. These images include both men's loincloths (Y-shaped images) and female aprons (stretched-out skin-shapes). Such motifs are exceptionally rare in the south-eastern mountain complex but common in the northern areas of the country (Blundell & Ferreira 2017).

5.1.5 Iron Age Sequence

In the northern regions of South Africa at least three settlement phases have been distinguished for early prehistoric agro-pastoralist settlements during the Early Iron Age (EIA). Diagnostic pottery assemblages can be used to infer group identities and to trace movements across the landscape.

The first phase of the EIA, known as "Happy Rest" (named after the site where the ceramics were first identified), is representative of the Western Stream of migrations, and dates to AD 400 - AD 600. The second phase of Diamant is dated to AD 600 - AD 900 and was first recognized at the eponymous site of Diamant in the western Waterberg. The third phase, characterised by herringbone-decorated pottery of the Eiland tradition, is regarded as the final expression of the EIA and occurs over large parts of the North West Province, Northern Province, Gauteng and Mpumalanga. This phase has been dated to about AD 900 - AD 1200. These sites are usually located on low-lying spurs close to water (Coetzee, 2015).

Only a few EIA sites have been identified near Polokwane. The few known sites are located either on the southern side of Blouberg or on the northern side of the Makgabeng Plateau. The identified EIA sites include Silver leaves, Eiland and Beasley (Nel et al., 2013: 20-23, Mitchell, 2002).

No MIA sites are known from the Capricorn district (Bergh, 1999).

The Late Iron Age (LIA) settlements are characterised by stone-walled enclosures situated on defensive hilltops c. AD 1640 - AD 1830). This occupation phase has been linked to the arrival of ancestral Northern Sotho, Tswana and Ndebele (Nguni-speakers) in the northern regions of South Africa with associated sites dating between the sixteenth and seventeenth centuries AD. The

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 28

terminal LIA is represented by late 18th/early 19th century settlements with multi-chrome Moloko pottery commonly attributed to the Sotho-Tswana. These settlements can in many instances be correlated with oral traditions on population movements during which African farming communities sought refuge in mountainous regions during the processes of disruption in the northern interior of South Africa, resulting from the so-called difaqane (or mfecane) (Coetzee, 2015).

LIA sites are found in abundance throughout the Limpopo Province (Bergh, 1999; Mitchell, 2002). Sites where copper smelting were identified are located between Tzaneen and Polokwane and along the Hout River. Iron working sites were also identified between Polokwane and Tzaneen (Bergh, 1999). Further sites were recorded on the farm Icon (Huffman, 2007; Archaetnos database) and Matoks (Huffman, 2007).

5.2 Historical Overview of the Study Area and Surroundings

The archival and desktop research of the history of the study area and surrounding landscape identified a number of historical aspects which can be associated with the study area as well as its immediate surroundings. These historical facets will be discussed in more detail and in chronological sequence below.

Please note that the authors are aware of the Makapan Valley with its various historical, archaeological and palaeontological significant sites and features such as Makapan's Caves, Cave of Hearths etc. The authors are also aware that the Makapan Valley is both a National Heritage and World Heritage site. However, the Makapan Valley is located approximately 22km south-south-west of the study area. As a result, the Makapan Valley is not directly associated with the history of the study area and was not included in this section or overall report.

Table 8 - Summary of findings

DATE	DESCRIPTION
Early 1600s	<p>Successive waves of both homogenous and heterogeneous groups entered and occupied the area since 1600 A.D., including the Ndebele, Shangaan and Koni people (Loubser, 1994). During the 17th Century Iron Age Nguni farmers moved from the Hlubi tribe in present day Kwa-Zulu Natal and settled in the former Transvaal as the Transvaal Ndebele. They were split into two major groupings of which the Northern Ndebele settled in the Mokopane - Polokwane region.</p> <p>While it is not clear which groups they settled alongside or displaced, several accounts of contact with the Northern-Sotho and Ba-Pedi are reported in the ethnology of these peoples. Bergh (1999) states that the Kekana Ndebele (Mathombeni/Yangalala) settled south-east of Potgietersrus at Moletlane. According to him this community had earlier split from the Ndzundza group. A further split within the Kekana community occurred when the Vaaltyn-Kekana established a separate community closer to the present-day town of Potgietersrust (Mokopane) on the farm Pruissen.</p>
c. 1600-1900AD	<p>The people currently living in the wider vicinity of the study site are mostly Bakoni of Matlala and Molepo, both of Northern Sotho origin, with the Mamabolo and Balobedu groups historically settled further to the east (Changuion, 2008). The Bakoni of Matlala first settled in the area around modern day Polokwane around 1730 A.D. (Krige, 1937) before moving north and west towards Makgabeng and founding a settlement at Ga</p>

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 29

	<p>Matlala a' Thaba. The Koni are not a homogenous group and most of the Koni people regard their ancestry as being Nguni and originating in Swaziland (Mönnig, 1967).</p> <p>Excavations in 1980 by the University of the Witwaterstrand at the site of the Bokoni Malapa museum south of Polokwane indicated settlement from 1600 to 1900 A.D. comprising a sequence of Northern Ndebele, Northern Sotho and Shangaan people, finally being occupied by the Koni of Matlala (Jordaan, 1992). Loubser (1994) also excavated the site of Bambo Hill and six other Late Iron Age sites located to the north-east and south-east of Polokwane.</p>
Early 1800s	The beginning of the Historical Period overlaps the demise of the late Stone and Iron Ages and is characterised by the first written accounts of the region from 1600 A.D. A number of early European travellers visited the area from the early 19th Century onwards including Cowan & Donovan in 1808, David Hume in 1825, Cornwallis Harris in 1836, Livingstone in 1847 and Carl Mauch in 1869 (Burke, 1969; Birkholtz & Steyn 2002).
1850s	During the 1850's, white farmers settled in the Limpopo area (Bergh, 1999: 16). They were followed by the German Missionaries and later other missionaries (Nel et al., 2013: 21; Bergh, 1999: 57).
1852	British grant Transvaal Boers independence in terms of the Sand River Convention. Formation of the Zuid-Afrikaanse Republiek ¹ .
1860s	Many of the first white settlers in the area arrived in the 1860s as wood cutters attracted by the extensive indigenous forests on the escarpment to the west where sawpits from these days can still be seen (Changuion 2008).
1870	Considerable tensions arose between the settlers and the local people and there were a number of skirmishes including the famous siege of the Ndebele ruler Mokopane in the Makapans caves and the forced abandonment of Potgietersrust in 1870. This site is located quite a distance from the study area (Wiener, 2006).
1871	Gold was found in the Transvaal in 1871 on Franz du Preez's farm 'Eersteling' near Marabastad. This led to the first gold rush in the Transvaal (Wiener, 2006).
1877	Annexation of the Transvaal by the British. Rise of nationalist political fervour among the Dutch population ² .
1880-81	The First Anglo-Boer War (1880-1881) broke out between the Transvaal and Britain, following the annexation of the Transvaal by the British in 1877. After a series of decisive victories by the Boers, the British gave back a large measure of self-rule to the Transvaal. The Boers' victory over the British was celebrated on 16 December 1881 in the Zoutpansberg district (Wiener 2006) ³ .
1882-1883	Executive Council authorises the purchase of the farm Sterkloop. On 8 October 1883, Kommandant-Generaal Pieter Jacobus Joubert, the head of the South African Republic's defence force and Vice-President of the Transvaal Republic under President Paul Kruger, visited the Zoutpansberg district to decide where its capital should be established. Several meetings were held to discuss the various options for the new town. At the first meeting at Fort Klipdam [Rhenosterpoort], 72 men proposed that Sterkloop should be the site chosen. Joubert decided to establish the new town on Opzadel [Sterkloop], then owned by B J Vorster and Gert Emmenis. The Volksraad authorised Piet Joubert to investigate and finalise the siting of a new town north of Pretoria. The town was called Pietersburg, after Kommandant-Generaal Pieter Jacobus Joubert (Wiener 2006) ⁴ .
1884-1886	On 29 January 1884, the Government bought the farm and the land-surveyor G R von Wielligh laid out 150 plots. Of these, 94 plots were given free of charge to people who had owned property in Schoemansdal and the rest were sold to the public for £6 each. On 26 July 1886, the magistrate's office was moved from Marabastad to Pietersburg and on 31 July 1886, Pietersburg was officially established. (Wiener 2006) ⁵ .
1887	The town of Haenerstburg, 40 kilometres to the east of the study area, was established in 1887 after gold was found there. Old mine shafts and remains of buildings can still be seen in this area (Changuion 2008).
1888-1893	In 1888 the railway was completed from Pretoria to Pietersburg, opening up the North even further. The population of Pietersburg grew quickly from 200 whites in 1889, to 800 in 1893

¹ <http://www.sahistory.org.za/topic/polokwanepietersburg-timeline>

² Ibid.

³ Ibid.

