

Appendix G.11

HERITAGE REPORT



HERITAGE IMPACT ASSESSMENT

(REQUIRED UNDER SECTION 38(8) OF THE NHRA (No. 25 OF 1999))

FOR THE PROPOSED PHEFUMULA EMOYENI ONE WIND ENERGY FACILITY (WEF),
MPUMALANGA

Type of development:

Wind Energy Facility (WEF)

Client:

WSP Group Africa (Pty) Ltd

Applicant:

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REPORT OUTLINE

Appendix 6 of the GNR 326 EIA Regulations published on 7 April 2017 provides the requirements for specialist reports undertaken as part of the Environmental Authorisation process. In line with this, Table 1 provides an overview of Appendix 6 together with information on how these requirements have been met.

Table 1. Specialist Report Requirements.

Requirement from Appendix 6 of GN 326 EIA Regulation 2017	Chapter
(a) Details of - (i) the specialist who prepared the report; and (ii) the expertise of that specialist to compile a specialist report including a curriculum vitae.	Section a
(b) Declaration that the specialist is independent in a form as may be specified by the competent authority.	<i>Declaration of Independence</i>
(c) Indication of the scope of, and the purpose for which, the report was prepared.	Section 1
(cA) An indication of the quality and age of base data used for the specialist report.	Section 3.4.
(cB) A description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change.	Section 9
(d) Duration, Date and season of the site investigation and the relevance of the season to the outcome of the assessment.	Section 3.4
(e) Description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used.	Section 3
(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 site plan identifying site alternatives.	Section 7, 8 and 9
(g) Identification of any areas to be avoided, including buffers.	Section 7,8 and 9
(h) 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 8
(I) Description of any assumptions made and any uncertainties or gaps in knowledge.	Section 3.7
(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 or activities.	Section 1.3
(k) Mitigation measures for inclusion in the EMPr.	Section 9.1 and 9.5
(l) Conditions for inclusion in the environmental authorisation.	Section 9. 1 and 9.5
(m) Monitoring requirements for inclusion in the EMPr or environmental authorisation.	Section 9.6
(n) Reasoned opinion - (i) As to whether the proposed activity, activities or portions thereof should be authorised; (iA) Regarding the acceptability of the proposed activity or activities; and (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.	Section 9.3
(o) Description of any consultation process that was undertaken during the course of preparing the specialist report.	Section 5
(p) A summary and copies of any comments received during any consultation process and where applicable all responses thereto.	Refer to the EIA report
(q) Any other information requested by the competent authority.	No other information requested at this time

Executive Summary

Phefumula Emoyeni One (Pty) Ltd, is proposing the development of the Phefumula Emoyeni One Wind Energy Facility (WEF) (up to 550MW) located approximately 16km north of Ermelo in the Msukaligwa Local Municipality and Gert Sibande District Municipality, near the town of Ermelo, in the Mpumalanga Province. Phefumula Emoyeni One (Pty) Ltd, appointed WSP Group Africa (Pty) Ltd as the independent environmental assessment practitioner (EAP) to apply for Environmental Authorization for the Project. WSP Group Africa (Pty) Ltd, in turn, appointed Beyond Heritage to conduct a Heritage Impact Assessment (HIA) for the Project and the study area was assessed through a desktop assessment and by a non-intrusive pedestrian field survey. Key findings of the assessment include:

- The Project area is situated within a large, open landscape of which large sections have been used for agricultural activities as well as cattle farming. Many farmsteads are also situated throughout the Project area, with some still being occupied. A total of 37 sites were recorded during the survey which includes multiple burial sites, farmsteads, ruins, circular stone enclosures, and possibly Historically planted trees;
- On the current layout the ruins/packed stone foundations and semi-circular enclosures at PF006 will be impacted by the WTG55 and avoidance of the site is preferable. If avoidance is not possible, the site will require mitigation through recording and mapping prior to applying for the appropriate destruction permit;
- Three burial sites (PF007, PF008, PF009) will be impacted by access roads. Burial site PF007 will be impacted by the access road which leads to WTG58. Burial site PF008 is situated next to an existing gravel road but the burial site will be impacted by widening of the road as well as during the use of the road. Burial site PF009 is situated between ploughed fields next to an existing gravel road leading to WTG13 and the expanding of the road and use thereof will encroach the 30m buffer zone of the burial site. It is always preferable to avoid all burial sites with a 30m buffer zone. If avoidance of these three burial sites is not possible, the graves can be moved with the relevant permits. A Grave management plan for the burial sites will also have to be compiled as well as access provided to burial sites for family members wishing to visit the graves.
- Due to the change in Project layout after the survey was conducted, some areas were not surveyed and a Heritage Walk-down will be required of the final Project layout prior to construction;
- According to the South African Heritage Resource Authority (SAHRA) Paleontological sensitivity map the study area is of insignificant and very high palaeontological sensitivity and an independent study was commissioned for this aspect (Bamford 2024).


The impact on heritage resources can be mitigated to an acceptable level, and the Project can be authorised provided that the recommendations in this report are adhered to and based on the SAHRA's approval.

Recommendations:

The following recommendations for Environmental Authorisation apply and the Project may only proceed after receiving comment from SAHRA:

- The ruins and semi-circular stone enclosures at PF006 impacted by WTG55 should preferably be avoided;
 - » If avoidance is not possible, the site can be mitigated through mapping and recording prior to applying for a destruction permit.
- Burial sites which will be impacted by access roads (PF007, PF008, PF009) should preferably be avoided with a 30m buffer zone with access provided to family members
 - » If avoidance is not possible, the graves can be moved with the necessary permits.
- All sites of medium and high significance should be added to development plans and avoided with a 30m buffer zone;
- Although of low significance, ruins should preferably be avoided as they have the risk of having associated graves present;
- A Grave Management Plan should be compiled for the burial sites present within the Project area;
- Due to layout changes to the Project after the survey was conducted, the final layout of the Project including final Turbine positions, and ancillary infrastructure will all be subject to a Heritage Walk-Down prior to construction in order to ensure no significant heritage resources will be impacted;
- Development activities must be confined to the approved development footprint only;
- Monitoring of the Project area by the ECO during pre-construction and construction phases for heritage and palaeontology chance finds, if chance finds are encountered to implement the Chance Find Procedure for the Project as outlined in Section 9.

Declaration of Independence

Specialist Name	Lara Lucija Kraljević
Declaration of Independence	<p>I declare, as a specialist appointed in terms of the National Environmental Management Act (Act No 107 of 1998) and the associated 2014 Environmental Impact Assessment (EIA) Regulations (as amended), that I:</p> <ul style="list-style-type: none"> • I act as an independent specialist 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 the specialist report relevant to this application, 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 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; • All the particulars furnished by me in this form are true and correct; and • I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 49 A of the Act.
Signature	
Date	24/06/2024

a) Expertise of the specialist

Lara Kraljević completed her masters in archaeology at the University of Pretoria specialising in chemical and mineralogical studies of Iron Age ceramics. Lara is an accredited member of the Association of South African Professional Archaeologists (ASAPA) (#661). She has co-authored over 100 impact assessments in Gauteng, Limpopo, Mpumalanga, Northern Cape, Eastern Cape, and North West Provinces in South Africa.