⁴ <http://www.sahistory.org.za/topic/polokwanepietersburg-timeline>

⁵ Ibid.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 30

1895	The history of the area also includes the 1895 war between Chief Makgoba and the ZAR. Relations between the whites and the Bavenda tribe under Magato deteriorated drastically because of disagreements over grazing and hunting grounds. The Zuid-Afrikaner Administration did not have sufficient funds to protect the whites. As a result, on 15 July 1867, the defenders of Schoemansdal under Commandant-General Paul Kruger, were forced to abandon the village, which was then burned by the Bavenda (Wiener 2006).
1889	In 1889 the famous postal coach service from Pietersburg via Haenertsburg to the Lowveld establishment of the by Doel Zeederberg (Changuion 2008).
1899-1902	<p>The South African War (also known as the Anglo Boer War) was fought between Great Britain and the Boer republics of the Zuid-Afrikaansche Republiek and Orange Free State.</p> <p>In 1900 there was an historic gathering of the Transvaal and Orange Free State republics where Pietersburg was nominated as the temporary seat of Government of the United Boer Republics⁶.</p> <p>In the Soutpansberg-Pietersburg area several incidents included a clash between the Bushveldt Carbineers and the Boers at W.H. Viljoen's farm Duiwelskloof in August 1901 (Woolmoore 2002), including the destruction of the last Long Tom guns near Haenertsburg in April 1901 (Changuion 2008).</p> <p>The Bush Veldt Carbineers were an irregular unit of the British forces raised in Pretoria in February 1901 and did useful work in the difficult country north of Pietersburg in that year. However, the unit gained an unfortunate notoriety by the conviction of officers Harry "Breaker" Morant, Handcock and Witton, on charges that they had committed acts not in accordance with the rules of civilised warfare. Harry 'Breaker' Morant was a drover and horse-breaker and thus acquired the name 'Breaker'. He enlisted with the South Australian Mounted Rifles to fight in the Boer War. He and two other soldiers, Handcock and Witton were court-martialled and all three found guilty of executing several Boer prisoners and a German missionary. Handcock and Morant were executed by the firing squad on 27th February 1902. Kitchener commuted Witton's sentence to a lifetime of penal servitude. The Bush Veldt Carbineers were renamed to the Pietersburg Light Horse on 1 December 1901⁷.</p> <p>The most important movement was the progress of a British force, under the command of Colonel Plumer, in an advance north from Pretoria, by the Pietersburg line, towards Nylstroom. No effective resistance was offered by opposing Boer forces, and the towns and districts in that region were occupied by the enemy with very little opposition. Pietersburg had been the seat of Transvaal Government for several months, and the purpose of the Plumer column was to attack the place. This was successfully done; General Schalk Burger and the acting members of the Transvaal Executive retiring from the town further east into the Zoutpansberg regions, where they were not pursued (Conan Doyle 1902)⁸.</p> <p>The war ended on 31 May 1902 with the British as the victors. The effects of the war were felt for years after the hostilities had actually ended.</p>
Early 1900s	A notable pioneer in the area was Orlando Baragwanath who together with his partner Frank Lewis had discovered Zambia's copper belt. In the early 1900's Baragwanath and Lewis settled at The Downs in the mountains to the south west of the study area and constructed a now famous road over the mountain, the Ollie Baragwanath Pass (Changuion 2008).
1904	First Municipal election held. Pietersburg's population made up of 3,276 people of whom 1,620 were White. ⁹
1925	Formation of Zion Christian Church (ZCC). The headquarters of the ZCC at Moria 40 kilometres to the west of the study area sees millions of worshippers congregate there every Easter in a major cultural event.
1984	In 1984 the then Pietersburg Town Council completed the construction of the Bakoni Malapa Northern Sotho Open Air Museum south of the town, having consulted and utilised the traditional knowledge and labour of the Matlala tribe (Jordaan, 1992).

⁶ Ibid.

⁷ <http://www.angloboerwar.com/unit-information/south-african-units/305-bush-veldt-carbineers-and-pietersburg-light-horse>

⁸ <http://www.angloboerwar.com/books/37-davitt-boer-fight-for-freedom/867-davitt-chapter-xxxvii-diary-of-the-warjanuary-to-june-1901>

⁹ <http://www.sahistory.org.za/topic/polokwanepietersburg-timeline>

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 31

2002	In February 2002, the city of Pietersburg became one of the first places in South Africa to change its name after the fall of apartheid, and was renamed to Polokwane, the Northern Sotho word which means "Place of Safety" ¹⁰ .
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5.3 Archival/historical maps

Topographic maps (1:50 000) for various years (1968, 1997, 2008), were available for utilisation in the background study. These maps were assessed to observe the development of the area, as well as the location of possible historical structures and burial grounds. The study area was overlain on the map sheets to identify structures or graves situated within or immediately adjacent to the study area that could possibly be older than 60 years and thus protected under Section 34 and 36 of the NHRA.

5.3.1 1: 50 000 Topographical Map 2329CD PIETERSBURG - First Edition 1968

Sections of the First Edition of the 2329CD Topographical Sheet is depicted in **Figure 21** and **Figure 22**. The map was compiled from aerial photography undertaken in 1963, surveyed in 1968 and drawn in 1969 by the Trigonometrical Survey Office.

Several farmsteads, homesteads ("huts") and structures were identified adjacent to the study area. All these identified sites are likely to be at least 54 years old.

¹⁰ <http://www.polokwane.gov.za/>

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg 132kV Powerline	2.0	04/08/2022	Page 32

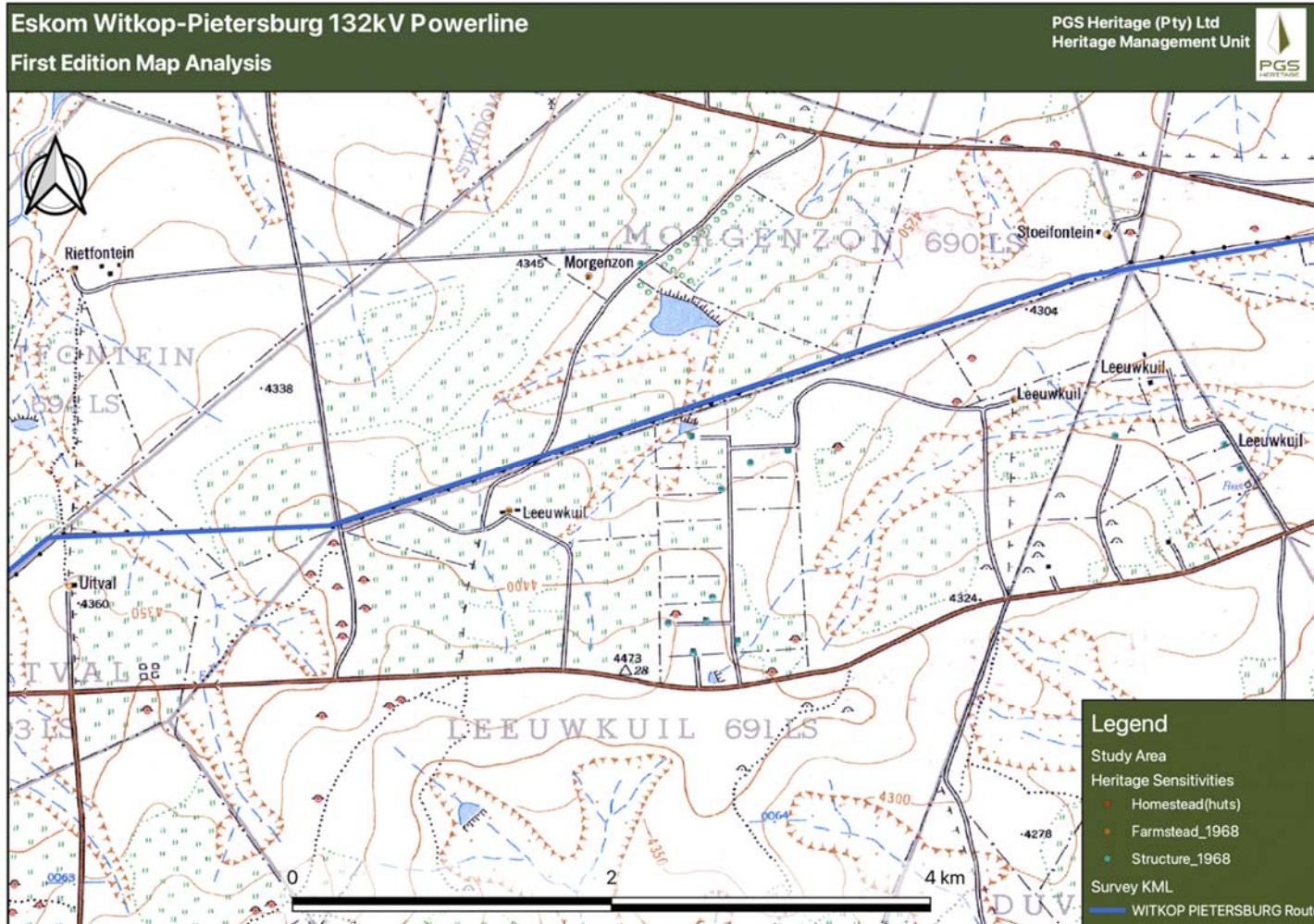


Figure 21 - Enlarged section of 2329CD Ed 1 1968 sheet, depicting homesteads (red point), farmsteads (orange point) and structures (cyan point) adjacent to the study area.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg 132kV Powerline	2.0	04/08/2022	Page 33

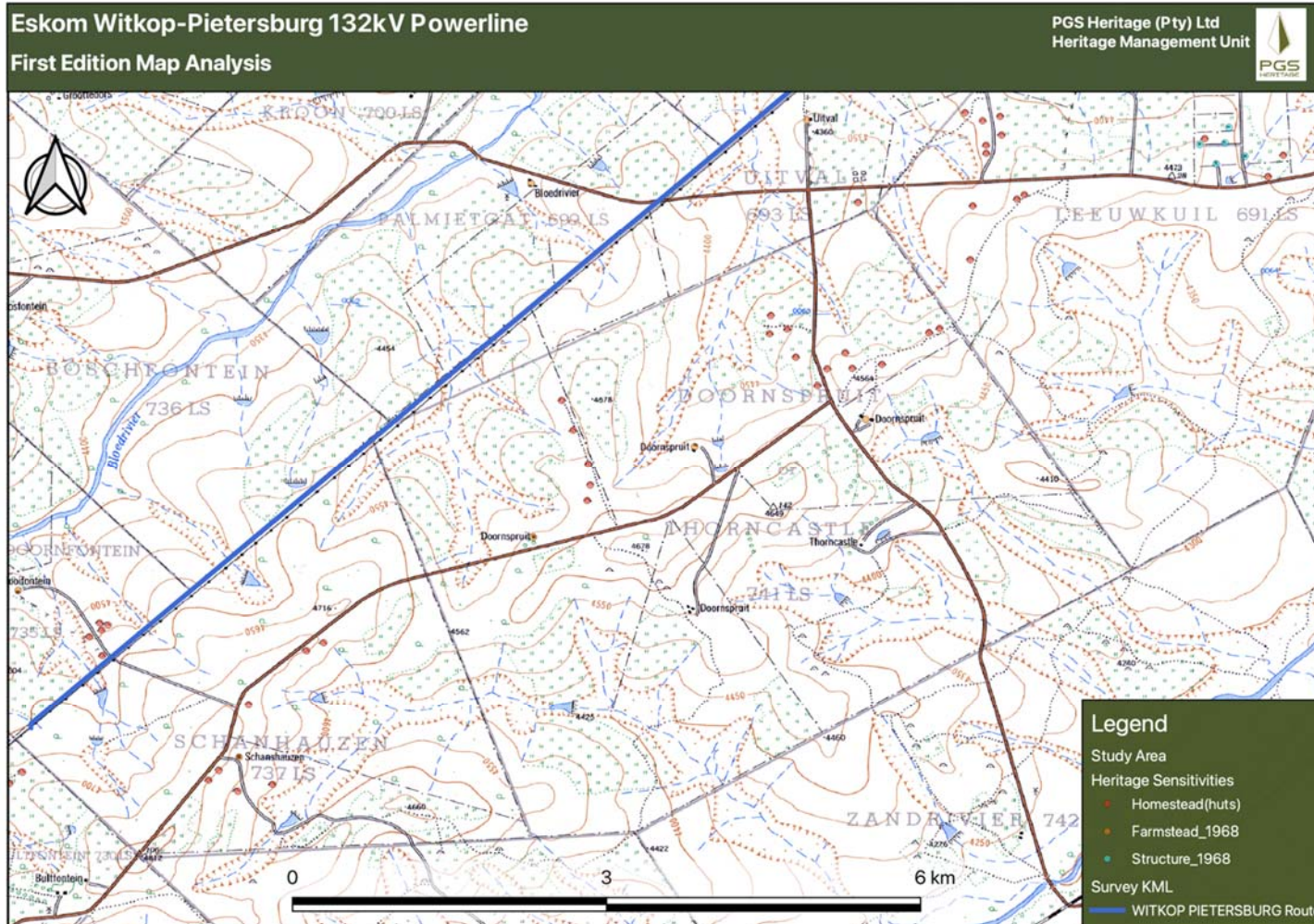


Figure 22 - Enlarged section of 2329CD Ed 1 1968 sheet, depicting homesteads (red point) and farmsteads (orange point) adjacent to the study area.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 34

5.4 Previous Archaeological and Heritage Studies from the General Region around the Study Area

A search on the SAHRIS database for previous reports submitted to SAHRA produced eleven archaeological and heritage impact assessment reports that were relevant to this assessment. See the summarised details of these reports below (chronological order).

- **Van Schalkwyk, L. 2006. Phase Heritage Impact Assessment of Chuniespoort Dam, Polokwane, Limpopo Province, South Africa. Prepared for Cave Klapwijk & Associates.** *This report addressed the proposed development located approx. 35km south-east of the current study area. No heritage resources of importance were noted.*
- **Roodt, F. 2007a. Phase 1 Heritage Resources Scoping Report: Bakone Substation & Powerline, Polokwane, Limpopo. Prepared for Lafarge Mining South Africa (Pty) Ltd.** *This report addressed the proposed construction of a substation and powerline located approx. 14km north-east of the current study area. A recent historical stone built structure and numerous Iron Age (stone walled) sites were recorded. Some isolated and scattered (low density) MSA flakes were also identified.*
- **Roodt, F. 2007b. Phase 1 Heritage Resources Impact Assessment (Scoping & Evaluation) Development of an Industrial Storage Yard on the Farm Rietfontein 743 LS: Polokwane. Prepared for Africa Geo-Environmental Services.** *This report addressed the proposed development located approx. 9km south of the current study area. No heritage resources of importance were noted. A LIA stone walled archaeological site was identified against the slope of a granite kopje directly north of the proposed project. This site was only discernible by ash and kraal deposits demarcated by the aloe growth on the terrain.*
- **Roodt, F. 2008. Heritage Impact Assessment Report: Residential Development Roodepoort 744 LS Port. 4 & Langgenoeg 745 LS Port. 1 Polokwane, Limpopo. Prepared for Gideon De Klerk, Envirodel.** *This report addressed the proposal for a residential development located approx. 11km south-east of the current study area. MSA flakes were scattered over the site in low densities and one site near an old earth dam contained higher concentrations of flakes. Several Iron Age (stonewalled) sites and sites with concentrations of pottery fragments were identified. Some historical remains were also noted (incl. original farmhouse, circular stone foundation remains and a rectangular stone structure).*
- **Pelser, A. G. 2012. Report On An Archaeological Impact Assessment For The Expansion Of The Lafarge Aggregate Quarry Near Polokwane, Limpopo Province. Prepared for Lafarge Mining South Africa (Pty) Ltd.** *This report addressed the proposed quarry expansion project is located approx. 12km south-east of the current study area. Several Iron Age sites (stone walling, terraces,*

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 35

pottery, animal bones), human remains, a recent historical cemetery, decorated pottery and old drills (related to historical quarrying) were recorded.

- **Heritage Contracts and Archaeological Consulting cc. 2013. Archaeological Scoping Report for the Proposed Kison Solar Energy Facility and Associated Infrastructure, Polokwane, Limpopo Province. Prepared for Savannah Environmental (Pty) Ltd.**

This report addressed the proposal for a solar facility located approx. 7km south-east of the current study area. No sites of archaeological or heritage significance were identified during the desktop study.

- **G & A Heritage. 2016. Heritage Impact Assessment Report for the Proposed Polokwane Outfall Sewer Route and Waste Water Treatment Works, Limpopo Province. Prepared for Developlan.**

This report addressed the proposal for a sewer route and wastewater treatment works facility located approx. 4km north-east of the current study area. Only one structure that could possibly be a grave and a small piece of vitrified clay was identified.

- **Van Vollenhoven, A. C. (Archaetnos cc) 2017. A Report on a Cultural Heritage Impact Assessment for the Proposed Polokwane Smelter SO2 Abatement Project, Limpopo Province. Prepared for WSP/ Parsons Brinckerhoff, Environment and Energy, Africa.**

This report addressed the development of a smelter located approx. 22km south-east of the current study area. No sites of cultural heritage significance were identified.

- **Roodt, F. 2018. Heritage Impact Assessment Report: Proposed Polokwane Solar Park. Polokwane Local Municipality. Capricorn District. Limpopo Province. Prepared for Phakanani Environmental.**

This report addressed the development of a proposed Solar Park located approx. 23km south-east of the current study area. A total of 14 heritage sites were recorded. No Stone Age material was recorded in the project area. One LIA farming settlement, twelve historical settlements and homesteads and one deliberate quartzite stone-packed feature was identified.

- **G & A Heritage. 2019. Heritage Impact Assessment for the Proposed Refurbishment Actions at Mac Beef Abattoir and Feedlot located on the Farm Leeukuil 691- LS Portions 70, 85, 86, 87, 114, 122 & 123 in the Polokwane Local Municipality, Capricorn District of the Limpopo Province. Prepared for Tekplan.**

This report addressed the proposed refurbishment actions at an abattoir located approx. 2km south of the current study area. A single stone tool of the Pietersburg Industry was found out of context as well as the remains of an old homestead (destroyed).

- **Roodt, F. 2020. Phase 1 Cultural Heritage Impact Assessment Report: Proposed Eskom Aloe 132kV Substation and Lilo Powerlines, Polokwane Local Municipality, Capricorn District, Limpopo Province. Prepared for GladAfrica House.**

This report addressed the proposal for a substation and powerlines approx. 21km east of the current study area. The report identified several LIA (stone walled sites) and early historical period sites. An informal cemetery, single ESA hand axe, dam wall, modern

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 36

abandoned farmhouse and a concrete reservoir and livestock drinking trough were also recorded.

5.5 Previous Archaeological and Heritage Study conducted for the powerline alignment

- **Pistorius, J. C. C. 2010. A PHASE I HERITAGE IMPACT ASSESSMENT (HIA) STUDY FOR ESKOM'S PROPOSED 132kV POWER LINE RUNNING BETWEEN THE WITKOP AND PIETERSBURG SUBSTATIONS NEAR POLOKWANE IN THE LIMPOPO PROVINCE OF SOUTH AFRICA. Prepared for Eskom Northern Region.**

This report revealed Stone walled settlements dating from the LIA in a poort in the Witkoppen Mountains (Thaba Tsewu); remains from the recent past located in the same poort in the Witkoppen Mountains and a graveyard under an existing Eskom power line and possible graves in a sisal bush. The Stone walled settlements may have been occupied by Langa Ndebele from the 17th century.

5.6 Palaeontology

According to the Palaeosensitivity Map available on the South African Heritage Resources Information System database (SAHRIS), the Palaeontological Sensitivity of the proposed development area is rated as Insignificant/Zero (**Figure 23**). No further palaeontological studies are required.

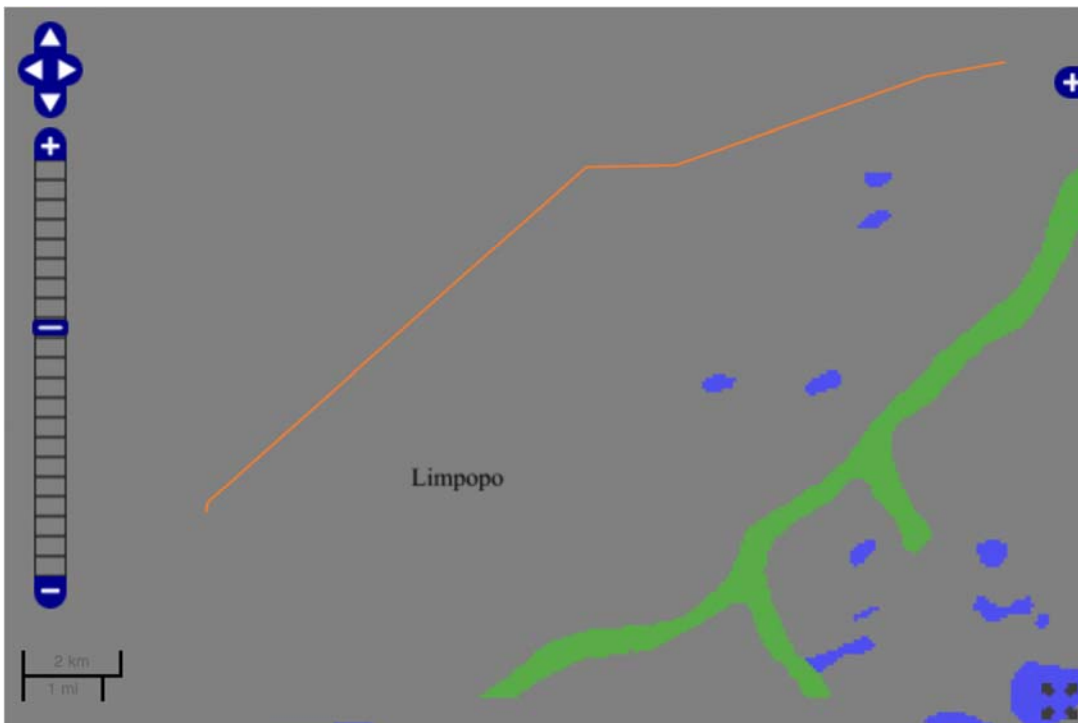


Figure 23 - Extract of the 1: 250 000 SAHRIS Palaeosensitivity Map (Council of Geosciences). Approximate location of the proposed powerline (orange line).