TABLE OF CONTENTS

REPORT OUTLINE.....	4
EXECUTIVE SUMMARY	5
DECLARATION OF INDEPENDENCE	7
A) EXPERTISE OF THE SPECIALIST	7
ABBREVIATIONS.....	14
GLOSSARY	14
1 INTRODUCTION	15
1.1 TERMS OF REFERENCE	19
1.2 PROJECT DESCRIPTION	20
1.3 ALTERNATIVES	24
2 LEGISLATIVE REQUIREMENTS.....	25
3 METHODOLOGY	27
3.1 LITERATURE REVIEW AND BACKGROUND STUDY.....	27
3.2 GENEALOGICAL SOCIETY AND GOOGLE EARTH MONUMENTS.....	27
3.3 PUBLIC CONSULTATION AND STAKEHOLDER ENGAGEMENT:.....	27
3.4 SITE INVESTIGATION.....	28
3.5 SITE SIGNIFICANCE AND FIELD RATING.....	30
3.6 IMPACT ASSESSMENT METHODOLOGY.....	32
3.7 ASSUMPTIONS AND LIMITATIONS OF THE STUDY.....	34
4 DESCRIPTION OF SOCIO-ECONOMIC ENVIRONMENT.....	34
5 RESULTS OF PUBLIC CONSULTATION AND STAKEHOLDER ENGAGEMENT:	34
6 CONTEXTUALISING THE STUDY AREA.....	35
6.1 ARCHAEOLOGICAL BACKGROUND.....	35
6.1.1 Stone Age.....	35
6.1.2 Iron Age	35
6.1.3 Historical Background	35
6.1.4 Battlefield and War History	36
6.2 LITERATURE REVIEW (SAHRIS)	37
6.3 GOOGLE EARTH AND THE GENEALOGICAL SOCIETY OF SOUTH AFRICA (GRAVES AND BURIAL SITES)	38
7 HERITAGE BASELINE.....	39

7.1	DESCRIPTION OF THE PHYSICAL ENVIRONMENT	39
7.2	HERITAGE RESOURCES.....	41
7.3	CULTURAL LANDSCAPE.....	73
7.4	PALEONTOLOGICAL HERITAGE	74
8	ASSESSMENT OF IMPACTS.....	75
8.1	IMPACTS ON TANGIBLE HERITAGE RESOURCES.....	75
8.1.1	<i>Cumulative impacts</i>	75
8.2	IMPACT ASSESSMENT TABLES.....	76
9	CONCLUSION AND RECOMMENDATIONS	78
9.1	RECOMMENDATIONS FOR CONDITION OF AUTHORISATION.....	78
9.2	CHANCE FIND PROCEDURE	79
9.2.1	<i>Heritage Resources</i>	79
9.2.2	<i>Monitoring Programme for Palaeontology – to commence once the excavations / drilling activities begin.</i>	80
9.3	REASONED OPINION	80
9.4	POTENTIAL RISK.....	80
9.5	MONITORING REQUIREMENTS	81
9.7	MANAGEMENT MEASURES FOR INCLUSION IN THE EMPR	82
10	REFERENCES.....	84

LIST OF FIGURES

FIGURE 1.1. REGIONAL SETTING OF THE PROJECT.	16
FIGURE 1.2. LOCAL SETTING OF THE PROJECT.	17
FIGURE 1.3. AERIAL IMAGE OF THE PROJECT AREA AND SURROUNDS.	18
FIGURE 3.1. TRACKLOG OF THE SURVEY PATH IN ORANGE.....	29
FIGURE 3.2. MITIGATION SEQUENCE/HIERARCHY	33
FIGURE 7.1. GENERAL SITE CONDITIONS SHOWING LARGE, PLOUGHED FIELDS.....	40
FIGURE 7.2. GENERAL SITE CONDITIONS SHOWING A GENERALLY FLAT TERRAIN.	40
FIGURE 7.3. LARGE, PLOUGHED FIELDS ARE FOUND ACROSS THE PROJECT AREA.	40
FIGURE 7.4. EXISTING POWERLINES WITHIN THE PROJECT AREA.....	40
FIGURE 7.5. SITE DISTRIBUTION MAP. ZOOMED IN MAPS ARE INCLUDED IN APPENDIX A.....	41
FIGURE 7.6. GENERAL VIEW OF THE FARMSTEAD AT PF001.	44
FIGURE 7.7. OCCUPIED BUILDING AT THE FARMSTEAD PF001.	44
FIGURE 7.8. BRICK FENCED BURIAL SITE AT PF002.	44
FIGURE 7.9. GRAVE AT PF002.	44

FIGURE 7.10. MOUTON GRAVE AT PF002.....	45
FIGURE 7.11. BOTHA GRAVE AT PF002 (2005 AND 2018).....	45
FIGURE 7.12. STRUCTURE AT THE FARMSTEAD PH003.....	45
FIGURE 7.13. OCCUPIED BUILDING AT FARMSTEAD PH003.....	45
FIGURE 7.14. OVERVIEW OF GRAVES AT BURIAL SITE PF004.	46
FIGURE 7.15. STONE PACKED GRAVES AT PF004.	46
FIGURE 7.16. OVERGROWN STONE PACKED GRAVE AT PF004.	46
FIGURE 7.17. GRAVE AT PF004 (2001).....	46
FIGURE 7.18. GRAVE AT PF004.	47
FIGURE 7.19. GRAVE AT PF004.	47
FIGURE 7.20. GRAVE AT PF004.	47
FIGURE 7.21. GRAVE AT PF004.	47
FIGURE 7.22. RUINS AT PF005.	48
FIGURE 7.23. VIEW OF A SEMI- CIRCULAR ENCLOSURE AT PF006.	48
FIGURE 7.24. OVERVIEW OF THE RUINS AT PF006.	48
FIGURE 7.25. OVERVIEW OF BURIAL SITE PF007.	48
FIGURE 7.26. DEGRADED GRANITE GRAVE AT PF007 (2011).	49
FIGURE 7.27. GRANITE AND CEMENT GRAVE AT PF007 (1965).	49
FIGURE 7.28. GRANITE AND CEMENT GRAVE AT PF007 (1953).	49
FIGURE 7.29. STONE PACKED GRAVE AT PF007.....	49
FIGURE 7.30. GRANITE GRAVE AT PF007 (1980).....	50
FIGURE 7.31. GRAVE AT PF007.	50
FIGURE 7.32. VIEW OF GRAVES IN THE BURIAL SITE PF008.	50
FIGURE 7.33. OVERGROWN GRAVE AT PF008.	50
FIGURE 7.34. GRAVE AT PF008.	51
FIGURE 7.35. BRICK GRAVE AT PF008 (1978).....	51
FIGURE 7.36. BRICK BUILT GRAVE AT PF008.....	51
FIGURE 7.37. VIEW OF GRAVES UNDER THICKET OF TREES AT PF008.	51
FIGURE 7.38. VIEW OF GRAVES UNDER THICKET OF TREES AT PF008.	52
FIGURE 7.39. GRAVES AT PF008.....	52
FIGURE 7.40. OVERGROWN GRAVE AT PF009.	52
FIGURE 7.41. GRANITE GRAVE AT PF009 (1990).....	52
FIGURE 7.42. OVERGROWN GRAVE AT PF009.	53
FIGURE 7.43. SINGLE GRAVE AT PF010.	53
FIGURE 7.44. SINGLE FENCED OFF GRAVE AT PF011.....	53
FIGURE 7.45. SINGLE GRAVE AT PF011.	53
FIGURE 7.46. RUINS AT PF012.	54
FIGURE 7.47. RUIN AT PF012.	54