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 37

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 24 – Key to the SAHRIS palaeontological map.

5.7 Findings of the Historical Desktop Study

The findings can be compiled as follows and have been combined to produce a heritage sensitivity map for the project based on the desktop assessment.

5.7.1 Heritage Sensitivity

The sensitivity maps were produced by overlying:

- Satellite Imagery;
- Current Topographical Maps;
- First edition Topographical Maps dating from the 1960's.

This enabled the identification of possible heritage sensitive areas around the proposed development area that included:

- Cluster of dwellings (farmsteads);
- Homesteads (“huts”) and
- Structures/Buildings.

By superimposition and analysis, it was possible to rate these structure/areas according to age and thus their level of protection under the NHRA. Note that these structures refer to possible tangible heritage sites as listed in **Table 9**.

Table 9 - Tangible heritage site in the study area

Name	Description	Legislative protection
Architectural Structures/Dwellings	Possibly older than 60 years	NHRA Sect 3 and 34
Archaeological sites	Artefacts and/or structures/sites	NHRA Sect 3 and 35 and Sect 27

Additionally, the evaluation of satellite imagery has indicated that certain areas may be sensitive from a heritage perspective. The analysis of the heritage studies conducted in the area has assisted in the development of the following landform type to heritage find matrix (**Table 10**).

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 38

Table 10 - Landform type to heritage find matrix

Landform Type	Heritage Type
Crest and foot hill	LSA and MSA scatters, LIA settlements
Crest of small hills	Small LSA sites – scatters of stone artefacts, ostrich eggshell, pottery and beads
Watering holes/Pans/Rivers	LSA sites, LIA settlements
Farmsteads	Historical archaeological material
Ridges and drainage lines	LSA sites, LIA settlements
Forested areas	LIA sites

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 39

6 FIELD WORK FINDINGS¹¹

A controlled surface survey was conducted on foot and by a vehicle by two archaeologists from PGS, between the 21-22 June 2022. The fieldwork component of the study was aimed at identifying tangible remains of archaeological, historical and heritage significance. At times, the archaeological visibility of the area was not ideal for surveying due to dense grass and thorny vegetation cover.

The fieldwork component consisted of a walkdown of the proposed powerline route and aimed at identifying heritage resources falling within the impact areas.

Heritage resources are unique and non-renewable and as such any impact on such resources must be seen as significant. The locations of finds were recorded using a GPS device and photographs were taken of the identified finds and general landscape of the proposed development area. The recorded track logs show the routes followed by the fieldwork team on site (yellow tracks, **Figure 25**).

The fieldwork conducted for the evaluation of the possible impact of the proposed powerline has revealed the presence of four (4) heritage resources (**Figure 26** and **Figure 27**). These include:

- One (1) burial ground (**WP01**)
- One (1) possible grave site (**WP02**)
- One (1) pottery cluster (**WP03**)
- One (1) Low-density surface scatter/findspot (**WP04**)

Refer to **Appendix B** for full site descriptions (incl. photographs).

¹¹ Site in this context refers to a place where a heritage resource is located and not a proclaimed heritage site as contemplated under s27 of the NHRA.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg 132kV Powerline	2.0	04/08/2022	Page 40



Figure 25 – Satellite Image showing the tracklog (yellow tracks) of the field survey.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg 132kV Powerline	2.0	04/08/2022	Page 41

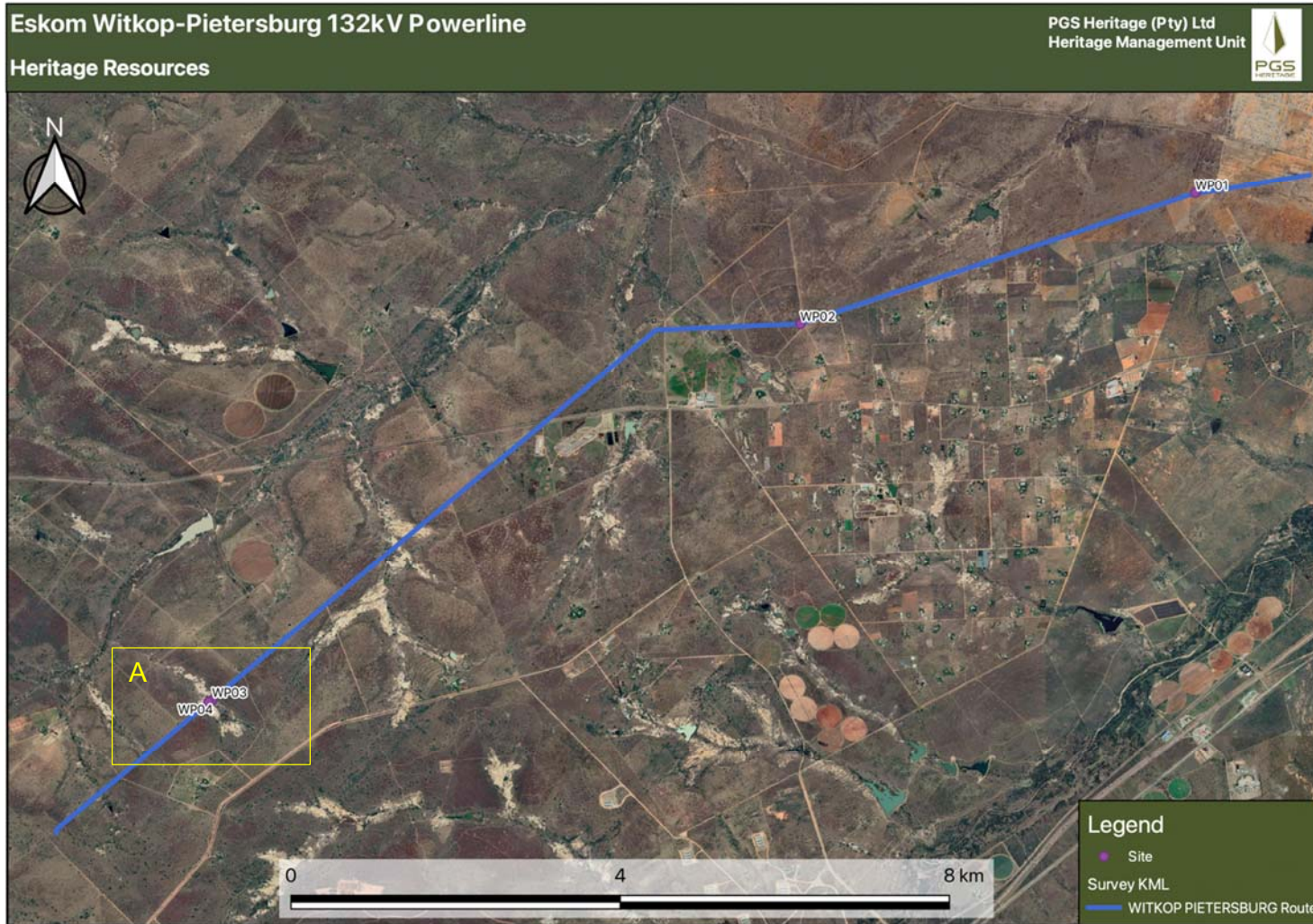


Figure 26 – Satellite Image showing the finds identified during the fieldwork. See inset A below.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg 132kV Powerline	2.0	04/08/2022	Page 42