FIGURE 7.48. RUIN AT PF013.	54
FIGURE 7.49. RUINS AT PF013.	54
FIGURE 7.50. VIEW OF POSSIBLE HISTORICAL TREE PLANTATION AT PF014.	55
FIGURE 7.51. POSSIBLE HISTORICAL LANE OF TREES AT PF015.	55
FIGURE 7.52. RUINS AT PF016.	55
FIGURE 7.53. SITE OVERVIEW OF BURIAL SITE PF017.	55
FIGURE 7.54. STONE PACKED GRAVE AT PF017.	56
FIGURE 7.55. STONE PACKED GRAVE AT PF017.	56
FIGURE 7.56. SITE OVERVIEW OF STONE RUINS AT PF018.	56
FIGURE 7.57. SECTION OF PACKED STONE ENCLOSURE AT PF018.	56
FIGURE 7.58. VIEW OF DEMOLISHED STRUCTURES AT PF019.	57
FIGURE 7.59. STONE FOUNDATIONS AT PF020.	57
FIGURE 7.60. STONE FOUNDATIONS AT PF020.	57
FIGURE 7.61. PACKED STONE RUINS AT PF021.	57
FIGURE 7.62. GENERAL SITE OVERVIEW OF STONE PACKED RUINS AT PF021.	58
FIGURE 7.63. VIEW OF STONE PACKED GRAVES AT PF022.	58
FIGURE 7.64. GRAVE AT PF022 (1976).	58
FIGURE 7.65. OVERGROWN STONE PACKED GRAVE AT PF022.	58
FIGURE 7.66. OVERGROWN BRICK-BUILT GRAVE AT PF022.	59
FIGURE 7.67. BRICK BUILT GRAVE AT PF022.	59
FIGURE 7.68. STONE PACKED GRAVES AT PF022.	59
FIGURE 7.69. GRANITE GRAVE AT PF022 (1984).	59
FIGURE 7.70. FENCED OFF GRAVE AT PF022.	60
FIGURE 7.71. VIEW OF FENCED OFF GRAVES AT PF022.	60
FIGURE 7.72. OVERVIEW OF PACKED STONE RUINS AT PF023.	60
FIGURE 7.73. SECTION OF STONE PACKED WALL AT PF023.	60
FIGURE 7.74. OVERVIEW OF BURIAL SITE PF024.	61
FIGURE 7.75. STONE PACKED GRAVE AT PF024.	61
FIGURE 7.76. GRANITE GRAVE AT PF024 (2014).	61
FIGURE 7.77. GRANITE GRAVE AT PF024 (2011).	61
FIGURE 7.78. GRANITE AND STONE GRAVE AT PF024.	62
FIGURE 7.79. OVERGROWN STONE PACKED GRAVE AT PF024.	62
FIGURE 7.80. FENCED OFF GRANITE GRAVE AT PF024.	62
FIGURE 7.81. FENCED OFF GRANITE GRAVE AT PF024 (2022).	62
FIGURE 7.82. OVERGROWN AND DEGRADED GRAVE AT PF024 (1998).	63
FIGURE 7.83. BRICK BUILT GRAVE AT PF024.	63
FIGURE 7.84. OVERGROWN GRANITE AND CEMENT GRAVE AT PF024.	63
FIGURE 7.85. VIEW OF BROKEN DOWN STRUCTURE AT PF025.	63

FIGURE 7.86. BROKEN DOWN STRUCTURE AT PF025.....	64
FIGURE 7.87. DEGRADED SCHOOL BUILDING AT PF026.....	64
FIGURE 7.88. VIEW OF VARIOUS STRUCTURES AT THE FARMSTEAD PF027.	64
FIGURE 7.89. VIEW OF OCCUPIED FARMSTEAD AT PF027.	64
FIGURE 7.90. VIEW OF THE TWO GRAVES AT BURIAL SITE PF028.	65
FIGURE 7.91. STONE PACKED GRAVE WITH HEADSTONE AT PF028.	65
FIGURE 7.92. STONE PACKED GRAVE WITH HEADSTONE AT PF028.	65
FIGURE 7.93. VIEW OF INTACT FARMHOUSE AT PF029.	65
FIGURE 7.94. ALTERNATIVE VIEW OF THE FARMHOUSE AT PF029.	66
FIGURE 7.95. STONE PACKED KRAAL AT PF030.	66
FIGURE 7.96. STONE PACKED KRAAL AT PF030.	66
FIGURE 7.97. VIEW OF FENCED OFF BURIAL SITE PF031.	66
FIGURE 7.98. GRANITE GRAVE AT PF031.	67
FIGURE 7.99. OVERGROWN STONE PACKED GRAVE AT PF031.	67
FIGURE 7.100. GRANITE GRAVE AT PF031 (1971).....	67
FIGURE 7.101. GRANITE GRAVE AT PF031 (1974).....	67
FIGURE 7.102. GRANITE GRAVE AT PF031 (1980).....	68
FIGURE 7.103. PACKED GRAVE AT PF031.	68
FIGURE 7.104. GRANITE GRAVE AT PF031 (1976).....	68
FIGURE 7.105. GRANITE GRAVE AT PF031 (1961).....	68
FIGURE 7.106. CEMENT AND BRICK GRAVE AT PF031 (1950).	69
FIGURE 7.107. GRANITE GRAVE AT PF031 (1997).....	69
FIGURE 7.108. BRICK BUILT GRAVE AT PF031.....	69
FIGURE 7.109. OVERVIEW OF THE FARMSTEAD PF032.	69
FIGURE 7.110. STRUCTURE RUIN AT PF032.	70
FIGURE 7.111. CEMENT AND BRICK WALL ENCLOSING BURIAL SITE PF033.	70
FIGURE 7.112. FAMILY GRAVE AT PF033.	70
FIGURE 7.113. STONE AND GRANITE GRAVE AT PF033 (1932).....	70
FIGURE 7.114. STONE AND GRANITE GRAVE AT PF033 (1903).....	71
FIGURE 7.115. GRAVE WITH COVER AT PF033.....	71
FIGURE 7.116. OVERVIEW OF BURIAL SITE PF034.	71
FIGURE 7.117. STONE CIRCLE PACKED GRAVES AT PF034.....	71
FIGURE 7.118. GRANITE AND STONE GRAVE AT PF034 (1958).....	72
FIGURE 7.119. STONE PACKED GRAVE AT PF034.....	72
FIGURE 7.120. GRANITE GRAVE AT PF034 (1972).....	72
FIGURE 7.121. STONE PACKED GRAVE AT PF034.....	72
FIGURE 7.122. OVERGROWN GRAVE AT PF034.	73
FIGURE 7.123. HISTORICAL FARMSTEAD PF035.	73

FIGURE 7.124. DEGRADED STRUCTURES AT PF035.	73
FIGURE 7.125. BROKEN DOWN STRUCTURE AT PF036.	73
FIGURE 7.126. PALEONTOLOGICAL SENSITIVITY OF THE APPROXIMATE STUDY AREA (YELLOW POLYGON) AS INDICATED ON THE SAHRA PALAEONTOLOGICAL SENSITIVITY MAP.	74
FIGURE 11.1. ZOOMED IN SITE DISTRIBUTION MAP (1 OF 3).....	86
FIGURE 11.2. ZOOMED IN SITE DISTRIBUTION MAP (2 OF 3).....	87
FIGURE 11.3. ZOOMED IN SITE DISTRIBUTION MAP (3 OF 3).....	88

LIST OF TABLES

TABLE 1. SPECIALIST REPORT REQUIREMENTS.	4
TABLE 2: PROJECT DESCRIPTION	20
TABLE 3. FARM PORTIONS AFFECTED BY THE PROJECT.....	20
TABLE 4: INFRASTRUCTURE AND PROJECT ACTIVITIES	23
TABLE 6: SITE INVESTIGATION DETAILS	28
TABLE 7. HERITAGE SIGNIFICANCE AND FIELD RATINGS	31
TABLE 8. STUDIES CONSULTED FOR THE PROJECT.	37
TABLE 9. CEMETERIES INDICATED BY THE GSSA.	38
TABLE 10. SITES RECORDED IN THE STUDY AREA.	42
TABLE 11. IMPACT ASSESSMENT FOR CONSTRUCTION PHASE OF THE PROJECT.	76
TABLE 12. IMPACT ASSESSMENT FOR OPERATIONAL PHASE OF THE PROJECT.	76
TABLE 13. IMPACT ASSESSMENT FOR DECOMMISSIONING PHASE OF THE PROJECT.	76
TABLE 14. CUMULATIVE IMPACT ASSESSMENT FOR THE PROJECT	77
TABLE 15. MONITORING REQUIREMENTS FOR THE PROJECT	81
TABLE 16. HERITAGE MANAGEMENT PLAN FOR EMPR IMPLEMENTATION	82

ABBREVIATIONS

ASAPA	Association of South African Professional Archaeologists
BGG	Burial Ground and Graves
CFPs	Chance Find Procedures
CMP	Conservation Management Plan
CoGHSTA	Co-operative Governance, Human Settlements and Traditional Affairs
CRR	Comments and Response Report
CRM	Cultural Resource Management
DFFE	Department of Fisheries, Forestry and Environment,
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment*
EIA	Early Iron Age*
EAP	Environmental Assessment Practitioner
EMPr	Environmental Management Programme
ESA	Early Stone Age
ESIA	Environmental and Social Impact Assessment
GIS	Geographical Information System
GPS	Global Positioning System
GRP	Grave Relocation Plan
HIA	Heritage Impact Assessment
LIA	Late Iron Age
LSA	Late Stone Age
MEC	Member of the Executive Council
MIA	Middle Iron Age
MPRDA	Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
MSA	Middle Stone Age
NCHM	National Cultural History Museum
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NID	Notification of Intent to Develop
NoK	Next-of-Kin
PRHA	Provincial Heritage Resource Agency
SADC	Southern African Development Community
SAHRA	South African Heritage Resources Agency

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

GLOSSARY

Archaeological site	Remains of human activity over 100 years old
Earlier Stone Age	~ 2.6 million to 250 000 years ago
Middle Stone Age	~ 250 000 to 40-25 000 years ago
Later Stone Age	~ 40-25 000, to the historic period
The Iron Age	~ AD 400 to 1840
Historic	~ AD 1840 to 1950
Historic building	Over 60 years old

1 Introduction

WSP Group Africa (Pty) Ltd, appointed Beyond Heritage to conduct a Heritage Impact Assessment (HIA) for the proposed development of the Phefumula Emoyeni One Wind Energy Facility (WEF) (up to 550MW) located approximately 16km north of Ermelo in the Msukaligwa Local Municipality and Gert Sibande District Municipality, near the town of Ermelo, in the Mpumalanga Province. The report forms part of the Environmental Impact Assessment (EIA) and Environmental Management Programme (EMPr) for the development and informs the EIA phase of this process.

The aim of the study was to survey the proposed development footprint to understand the cultural layering of the area, and if heritage features are found, to assess their importance within local, provincial, and national context. It further served to assess the impact of the proposed Project on non-renewable heritage resources. The study will submit appropriate recommendations with regard to the responsible cultural resources management measures that might be required to assist the developer in managing the discovered heritage resources in a responsible manner. Recommendations are included to protect, preserve, and develop such resources within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999) (NHRA).

The report outlines the approach and methodology utilized before and during the survey, which includes:

- Phase 1, review of relevant literature;
- Phase 2, the physical surveying of the area on foot and by vehicle;
- Phase 3, reporting the outcome of the study.

During the survey, multiple burial sites, farmsteads, ruins, and circular stone enclosures were recorded in the study area. General site conditions and features in the study area were recorded by means of photographs, GPS locations and descriptions. Possible impacts were identified, and mitigation measures are proposed in this report.

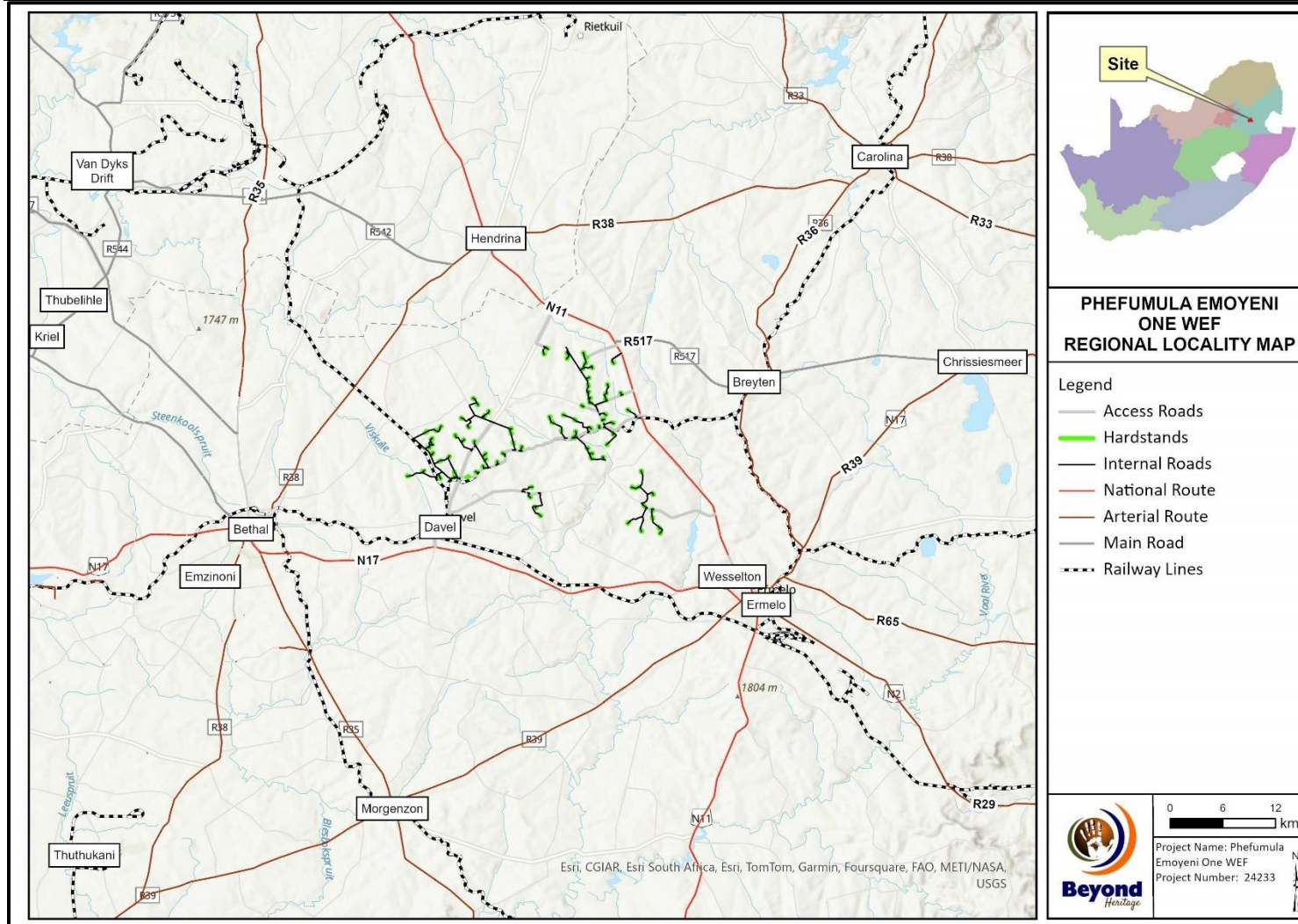


Figure 1.1. Regional setting of the Project.