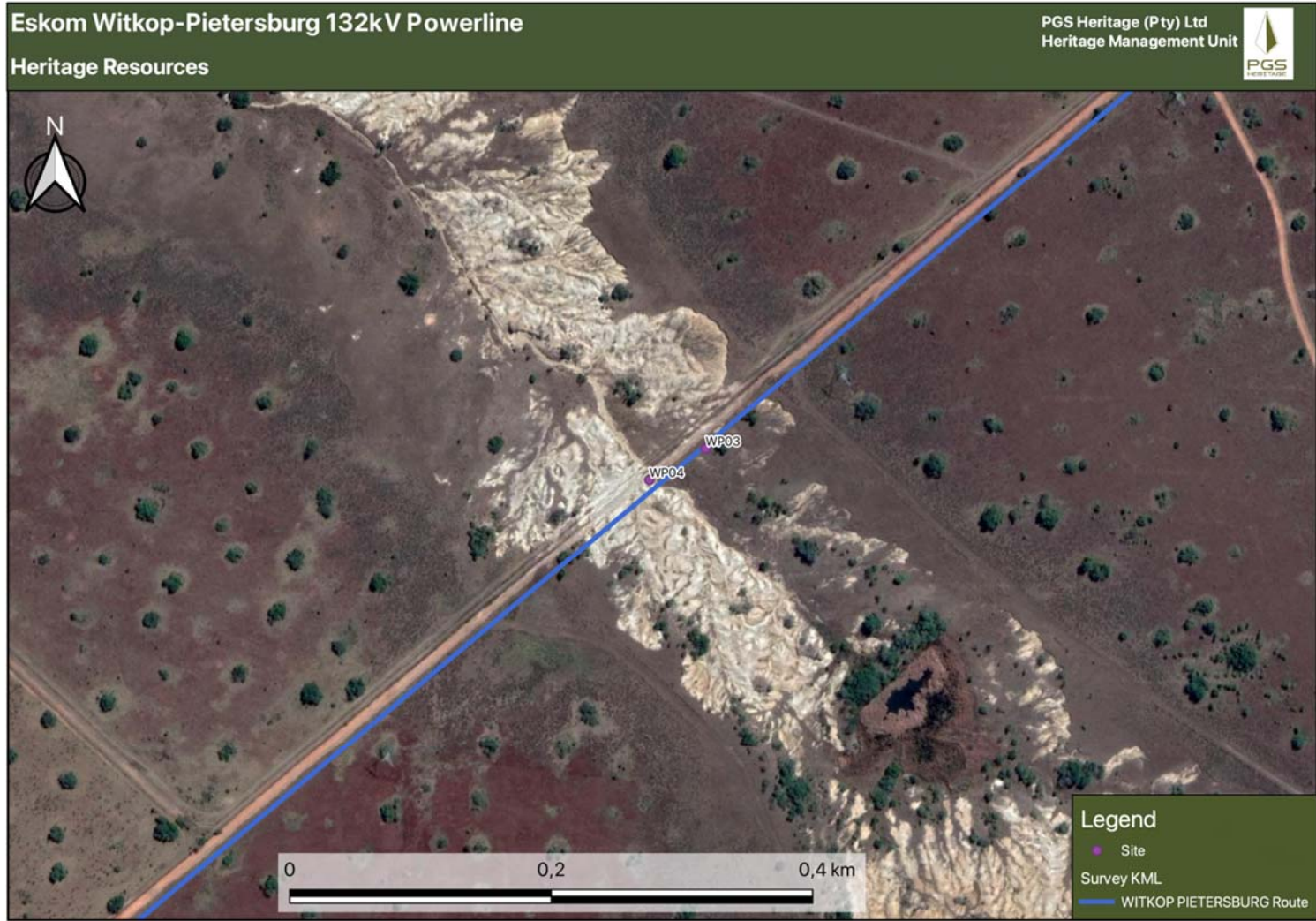


Figure 27 – Finds identified in the study area. Inset A.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 43

6.1 Sites Identified During the Survey

Table 11 - Heritage resources noted during the field assessment

Site Nr	Site Co-ordinates		Time Period	Brief Site Description	Grading	Heritage Significance
	X (Lon)	Y (Lat)				
WP01	29.38945	-23.89294	Historical Period/Recent	Burial ground located within an overgrown bushy environment. Both formal and informal graves.	Grade 3 - A (IIIA)	High
WP02	29.34228	-23.9085	Historical Period	Possible Graves located within an overgrown bushy environment. The site was recorded out of caution because the piles of rocks resemble a grave.	Grade 3 - A (IIIA)	High
WP03	29.27202	-23.95349	Iron Age	Pottery Cluster exposed by erosion. Undecorated pieces.	NCW	No research potential or other cultural significance
WP04	29.271598	-23.953724	Stone Age	Low Density Surface Scatter of Lithics (findspot) exposed by erosion. Fine grained quartzite and vein quartz flakes.	NCW	No research potential or other cultural significance

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 44

6.2 Selected Photographic Record



Figure 28 – Formal grave observed at WP01.



Figure 29 – Informal grave observed at WP01.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 45



Figure 30 - Undecorated pottery recorded at WP03.



Figure 31 - View of artefacts identified at WP04.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 46

7 IMPACT ASSESSMENT

7.1 Impact Assessment Methodology

The following Assessment Methodology has been supplied by ACER.

The EIA Team has adopted a set of conventions for purposes of the integrated assessment of potential impacts, and the determination of impact significance. The following list of conventions must be used by specialists when undertaking their discipline-specific assessments.

The EIA Team has adopted a set of conventions for purposes of the integrated assessment of potential impacts, and the determination of impact significance. The following list of conventions must be used by specialists when undertaking their discipline-specific assessments.

- Direct impacts are impacts that are caused directly by the activity and generally occur at the same time and at the place as the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable.
- Indirect impacts of an activity are indirect or induced changes that may occur because of the activity. These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken, or which occur at a different place because of the activity.
- Cumulative impacts are those that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities. Cumulative impacts can occur from the collective impacts of individual minor actions over time and can include both direct and indirect impacts.
- Nature – the evaluation of the nature is impact specific. Most negative impacts will remain negative, however, after mitigation, significance should reduce:
 - Positive.
 - Negative.
- Spatial extent – the size of the area that will be affected by the impact:
 - Site specific.
 - Local (limited to the immediate areas around the site; < 2 km from site).
 - Regional (would include a major portion of an area; within 30 km of site).
 - National or International.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 47

- Duration – the timeframe during which the impact will be experienced:
 - Short-term (0-3 years or confined to the period of construction).
 - Medium-term (3-10 years).
 - Long-term (the impact will only cease after the operational life of the activity).
 - Permanent (beyond the anticipated lifetime of the project).

- Intensity – this provides an order of magnitude of whether the intensity (magnitude/size/frequency) of the impact would be negligible, low, medium, or high):
 - Negligible (inconsequential or no impact).
 - Low (small alteration of natural systems, patterns, or processes).
 - Medium (noticeable alteration of natural systems, patterns, or processes).
 - High (severe alteration of natural systems, patterns, or processes).

- Frequency – this provides a description of any repetitive, continuous, or time-linked characteristics of the impact:
 - Once Off (occurring as single events any time during construction).
 - Intermittent (occurring from time to time, without specific periodicity).
 - Periodic (occurring at more or less regular intervals).
 - Continuous (without interruption).

- Probability – the likelihood of the impact occurring:
 - Improbable (very low likelihood that the impact will occur).
 - Probable (distinct possibility that the impact will occur).
 - Highly probable (most likely that the impact will occur).
 - Definite (the impact will occur).

- Irreplaceability – of resource loss caused by impacts:
 - High irreplaceability of resources (the project will destroy unique resources that cannot be replaced).
 - Moderate irreplaceability of resources (the project will destroy resources, which can be replaced with effort).
 - Low irreplaceability of resources (the project will destroy resources, which are easily replaceable).

- Reversibility – this describes the ability of the impacted environment to return/be returned to its pre-impacted state (in the same or different location):
 - Impacts are non-reversible (impact is permanent).
 - Low reversibility.
 - Moderate reversibility of impacts.
 - High reversibility of impacts (impact is highly reversible at end of project life).

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 48

- Significance – the significance of the impact on components of the affected environment (and, where relevant, with respect to potential legal infringement) is described as:
 - Low (the impact will not have a significant influence on the environment and, thus, will not be required to be significantly accommodated in the project design).
 - Medium (the impact will have an adverse effect or influence on the environment, which will require modification of the project design, the implementation of mitigation measures or both).
 - High (the impact will have a serious effect on the environment to the extent that, regardless of mitigation measures, it could block the project from proceeding).

- Confidence – the degree of confidence in predictions based on available information and specialist knowledge:
 - Low.
 - Medium.
 - High.

7.2 General Observations

In this section, an assessment will be made of the impact of the proposed development on the identified heritage sites. An overlay of all the heritage sites identified during the fieldwork over the proposed development footprint areas was made to assess the impact of the proposed development on these identified heritage sites. This overlay resulted in the following observations:

The following general observations will apply for the impact assessment undertaken in this report:

- Heritage sites assessed to have a low heritage significance are not included in these impact risk assessment calculations. The reason for this is that sites of low significance will not require mitigation. These sites are the pottery cluster (**WP03**) and the low-density surface scatter/findspot (**WP04**).
- It is necessary to realise that the heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the area. Various factors account for this, including the size of the study area and the subterranean nature of some heritage sites. The impact assessment conducted for heritage sites assumes the possibility of finding heritage resources during the project life and has been conducted as such.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 49

7.3 Impact Rating Tables

The following impact rating table is based on the proposed development layout within the region.

Description and Nature of Impact	Unmitigated versus mitigated	Nature (Positive, Negative, Neutral)	Spatial Extent (Site Specific, Local, Regional, National/International)	Duration (Short-term, Medium-term, Long-term, Permanent)	Intensity (Negligible, Low, Medium, High)	Frequency (Once off, Intermittent, Periodic, Continuous)	Irreplaceable loss of resources (Low, Moderate, High)	Reversibility of Impacts (Non-reversible, Low, Moderate, High)	Probability (Improbable, Probable, Highly Probable, Definite)	Significance (Low, Medium, High)	Confidence (Low, Medium, High)
Disturbance, Damage, or destruction to burial ground (WP01).	Unmitigated	Negative	Regional	Permanent	Medium	Once-off	High	Non-reversible	Probable	Medium	High
	Mitigated	Negative	Local	Permanent	Low	Once-off	High	Non-reversible	Improbable	Low	High
Disturbance, Damage, or destruction to possible grave (WP02).	Unmitigated	Negative	Regional	Permanent	Medium	Once-off	High	Non-reversible	Probable	Medium	High
	Mitigated	Negative	Local	Permanent	Low	Once-off	High	Non-reversible	Improbable	Low	High

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg 132kV Powerline	2.0	04/08/2022	Page 50

7.4 Cumulative Impacts

This section evaluates the possible cumulative impacts (IC) on heritage resources with the addition of the proposed 132kV powerline route.