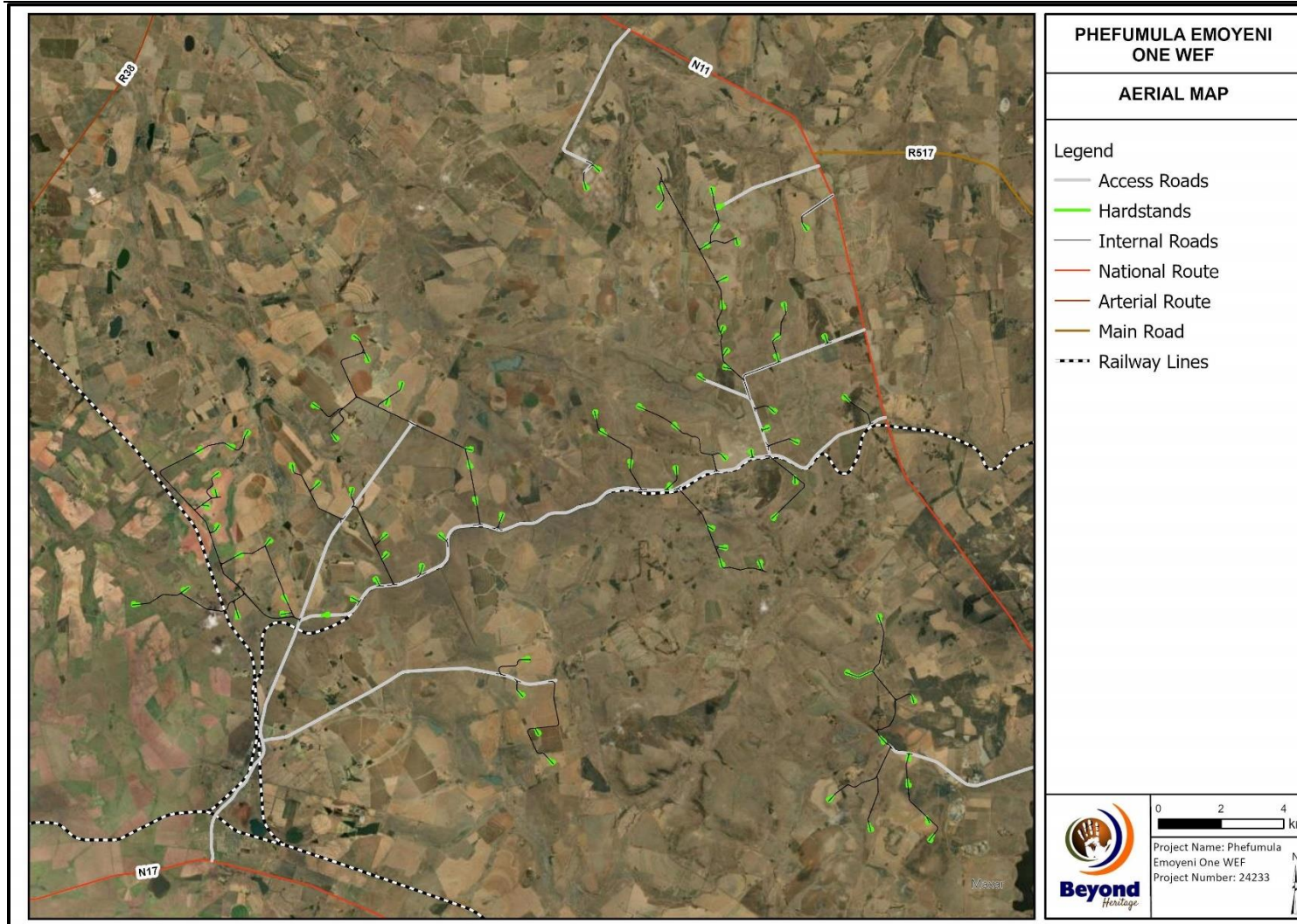


Figure 1.3. Aerial image of the Project area and surrounds.

1.1 Terms of Reference

The following Terms of Reference were adhered to in conducting this HIA.

Field study

Conduct a field study to: (a) survey the development footprint to understand the heritage character of the impact area; b) record GPS points of sites/areas identified as significant areas; c) determine the levels of significance of the various types of heritage resources affected by the proposed development.

Reporting

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

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

1.2 Project Description

Project components and the location of the Phefumula Emoyeni One WEF Project are outlined in Tables 2 - 5.

Table 2: Project Description

Magisterial District	Msukaligwa Local Municipality within the Gert Sibande District Municipality
Central co-ordinates of the development	26°21'14.25"S 29°45'39.81"E
1:50 000 Topographic Map Number	2629 BC & BD

Table 3. Farm portions affected by the Project.

Farm Name and Number	Portion	21 Digit Surveyor General Code of Each Cadastral Land Parcel
ISRAEL 207 IS	0	T0IS00000000020700000
BOSMANSKRANS 217 IS	0	T0IS00000000021700000
BOSMANSKRANS 217 IS	3	T0IS00000000021700003
BOSMANSKRANS 217 IS	4	T0IS00000000021700004
BOSMANSKRANS 217 IS	6	T0IS00000000021700006
BOSMANSKRANS 217 IS	7	T0IS00000000021700007
BOSMANSKRANS 217 IS	8	T0IS00000000021700008
BOSMANSKRANS 217 IS	9	T0IS00000000021700009
VAALBANK 233 IS	6	T0IS00000000023300006
KUILFONTEIN 234 IS	1	T0IS00000000023400001
KUILFONTEIN 234 IS	2	T0IS00000000023400002
KUILFONTEIN 234 IS	7	T0IS00000000023400007
KUILFONTEIN 234 IS	8	T0IS00000000023400008
KUILFONTEIN 234 IS	9	T0IS00000000023400009
KUILFONTEIN 234 IS	11	T0IS00000000023400011
KUILFONTEIN 234 IS	12	T0IS00000000023400012
KUILFONTEIN 234 IS	14	T0IS00000000023400014
KUILFONTEIN 234 IS	15	T0IS00000000023400015
KUILFONTEIN 234 IS	16	T0IS00000000023400016
KUILFONTEIN 234 IS	17	T0IS00000000023400017
KUILFONTEIN 234 IS	21	T0IS00000000023400021
KUILFONTEIN 234 IS	22	T0IS00000000023400022
KUILFONTEIN 234 IS	23	T0IS00000000023400023

HIA – Phfumula Emoyeni WEF

July 2024

Farm Name and Number	Portion	21 Digit Surveyor General Code of Each Cadastral Land Parcel
BOSMANSHOEK 235 IS	3	T0IS00000000023500003
WITBANK 236 IS	2	T0IS00000000023600002
WITBANK 236 IS	4	T0IS00000000023600004
WITBANK 236 IS	5	T0IS00000000023600005
WITBANK 236 IS	7	T0IS00000000023600007
WITBANK 236 IS	10	T0IS00000000023600010
WITBANK 236 IS	11	T0IS00000000023600011
WITBANK 236 IS	13	T0IS00000000023600013
NOOITGEDACHT 237 IS	0	T0IS00000000023700000
NOOITGEDACHT 237 IS	2	T0IS00000000023700002
NOOITGEDACHT 237 IS	4	T0IS00000000023700004
NOOITGEDACHT 237 IS	5	T0IS00000000023700005
NOOITGEDACHT 237 IS	7	T0IS00000000023700007
NOOITGEDACHT 237 IS	8	T0IS00000000023700008
NOOITGEDACHT 237 IS	9	T0IS00000000023700009
NOOITGEDACHT 237 IS	10	T0IS00000000023700010
NOOITGEDACHT 237 IS	11	T0IS00000000023700011
NOOITGEDACHT 237 IS	12	T0IS00000000023700012
NOOITGEDACHT 237 IS	13	T0IS00000000023700013
ORPENSKRAAL 238 IS	0	T0IS00000000023800000
ORPENSKRAAL 238 IS	2	T0IS00000000023800002
GELIKSDRAAI 240 IS	1	T0IS00000000024000001
GELIKSDRAAI 240 IS	2	T0IS00000000024000002
ELIM 247 IS	0	T0IS00000000024700000
KRANSPOORT 248 IS	0	T0IS00000000024800000
KRANSPOORT 248 IS	2	T0IS00000000024800002
KRANSPOORT 248 IS	3	T0IS00000000024800003
KRANSPOORT 248 IS	4	T0IS00000000024800004
KRANSPOORT 248 IS	6	T0IS00000000024800006
KRANSPOORT 248 IS	8	T0IS00000000024800008
KRANSPOORT 248 IS	9	T0IS00000000024800009
KRANSPOORT 248 IS	10	T0IS00000000024800010
KRANSPOORT 248 IS	11	T0IS00000000024800011
KRANSPOORT 248 IS	12	T0IS00000000024800012
KRANSPOORT 248 IS	13	T0IS00000000024800013
KRANSPOORT 248 IS	18	T0IS00000000024800018

BEYOND HERITAGE

HIA – Phfumula Emoyeni WEF

July 2024

Farm Name and Number	Portion	21 Digit Surveyor General Code of Each Cadastral Land Parcel
KRANSPOORT 248 IS	19	T0IS00000000024800019
KRANSPOORT 248 IS	21	T0IS00000000024800021
KRANSPOORT 248 IS	22	T0IS00000000024800022
KRANSPOORT 248 IS	23	T0IS00000000024800023
TWEEFONTEIN 249 IS	1	T0IS00000000024900001
TWEEFONTEIN 249 IS	2	T0IS00000000024900002
TWEEFONTEIN 249 IS	3	T0IS00000000024900003
TWEEFONTEIN 249 IS	8	T0IS00000000024900008
TWEEFONTEIN 249 IS	9	T0IS00000000024900009
VOORZORG 250 IS	0	T0IS00000000025000000
NOOITGEDACHT 251 IS	0	T0IS00000000025100000
NOOITGEDACHT 251 IS	2	T0IS00000000025100002
NOOITGEDACHT 251 IS	5	T0IS00000000025100005
NOOITGEDACHT 251 IS	6	T0IS00000000025100006
NOOITGEDACHT 251 IS	7	T0IS00000000025100007
NOOITGEDACHT 251 IS	9	T0IS00000000025100009
NOOITGEDACHT 251 IS	10	T0IS00000000025100010
NOOITGEDACHT 251 IS	11	T0IS00000000025100011
SPION KOP 252 IS	1	T0IS00000000025200001
SPION KOP 252 IS	2	T0IS00000000025200002
UITZICHT 266 IS	4	T0IS00000000026600004
UITZICHT 266 IS	15	T0IS00000000026600015
DAVELFONTEIN 267 IS	7	T0IS00000000026700007
MIDDELPLAAT 271 IS	2	T0IS00000000027100002
MIDDELPLAAT 271 IS	3	T0IS00000000027100003
MIDDELPLAAT 271 IS	4	T0IS00000000027100004
MIDDELPLAAT 271 IS	5	T0IS00000000027100005
MIDDELPLAAT 271 IS	8	T0IS00000000027100008
DRIEHOEK 273 IS	0	T0IS00000000027300000
DRIEHOEK 273 IS	2	T0IS00000000027300002
DRIEHOEK 273 IS	1	T0IS00000000027300001
DRIEHOEK 273 IS	3	T0IS00000000027300003
DRIEHOEK 273 IS	7	T0IS00000000027300007
SPITSKOP 276 IS	59	T0IS00000000027600059
SPITSKOP 276 IS	68	T0IS00000000027600068
KRANSPOORT 827 IS	0	T0IS00000000082700000

BEYOND HERITAGE

Table 4: Infrastructure and project activities

DETAIL	INFORMATION
Applicant Name:	Phefumula Emoyeni One (Pty) Ltd
Municipalities	Msukaligwa Local Municipality Gert Sibande District Municipality
Extent	33 660 ha
Buildable area	Subject to finalization based on technical and environmental requirements
Export Capacity	Up to 550MW
Power system technology	Wind
Number of Turbines	Up to 88
Turbine capacity	Between 6 MW and 15 MW each
Rotor Diameter	Up to 200m
Hub Height	Up to 200m
Hard Standing Dimensions	Approximately 75m x 120m
Turbine Foundations	Diameter of up to 40m per turbine – excavation up to 6 m deep, constructed of reinforced concrete to support the mounting ring. Once tower established, footprint of foundation is covered with soil.
Substation and internal powerlines	33kV cabling to connect the wind turbines to the onsite collector substations, to be laid underground where practical. 3 x 33kV/132kV onsite collector substation (IPP Portion), each being up to 5ha. Cabling between turbines, to be laid underground where practical

DETAIL	INFORMATION
Construction camp and laydown area	<p>Construction compounds including site office (approximately 300m x 300m in total but split into 3ha each of 150m x 200m):</p> <p>3 x Batching plant of up to 4ha to 7ha.</p> <p>3 x construction compound / laydown area, including site office of 3ha each (150m x 200m each).</p> <p>Laydown and crane hardstand areas (approximately 75m x 120m).</p>
Internal Roads	12-13m wide roads with 12m radius turning circles, gravel surface
O&M Building	3 x O&M office of approximately 1.5ha each adjacent to each collector Sub Station.
Batching Plant	Up to 3 x Batching plants of up to 4ha to 7ha.
BESS	<p>Battery Energy Storage System (BESS) (200MW/800MWh).</p> <p>Type has not been confirmed at this stage. It is proposed that all impacts related to both types be assessed in the EIA.</p> <p>Export Capacity of up to 800MWh</p> <p>Total storage capacity 200MW</p> <p>Storage capacity of up to 6-8 hours</p> <p>The BESS will be housed in containers covering a total approximate footprint of up to 5ha.</p> <p>Battery types to be considered: Solid State Batteries as the preferred (Lithium Ion) and Redox Flow Batteries as the alternative (Vanadium Redox).</p>

1.3 Alternatives

No alternatives were provided, but the area assessed allows for siting of the development to avoid impacts to heritage resources.

2 Legislative Requirements

The HIA, as a specialist study to the EIA, is required under the following legislation:

- National Heritage Resources Act ((NHRA), Act No. 25 of 1999)
- National Environmental Management Act ((NEMA), Act No. 107 of 1998 - Section 23(2)(b))

A Phase 1 HIA is a pre-requisite for development in South Africa as prescribed by SAHRA and stipulated by legislation. The overall purpose of heritage specialist input is to:

- Identify any heritage resources, which may be affected;
- Assess the nature and degree of significance of such resources;
- Assess the negative and positive impact of the development on these resources; and
- Make recommendations for the appropriate heritage management (or avoidance) of these impacts.