The following must be considered in the analysis of the cumulative effect of development on heritage resources:

- **Fixed datum or dataset:** There is no comprehensive heritage data set for the Polokwane region and thus we cannot quantify how much of a specific cultural heritage element is present in the region. The region has never been covered by a heritage resources study that can account for all heritage resources. Further to this none of the heritage studies conducted can with certainty state that all heritage resources within the study area has been identified and evaluated;
- **Defined thresholds:** The value judgement on the significance of a heritage site will vary from individual to individual and between interest groups. Thus, implicating that heritage resources' significance can and does change over time. And so, will the tipping threshold for impacts on a certain type of heritage resource;
- **Threshold crossing:** In the absence of a comprehensive dataset or heritage inventory of the entire region we will never be able to quantify or set a threshold to determine at what stage the impact from developments on heritage resources has reached or is reaching the danger level or excludes the new development on this basis. (Godwin, 2011)

With regards to the heritage resources, in most cases given a low-medium heritage significance on a local scale and in the majority of the cases were recommended as being easily mitigated or avoidable. While the graves sites in all cases given a high heritage significance on a local scale and in the majority of the cases were recommended as being no-go areas or extensive mitigation required.

Table 12, provides an analysis of the projected cumulative impact this project will add to impact on heritage resources.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 51

Table 12 – Cumulative Impact Table for heritage resources

Description and Nature of Impact		Nature (Positive , Negative , Neutral)	Spatial Extent (Site Specific, Local, Regional, National/Intern ational)	Duration (Short-term, Medium- term, Long- term, Permanent)	Intensity (Negligible , Low, Medium, High)	Frequency (Once off, Intermittent, Periodic, Continuous)	Irreplaceable loss of resources (Low, Moderate, High)	Reversibility of Impacts (Non- reversible, Low, Moderate, High)	Probability (Improbable, Probable, Highly Probable, Definite)	Significance (Low, Medium, High)	Confidence (Low, Medium, High)
The extent that the addition of this project will have on the overall impact of developments in the region on heritage resources. Cumulative impacts to heritage resources would occur during the construction and operation phase when the ground surface is cleared for the power pylons and service roads are excavated.	Overall impact of the proposed project considered in isolation	Negative	Site Specific	Permanent	Low	Once-off	High	Non-reversible	Improbable	Low	Medium
	Cumulative impact of the project and other projects in the area	Negative	Regional	Permanent	Moderate	Once-off	High	Non-reversible	Improbable	Low	Medium

Mitigation:

It can clearly be noted that the area in general is abundant with historical remains. However, until a regional detailed study is commissioned by SAHRA, no further mitigations measures can be proposed other than those already recommended for the site-specific mitigation of sites in this report.

Residual Impacts:

Considering the nature of the site identified in the present study, the residual risk will be moderate.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 52

7.5 Overall Impact Rating

It is the author's considered opinion that this additional load on the overall impact on heritage resources will be **low**. With a detailed and comprehensive regional dataset this rating could possibly be adjusted and more accurate.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 53

8 MANAGEMENT RECOMMENDATIONS AND GUIDELINES

8.1 Construction Phase

The project will encompass a range of activities during the pre-construction and construction phases, including vegetation clearance and excavations for powerline poles.

It is possible that cultural material will be exposed during the abovementioned activities, and may be recoverable, keeping in mind delays can be costly during construction and as such must be minimised. Development surrounding infrastructure results in significant disturbance, however, powerline foundation holes do offer a window into the past and it thus may be possible to rescue some of the data and materials.

During the pre-construction and construction phases, it is important to recognize any significant material being unearthed, making the correct judgment on which actions should be taken. It is recommended that the following chance find procedure should be implemented.

8.2 Chance Find Procedure

- An appropriately qualified heritage practitioner/archaeologist must be identified to be called upon if any possible heritage resources or artefacts are identified.
- Should an archaeological site or cultural material be discovered during construction (or operation), the area should be demarcated, and construction activities halted.
- The qualified heritage practitioner/archaeologist will then need to come out to the site and evaluate the Heritage resources and make the necessary recommendations for mitigating the find and the impact on the heritage resource.
- The contractor therefore should have some sort of contingency plan so that operations could move elsewhere temporarily while the materials and data are recovered.
- Construction can commence as soon as the site has been cleared and signed off by the heritage practitioner/archaeologist.

8.3 Possible finds during Construction

The study area occurs within a region that holds both historical and the archaeological significance, as identified during the desktop and fieldwork phase. Bush clearance and trenching could uncover the following:

- High density concentrations of stone artefacts
- Stone walling
- Unmarked graves

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 54

8.4 Timeframes

It must be kept in mind that mitigation and monitoring of heritage resources discovered during construction activity will require permitting for collection or excavation of heritage resources and lead times must be worked into the construction time frames. **Table 13** gives guidelines for lead times on permitting.

Table 13 - Lead times for permitting and mobilisation

ACTION	RESPONSIBILITY	TIMEFRAME
Preparation for field monitoring and finalisation of contracts	The contractor and service provider	1 MONTH
Application for permits to do necessary mitigation work	Service provider – Archaeologist and SAHRA	3 MONTHS
Documentation, excavation, and archaeological report on the relevant site	Service provider – Archaeologist	3 MONTHS
Handling of chance finds – Graves/Human Remains	Service provider – Archaeologist and SAHRA	2 WEEKS
Relocation of burial grounds or graves in the way of construction	Service provider – Archaeologist, SAHRA, local government and provincial government	6 MONTHS

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 55

8.5 HERITAGE MANAGEMENT PLAN FOR EMPR IMPLEMENTATION

Table 14 - Heritage Management Plan for EMPr implementation

Area and site no.	Mitigation measures	Phase	Timeframe	The responsible party for implementation	Monitoring Party (frequency)	Target	Performance indicators (monitoring tool)
General project area	Implement chance find procedures in case where possible heritage finds are uncovered.	Construction and operation	During construction and operation	Applicant ECO Heritage Specialist	ECO (monthly / as or when required)	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 34-36 and 38 of NHRA	ECO Monthly Checklist/Report
Burial ground (WP01) that was located within the proposed development area and was rated as high local heritage significance and had a heritage grading of IIIA.	<ul style="list-style-type: none"> ▪ The site should be demarcated with a 50-meter no-go-buffer-zone and the graves should be avoided and left in situ. ▪ A Grave Management Plan should be developed for the graves, to be implemented during the construction and operation phases (which needs approval by SAHRA). ▪ If the site is going to be impacted directly and the graves need to be removed, a grave relocation process for these sites is recommended as a mitigation and management measure. This will involve the necessary social 	Pre-construction	Pre-construction	Applicant ECO Archaeologist	None	Ensure compliance with relevant legislation and recommendations from HWC under Section 36 and 38 of NHRA	ECO Monthly checklist/report

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 56

Area and site no.	Mitigation measures	Phase	Timeframe	The responsible party for implementation	Monitoring Party (frequency)	Target	Performance indicators (monitoring tool)
	consultation and public participation process before grave relocation permits can be applied for with SAHRA under the NHRA and National Health Act regulations.						
Possible grave (WP02) that was located within the proposed development area and was rated as high local heritage significance and had a heritage grading of IIIA.	<ul style="list-style-type: none"> ▪ Until such time that the presence of a grave at the site has been tested, the stone concentration must be viewed as containing a grave. ▪ The possible grave should be demarcated with a 50-meter buffer and should be avoided and left in situ. <p>If the grave cannot be avoided:</p> <ul style="list-style-type: none"> ▪ A Grave Management Plan should be developed for the grave, which also need to be approved by SAHRA BGG. ▪ If the site cannot be avoided and the site is going to be impacted, then an application to SAHRA, will be required for a test excavation and/or GPR permit to determine if the site contains graves. ▪ If human remains are discovered, a grave relocation process is recommended as a mitigation and management 	Pre-construction	Pre-construction	Applicant ECO Archaeologist	None	Ensure compliance with relevant legislation and recommendations from HWC under Section 36 and 38 of NHRA	ECO Monthly checklist/report

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 57

Area and site no.	Mitigation measures	Phase	Timeframe	The responsible party for implementation	Monitoring Party (frequency)	Target	Performance indicators (monitoring tool)
	<p>measure. This will involve the necessary social consultation and public participation process before grave relocation permits can be applied for with the SAHRA BGG, under the NHRA and National Health Act regulations.</p> <ul style="list-style-type: none"> If, during test excavations, it is determined that the site does not contain graves, no further mitigation will be required. 						
Pottery cluster (WP03) rated to have no research potential or other cultural significance and had a heritage grading of NCW.	<ul style="list-style-type: none"> No mitigation required 	Pre-construction	Pre-construction	Applicant ECO Archaeologist	None	Ensure compliance with relevant legislation and recommendations from HWC under Section 36 and 38 of NHRA	ECO Monthly checklist/report
Low-density surface scatter/findspot (WP04) rated to have no research potential or other cultural significance and had a heritage grading of NCW.	<ul style="list-style-type: none"> No mitigation required 	Pre-construction	Pre-construction	Applicant ECO Archaeologist	None	Ensure compliance with relevant legislation and recommendations from HWC under Section 36 and 38 of NHRA	ECO Monthly checklist/report
Possible graves	<ul style="list-style-type: none"> When graves are discovered/ uncovered the site should be demarcated with a 30-meter no-go-buffer-zone and the grave should be avoided. 	Construction	During Construction	Applicant EO Heritage Specialist	EO (monthly / as or when required)	Ensure compliance with relevant legislation and recommendations from ECPHRA	EO Monthly Checklist/Report

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 58

Area and site no.	Mitigation measures	Phase	Timeframe	The responsible party for implementation	Monitoring Party (frequency)	Target	Performance indicators (monitoring tool)
	<ul style="list-style-type: none"> ▪ If human remains are discovered a grave relocation process is recommended as a mitigation and management measure. This will involve the necessary social consultation and public participation process before grave relocation permits can be applied for with the SAHRA BGG, under the NHRA and National Health Act regulations. ▪ If during the test excavations it is determined that the feature is not a grave, the site will then have no heritage significance and require no further mitigation. 					under Section 36 and 38 of NHRA	

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg 132kV Powerline	2.0	04/08/2022	Page 59

9 CONCLUSIONS AND RECOMMENDATIONS

PGS was appointed by ACER, on behalf of Eskom, to conduct a HIA as part of the BA for the proposed Witkop-Pietersburg 132kV grid connection, within the Polokwane Local Municipality and the Capricorn District Municipality in the Limpopo Province.

Heritage resources are unique and non-renewable and as such, any impact on such resources must be seen as significant. The HIA has shown that the study area and surrounding area has some heritage resources situated within the proposed development boundaries. Through data analysis and a site investigation, the following issues were identified from a heritage perspective.