The HIA should be submitted, as part of the impact assessment report or EMPr, to the Provincial Heritage Resource Agency (PHRA) or to The South African Heritage Resources Agency (SAHRA). SAHRA will ultimately be responsible for the evaluation of Phase 1 HIA reports upon which review comments will be issued. 'Best practice' requires Phase 1 HIA reports and additional development information, as per the impact assessment report and/or EMPr, to be submitted in duplicate to SAHRA after completion of the study. SAHRA accepts Phase 1 HIA reports authored by professional archaeologists, accredited with ASAPA or with a proven ability to do archaeological work.

SAHRA as a commenting authority under section 38(8) of the NHRA require all environmental documents, compiled in support of an EA application as defined by the National Environmental Management Act (NEMA) (Act No 107 of 1998) to be submitted to SAHRA for commenting. Environmental Impact Assessment (EIA) Regulations section 40 (1) and (2). The Environmental Impact Assessment (EIA) Regulations, Government Notice Regulation (GN) R.982 were published on 04 December 2014 and promulgated on 08 December 2014. Together with the EIA Regulations, the Minister also published GN R.983 (Listing Notice No. 1), GN R.984 (Listing Notice No. 2) and GN R.985 (Listing Notice No. 3) in terms of Sections 24(2) and 24D of the NEMA, as amended) Upon submission to SAHRA the project will be automatically given a case number as reference. As such the EIA report and its appendices must be submitted to the case as well as the EMPr, once it's completed by the Environmental Assessment Practitioner (EAP).

Minimum accreditation requirements include an Honours degree in archaeology or related discipline and 3 years post-university CRM experience (field supervisor level). Minimum standards for reports, site documentation and descriptions are set by ASAPA in collaboration with SAHRA. ASAPA is based in South Africa, representing professional archaeology in the SADC region. ASAPA is primarily involved in the overseeing of ethical practice and standards regarding the archaeological profession. Membership is based on proposal and secondment by other professional members.

Phase 1 HIAs are primarily concerned with the location and identification of heritage sites situated within a proposed development area. Identified sites should be assessed according to their significance (refer to Section 3.5). Relevant conservation or mitigation recommendations should be made. Recommendations are subject to evaluation by SAHRA.

Section 3 of the NHRA distinguishes nine criteria for places and objects to qualify as 'part of the national estate' if they have cultural significance or other special value. These criteria are:

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

Conservation or mitigation recommendations, as approved by SAHRA, are to be used as guidelines in the developer's decision-making process.

Phase 2 archaeological projects are primarily based on salvage/mitigation excavations preceding development destruction or impact on a site. Phase 2 excavations can only be conducted with a permit, issued by SAHRA to the appointed archaeologist. Permit conditions are prescribed by SAHRA and includes (as minimum requirements) reporting back strategies to SAHRA and deposition of excavated material at an accredited repository.

In the event of a site conservation option being preferred by the developer, a site management plan, prepared by a professional archaeologist and approved by SAHRA, will suffice as minimum requirement. After mitigation of a site, a destruction permit must be applied for with SAHRA by the applicant before development may proceed.

Human remains older than 60 years are protected by the National Heritage Resources Act, with reference to Section 36 and GNR 548 as well as the SAHRA BGG Policy 2020. Graves older than 60 years, but younger than 100 years fall under Section 36 of Act 25 of 1999 of the National Heritage Resources Act (NHRA), as well as the National Health Act of 2003 and are the jurisdiction of SAHRA. The procedure for Consultation Regarding Burial Grounds and Graves (Section 36[5] of Act 25 of 1999) is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in this age category, located inside a formal cemetery administrated by a local authority, require the same authorisation as set out for graves younger than 60 years, in addition to SAHRA authorisation. If the grave is not situated inside a formal cemetery, but is to be relocated to one, permission from the local authority is required and all regulations, laws and by-laws, set by the cemetery authority, must be adhered to.

Human remains that are less than 60 years old are protected under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance No. 7 of 1925) re-instituted by Proclamation 109 of 17 June 1994 and implemented by CoGHSTA as well as the National Health Act 2003 and are the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the office of the relevant Provincial Premier. Authorisation for exhumation and reinternment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. To handle and transport human remains, the institution conducting the relocation should be authorised under the National Health Act of 2003.

3 METHODOLOGY**3.1 Literature Review and background study**

A brief survey of available literature was conducted to extract data and information on the area in question to provide general heritage context into which the development would be set. This literature search included published material, unpublished commercial reports and online material, including reports sourced from the South African Heritage Resources Information System (SAHRIS). Findings are included in Section 6.1 and 6.2.

3.2 Genealogical Society and Google Earth Monuments

Google Earth and 1:50 000 topographic maps of the area were utilised to identify possible places of heritage sensitivity might be located; these locations were marked and visited during the fieldwork phase. The database of the Genealogical Society of South Africa (GSSA) was consulted to collect data on any known graves in the area. Results are included in Section 6.3.

3.3 Public Consultation and Stakeholder Engagement:

Stakeholder engagement is a key component of any EIA process, it involves stakeholders interested in, or affected by the proposed development. Stakeholders are provided with an opportunity to raise issues of concern (for the purposes of this report only heritage related issues will be included). The aim of the public consultation process undertaken by the EAP was to capture and address any issues raised by community members and other stakeholders. Results are included in Section 5 and the final EIA report.

3.4 Site Investigation

The aim of the site visit was to:

- a) survey the proposed Project area to understand the heritage character of the area and to record, photograph and describe sites of archaeological, historical or cultural interest;
- b) record GPS points of sites/areas identified as significant areas;
- c) determine the levels of significance of the various types of heritage resources recorded in the Project area.

Table 5: Site Investigation Details

	Site Investigation
Date	Week of 20 May 2022
Season	Winter – The overall archaeological visibility across the proposed project area was fairly high in areas consisting of open veld. The grasses within the proposed project area have been grazed to a degree that visibility was fairly high. Visibility across the agricultural landscape was however fairly low due to high levels of surface disturbances such as ploughed fields. The Project layout changed after the survey was conducted and some areas have not been surveyed as a result. The heritage character of the Project area is however well understood (Figure 3.1).