9.1 Fieldwork

9.1.1 Heritage Resources

The fieldwork component of the study was aimed at identifying tangible remains of archaeological, historical and heritage significance. The fieldwork was undertaken by way of intensive walkthroughs of the study area. The fieldwork component consisted of a walkdown of the alignment and aimed at identifying heritage resources falling within the impact areas.

At times, the archaeological visibility of the area was not ideal for surveying due to dense grass and thorny vegetation cover.

A field survey of the proposed development area was undertaken on foot and by a vehicle by two PGS archaeologists (Nikki Mann and Wynand van Zyl) between 21-22 June 2022. The fieldwork conducted for the evaluation of the possible impact of the 132kV grid connection has revealed the presence of four (4) heritage resources.

One (1) burial ground (**WP01**) and one (1) possible grave site (**WP02**) were rated as having **high heritage significance**.

One (1) pottery cluster (**WP03**) and one (1) low-density surface scatter/findspot (**WP04**) were rated as having **no heritage significance**.

9.2 Anticipated Impacts on Heritage Resources

The pre-construction and construction phase of the proposed development will entail extensive surface clearance (e.g., vegetation clearance approx. 4-8m either side of the powerline) as well as excavations into the superficial sediment cover and underlying bedrock (e.g., for powerline poles).

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 60

9.2.1 Burial grounds and graves

One (1) burial ground (**WP01**) and one (1) possible grave site (**WP02**) were identified within the proposed development areas. Burial grounds and graves have high heritage significance and are given a IIIA significance rating in accordance with the system described in **Section 4** of this document.

Burial grounds and graves are protected under Section 36 of the NHRA 25 of 1999. Thus, the sites are provisionally rated as having a high heritage significance with a heritage rating of IIIA. All graves have high levels of emotional, religious and in some cases historical significance. It is also important to understand that the identified graves could have significant heritage value to the relevant families.

The possible pre-construction impacts calculated on the tangible cultural heritage resources is overall **MODERATE NEGATIVE** rating but with the implementation of the recommended buffers and management guidelines will be reduced to a **LOW NEGATIVE** impact.

9.2.2 Iron Age site

One (1) pottery cluster (**WP03**) was assessed to have no heritage significance and is therefore not included in the impact assessment. The reason for this is that sites of low significance will not require mitigation.

9.2.3 Stone Age site

One (1) low-density surface scatter/findspot (**WP04**) was assessed to have no heritage significance and is therefore not included in the impact assessment. The reason for this is that sites of low significance will not require mitigation.

9.3 Palaeontology

According to the Palaeosensitivity Map available on the South African Heritage Resources Information System database (SAHRIS), the Palaeontological Sensitivity of the proposed development area is rated as Insignificant/Zero. No further palaeontological studies are required.

9.4 Recommendations

The calculated impact as summarised in **Section 7** of this report confirms the impact of the proposed 132kV grid connection will be reduced with the implementation of the mitigation measures. This finding

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 61

in addition to the implementation of a chance finds procedure, as part of the EMP, will mitigate possible impacts on unidentified heritage resources. The following mitigation measures are listed in **Table 15**.

Table 15 - Heritage management recommendations.

Area and site no.	Mitigation measures
General project area	<ul style="list-style-type: none"> ▪ Implement a chance to find procedures in case where possible heritage finds are uncovered.
Burial ground (WP01) rated as high local heritage significance and had a heritage grading of IIIA.	<ul style="list-style-type: none"> ▪ The site should be demarcated with a 50-meter no-go-buffer-zone and the graves should be avoided and left in situ. ▪ A Grave Management Plan should be developed for the graves, to be implemented during the construction and operation phases (which needs approval by SAHRA). ▪ If the site is going to be impacted directly and the graves need to be removed a grave relocation process for these sites is recommended as a mitigation and management measure. This will involve the necessary social consultation and public participation process before grave relocation permits can be applied for with SAHRA under the NHRA and National Health Act regulations.
Possible grave site (WP02) that was located within the proposed development area and was rated as high local heritage significance and had a heritage grading of IIIA.	<ul style="list-style-type: none"> ▪ Until such time that the presence of a grave at the site has been tested, the stone concentrations must be viewed as containing a grave. ▪ The possible graves should be demarcated with a 50-meter buffer and should be avoided and left in situ. <p>If the grave cannot be avoided:</p> <ul style="list-style-type: none"> ▪ A Grave Management Plan should be developed for the grave which also need to be approved by SAHRA BGG. ▪ If the site cannot be avoided, then an application to SAHRA will be required for a test excavation and/or GPR permit to determine if the site contains graves. ▪ If human remains are discovered a grave relocation process is recommended as a mitigation and management measure. This will involve the necessary social consultation and public participation process before grave relocation permits can be applied for with the SAHRA BGG under the NHRA and National Health Act regulations. ▪ If, during test excavations, it is determined that the site does not contain graves, no further mitigation will be required.
Pottery cluster (WP03) rated to have no research potential or other cultural significance and had a heritage grading of NCW.	<ul style="list-style-type: none"> ▪ No mitigation is required.
Low-density surface scatter/findspot (WP04) rated to have no research potential or other cultural significance and had a heritage grading of NCW.	<ul style="list-style-type: none"> ▪ No mitigation is required.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 62

9.5 General

In the event that heritage resources are discovered during site clearance, construction activities must stop in the vicinity, and a qualified archaeologist must be appointed to evaluate and make recommendations on mitigation measures.

It is the author's considered opinion that overall impact of the proposed grid connection on heritage resources is **Low**. Provided that the delineated no-go areas are avoided, and the recommended mitigations are applied, the impact would be acceptably Low or could be totally mitigated to the degree that the project could be approved from a heritage perspective. The management and mitigation measures as described in **Section 8** of this report have been developed to minimise the project impact on heritage resources.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 63

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Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 64

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Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 65

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Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 66

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Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 67

APPENDIX A – Project team CVs

WOUTER FOURIE

Professional Heritage Specialist and Professional Archaeologist and Director PGS Heritage

Summary of Experience

Specialised expertise in Archaeological Mitigation and excavations, Cultural Resource Management and Heritage Impact Assessment Management, Archaeology, Anthropology, Applicable survey methods, Fieldwork and project management, Geographic Information Systems, including *inter alia* -

Involvement in various grave relocation projects (some of which relocated up to 1000 graves) and grave “rescue” excavations in the various provinces of South Africa

Involvement with various Heritage Impact Assessments, within South Africa, including -

- Archaeological Walkdowns for various projects
- Phase 2 Heritage Impact Assessments and EMPs for various projects
- Heritage Impact Assessments for various projects
- Iron Age Mitigation Work for various projects, including archaeological excavations and monitoring
- Involvement with various Heritage Impact Assessments, outside South Africa, including -
- Archaeological Studies in Democratic Republic of Congo
- Heritage Impact Assessments in Mozambique, Botswana and DRC
- Grave Relocation project in DRC

Key Qualifications

BA [Hons] (Cum laude) - Archaeology and Geography - 1997

BA - Archaeology, Geography and Anthropology - 1996

Professional Archaeologist - Association of Southern African Professional Archaeologists (ASAPA) - Professional Member

Accredited Professional Heritage Specialist – Association of Professional Heritage Practitioners (APHP) CRM Accreditation (ASAPA) -

- Principal Investigator - Grave Relocations
- Field Director – Iron Age
- Field Supervisor – Colonial Period and Stone Age
- Accredited with Amafa KZN

Key Work Experience

2003- current - Director – Professional Grave Solutions (Pty) Ltd

2007 – 2008 - Project Manager – Matakoma-ARM, Heritage Contracts Unit, University of the Witwatersrand

2005-2007 - Director – Matakoma Heritage Consultants (Pty) Ltd

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 68

2000-2004 - CEO– Matakoma Consultants

1998-2000 - Environmental Coordinator – Randfontein Estates Limited. Randfontein, Gauteng

1997-1998 - Environmental Officer – Department of Minerals and Energy. Johannesburg, Gauteng

Worked on various heritage projects in the SADC region including, Botswana, Mozambique, Malawi, Mauritius, Zimbabwe and the Democratic Republic of the Congo

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 69

PROFESSIONAL CURRICULUM VITAE FOR NIKKI MANN

Key Qualifications:

MSc Archaeology (phytolith analysis) - University of Cape Town - 2017

BSc Honours Archaeology - University of Cape Town – 2014

Bachelor of Science (BSc) - University of Cape Town - Majors in Archaeology, and Environmental and Geographical Science -2013

Professional Archaeologist – Association of Southern African Professional Archaeologists (**ASAPA**)

Archaeological Experience

- 2021- Current – Archaeologist – PGS Heritage (Pty) Ltd
- Kathu Tyre Management Plant HIA. Kathu. EXM. Position: Heritage Specialist.
- Kathu Borrow Pit Screening. Kathu. EXM. Position: Heritage Specialist.
- Harmony Kareerand Pipelines Project. Between Klerkdorp and Potchefstroom, North West Province. EIMS. Position: Heritage Specialist
- Black Mountain PV. Northern Cape. Uvuna. Position: Heritage Specialist
- Proposed amendment of existing mining activities for Kolomela Mine. South-west of Postmasburg, Northern Cape. EXM. Position: Heritage Specialist.
- Proposed amendment of existing mining activities for Kudumane Mine. Hotazel, Northern Cape. SRK. Position: Heritage Specialist.
- Victoria West Pipeline project. Victoria West. iXEng. Position: Heritage Specialist.
- Koup 1 and Koup 2 WEF. Beaufort West, Western Cape. SiVEST. Position: Heritage Specialist.
- Victoria West Pipelines. Victoria West, Northern Cape. iXEng. – Position: Heritage Specialist.
- East Orchards Poultry Farm Project. Delmas, Mpumalanga. EcoSphere. – Position: Heritage Specialist.
- Phase 1 Archaeological Impact Assessment (Phase 1 AIA): Gunstfontein Wind Energy Facility (WEF) and overhead powerline, near Sutherland, Northern Cape, South Africa. – Position: Archaeological Specialist (November 2020).
- Phase 1 Archaeological Impact Assessment (Phase 1 AIA): Proposed development of an overhead powerline for the approved Oya PV Facility, between Sutherland and Matjiesfontein, Northern and Western Cape, South Africa. – Position: Archaeological Specialist (October 2020).
- Phase 1 Archaeological Impact Assessment (Phase 1 AIA): Proposed development of infrastructure for the approved Kudusberg Wind Energy Facility (WEF), between Sutherland and Matjiesfontein, Northern and Western Cape, South Africa. – Position: Archaeological Specialist (October 2020).
- Phase 1 Archaeological Impact Assessment (Phase 1 AIA): Proposed Square Kilometre Array (SKA) fibre optic cable, between Beaufort West and Carnarvon, Northern and Western Cape, South Africa. (September 2020).
- Phase 1 Archaeological Impact Assessment (**Phase 1 AIA**): Kolkies PV (Photovoltaics) Project, north of Touws River, Western Cape, South Africa. – Position: Archaeological Specialist (September 2020).
- Phase 1 Archaeological Impact Assessment (**Phase 1 AIA**): Pienaarspoort Wind Energy Facility (WEF) Project 1 and 2, north-west of Matjiesfontein, Western Cape, South Africa. – Position: Archaeological Specialist (September 2020).
- Phase 1 Archaeological Impact Assessment (**Phase 1 AIA**): Swellendam Wind Energy Facility (WEF), Swellendam, Western Cape, South Africa. – Position: Archaeological Specialist (August 2020).
- **Phase 2 Archaeological Mitigation**: Proposed development of infrastructure in the Port of Ngqura within the Coega Industrial Development Zone (IDZ), Nelson Mandela Bay Municipality, Eastern Cape, South Africa: Contract Archaeologist, excavation of Later Stone Age (LSA) shell middens (July 2020). Contracted to work with PGS Heritage.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 70

- Polihali Dam Heritage Management Project, Lesotho: Junior field archaeologist, excavation of Later Stone Age (LSA) sites (May 2019- May 2020) as part of PGS Heritage.
 - Duties included excavation of rock shelters, site supervision, site recording, photography, lab work, section drawing and digital illustration (Inkscape and Photoshop), assisting in report writing and implementation of HSE practices.
- Ledi-Geraru Research Project, Ethiopia: excavation of Early Stone Age (ESA) sites (February-March 2020; Directed by Dr David R. Braun)
- Gorras Farm, Northern Cape, South Africa: excavation of middens next to a corbelled building; Historical site (October 2018; supervised by Simon Lee Hall and UCT PhD student Ms Vuyiswa Thembelihile Lupuwana)
 - Duties included excavation of middens and surface collection.
- **Phase 2 Archaeological Mitigation:** Proposed development of boreholes and associated pipelines for the Langebaan Aquifer within the Hopefield Private Nature Reserve, Hopefield, Western Cape.- Position: Archaeological specialist (August 2018).
- Koobi Fora Field School, Kenya: Intern, excavation of Early Stone Age (ESA) and Middle Stone Age (MSA) sites (June-July 2018; Directed by Dr David R. Braun, Kathryn Ranhorn (Postdoctoral Research Fellow at Harvard University) and Jonathan Reeves (PhD student at The George Washington University))
- Data extraction to SAHRIS (South African Heritage Resource Agency) for CTS Heritage (April 2018)
- Phase 1 Archaeological Impact Assessment (**Phase 1 AIA**): Matjiesfontein Road Extension Project,, Matjiesfontein, Western Cape. – Position: Archaeological Specialist (April 2018).
- Ledi-Geraru Research Project, Ethiopia: excavation of Early Stone Age (ESA) sites (February-March 2018; Directed by Dr David R. Braun)
- Ferrycarrig, Irish National Heritage Park, Wexford, southeast Ireland: Excavation of ringwork castle site associated with the Anglo-Norman invasion of Ireland (January 2018; Directed by Dr Denis Shine and Dr Stephen Mandal)

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 71

APPENDIX B – Site Descriptions (incl. photographs

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 72

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
WP01	-23.89294	29.38945	<p>General Landscape Characteristics Flat lying area, Bushy/Shrubby vegetation, Grassy vegetation</p> <p>Site Conditions Overgrown/ limited visibility</p> <p>Time Period Historical Period, Recent</p> <p>Site Type Graves</p> <p>Site Extent Approx. 8m x 10m</p> <p>Notes Six (6) graves were recorded. There are two formal graves with granite headstones, one of which has been fenced off. There is also one circular stone packed enfant's grave and three rectangular stone packed graves. The graves were orientated W-E direction (feet facing East).</p>	High	Grade 3 - A (IIIA)

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 73

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
					

Figure 32 - View of WP01.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 74

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
					

Figure 33 – Views of the fenced off formal grave recorded at WP01.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 75


Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
					

Figure 34 – Views of the other formal grave recorded at WP01.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 76

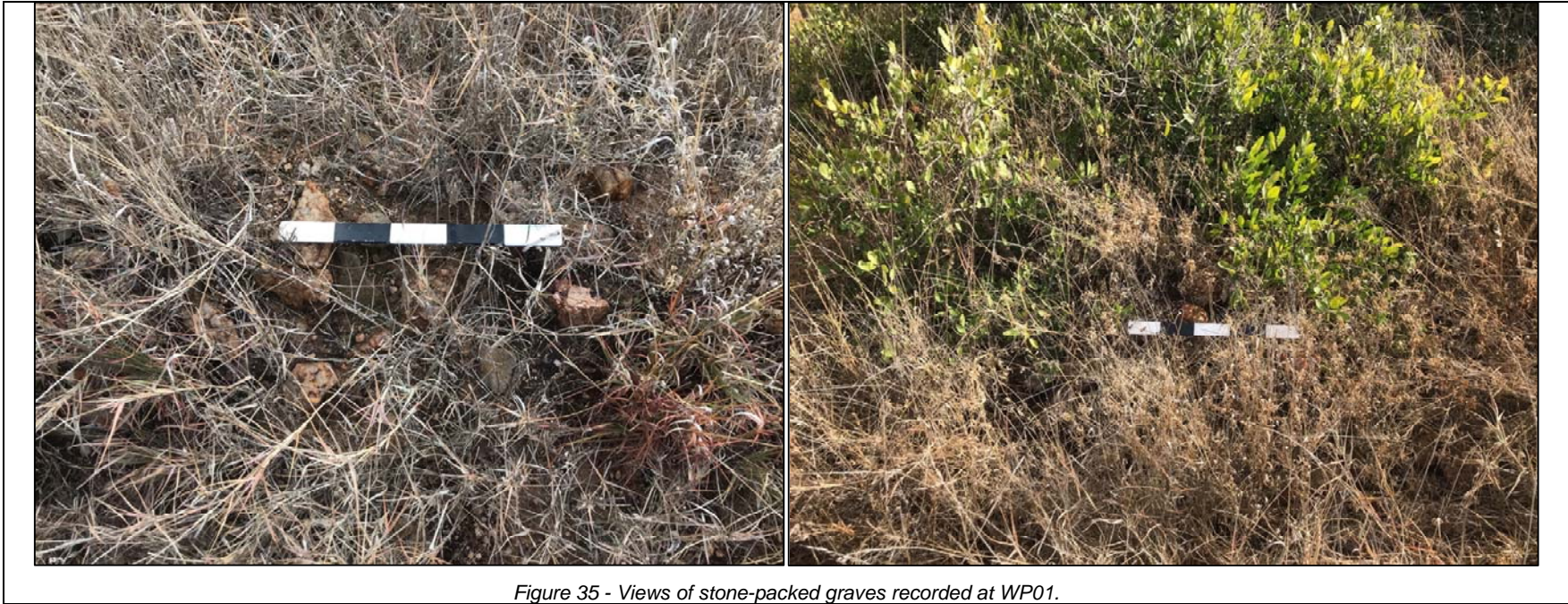


Figure 35 - Views of stone-packed graves recorded at WP01.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 77

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
					

Figure 36 - Additional views of stone-packed graves at WP01.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 78

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
WP02	-23.9085	29.34228	<p>General Landscape Characteristics Flat lying area, Bushy/Shrubby vegetation</p> <p>Site Conditions Overgrown/ limited visibility</p> <p>Time Period Iron Age, Historical Period</p> <p>Site Type Possible Grave</p> <p>Site Extent Approx. 1m x 1m</p> <p>Notes Small round cluster of stones indicating a possible grave. It was recorded out of caution because the pile of rocks resembles a grave.</p>	High	Grade 3 - A (IIIA)

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 79

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
					

Figure 37 - Views of the possible grave at WP02.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 80

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
WP03	-23.95349	29.27202	<p>General Landscape Characteristics Valleys and Plains, Perennial streams/rivers, Bushy/Shrubby vegetation</p> <p>Site Conditions Erosion</p> <p>Time Period Iron Age</p> <p>Site Type Pottery Cluster</p> <p>Site Extent Approx. 5m x 5m</p> <p>Notes Eroded out from slope. Undecorated pottery pieces.</p>	No research potential or other cultural significance	NCW

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 81



Figure 38 - Views of WP03.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 82


Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
					

Figure 39 - Undecorated pottery recorded at WP03.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 83

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
WP04	-23.953724	29.271598	<p>General Landscape Characteristics Valleys and Plains, Perennial streams/rivers, Bushy/Shrubby vegetation</p> <p>Site Conditions Erosion</p> <p>Time Period Stone Age</p> <p>Site Type Lithics Low Density Surface Scatter//Single Find Spot</p> <p>Site Extent Approx. 5m x 10m</p> <p>Notes A few artefacts were identified. This concentration was likely exposed by erosion (topsoil was removed). Fine grained quartzite and vein quartz flakes.</p>	No research potential or other cultural significance	NCW

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 84



Figure 40 - View of the gully erosion at WP04.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 85


Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
					

Figure 41 - View of artefacts identified at WP04.

Document	Project	Revision	Date	Page Number
617HIA-001	Eskom Witkop-Pietersburg132kV Powerline	2.0	04/08/2022	Page 86