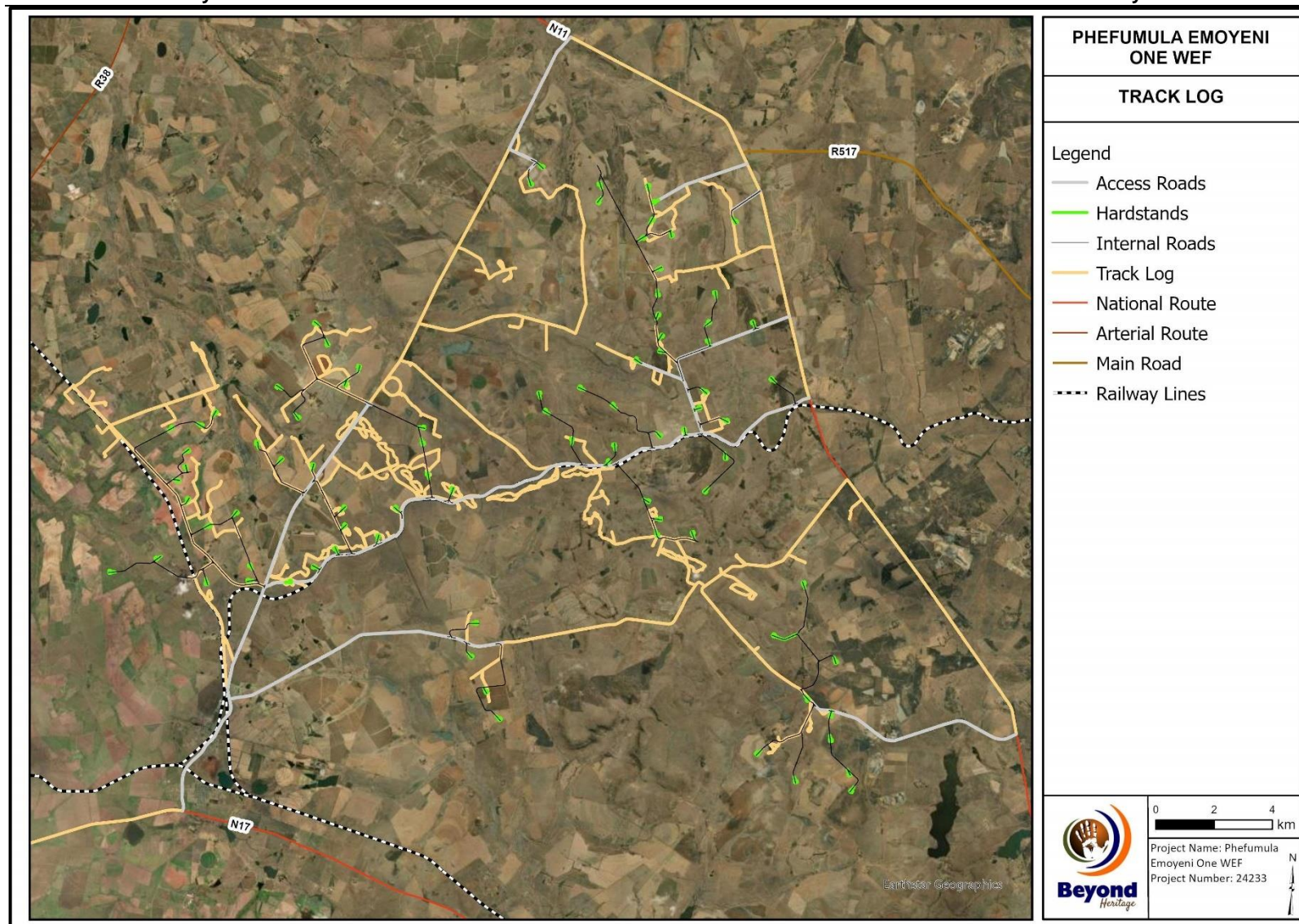


Figure 3.1. Tracklog of the survey path in orange.

3.5 Site Significance and Field Rating

The presence and distribution of heritage resources define a 'heritage landscape'. In this landscape, every site is relevant. In addition, because heritage resources are non-renewable, heritage surveys need to investigate an entire Project area, or a representative sample, depending on the nature of the project. In the case of the proposed Project the local extent of its impact necessitates a representative sample and only the footprint of the areas demarcated for development were surveyed. In all initial investigations, however, the specialists are responsible only for the identification of resources visible on the surface. This section describes the evaluation criteria used for determining the significance of archaeological and heritage sites. The following criteria were used to establish site significance with cognisance of Section 3 of the NHRA:

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

In addition to this criteria field ratings prescribed by SAHRA (2006), and acknowledged by ASAPA for the SADC region, were used for the purpose of this report. The recommendations for each site should be read in conjunction with section 9 of this report.

Table 6. Heritage significance and field ratings

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

3.6 Impact Assessment Methodology

The criteria used to establish the impact rating on sites was provided by WSP Group Africa (Pty) Ltd:

CRITERIA	SCORE 1	SCORE 2	SCORE 3	SCORE 4	SCORE 5
Impact Magnitude (M) The degree of alteration of the affected environmental receptor	Very low: No impact on processes	Low: Slight impact on processes	Medium: Processes continue but in a modified way	High: Processes temporarily cease	Very High: Permanent cessation of processes
Impact Extent (E) The geographical extent of the impact on a given environmental receptor	Site: Site only	Local: Inside activity area	Regional: Outside activity area	National: National scope or level	International: Across borders or boundaries
Impact Reversibility (R) The ability of the environmental receptor to rehabilitate or restore after the activity has caused environmental change	Reversible: Recovery without rehabilitation		Recoverable: Recovery with rehabilitation		Irreversible: Not possible despite action
Impact Duration (D) The length of permanence of the impact on the environmental receptor	Immediate: On impact	Short term: 0-5 years	Medium term: 5-15 years	Long term: Project life	Permanent: Indefinite
Probability of Occurrence (P) The likelihood of an impact occurring in the absence of pertinent environmental management measures or mitigation	Improbable	Low Probability	Probable	Highly Probability	Definite
Significance (S) is determined by combining the above criteria in the following formula:	$[S = (E + D + R + M) \times P]$ $Significance = (Extent + Duration + Reversibility + Magnitude) \times Probability$				
IMPACT SIGNIFICANCE RATING					
Total Score	4 to 15	16 to 30	31 to 60	61 to 80	81 to 100
Environmental Significance Rating (Negative (-))	Very low	Low	Moderate	High	Very High
Environmental Significance Rating (Positive (+))	Very low	Low	Moderate	High	Very High

The impact significance without mitigation measures will be assessed with the design controls in place. Impacts without mitigation measures in place are not representative of the proposed development's actual extent of impact and are included to facilitate understanding of how and why mitigation measures were identified. The residual impact is what remains following the application of mitigation and management measures and is thus the final level of impact associated with the development. Residual impacts also serve as the focus of management and monitoring activities during Project implementation to verify that actual impacts are the same as those predicted in this report.

The mitigation measures chosen are based on the mitigation sequence/hierarchy which allows for consideration of five (5) different levels, which include avoid/prevent, minimise, rehabilitate/restore, offset and no-go in that order. The idea is that when project impacts are considered, the first option should be to avoid or prevent the impacts from occurring in the first place if possible, however, this is not always feasible. If this is not attainable, the impacts can be allowed, however they must be minimised as far as possible by considering reducing the footprint of the development for example so that little damage is encountered. If impacts are unavoidable, the next goal is to rehabilitate or restore the areas impacted back to their original form after project completion. Offsets are then considered if all the other measures described above fail to remedy high/significant residual negative impacts. If no offsets can be achieved on a potential impact, which results in full destruction of any ecosystem for example, the no-go option is considered so that another activity or location is considered in place of the original plan.

The mitigation sequence/hierarchy is shown in Figure 3.2 below.



Figure 3.2. Mitigation Sequence/Hierarchy

3.7 Assumptions and limitations of the study

- The authors acknowledge that the brief literature review is not exhaustive of the literature of the area.
- Due to the nature of heritage resources and pedestrian surveys, the possibility exists that some features or artefacts may not have been discovered/recorded and the possible occurrence of graves and other cultural material cannot be excluded. This limitation is successfully mitigated with the implementation of a Chance Find Procedure (CFP) and monitoring of the study area by the Environmental Control Officer (ECO).
- This report only deals with the footprint area of the proposed development and consisted of non-intrusive surface surveys.
- Field data were recorded by handheld GPS and Mobile GPS applications. It must be noted that during the process of converting spatial data to final drawings and maps the accuracy of spatial data may be compromised. Printing or other forms of reproduction might also distort the spatial distribution in maps. Due care has been taken to preserve accuracy
- This study did not assess the impact on medicinal plants and intangible heritage as it is assumed that these components will be highlighted through the public consultation process if relevant. This process is facilitated by the EAP and if not done this can be considered a significant limitation and as a potential Project risk. It is possible that new information could come to light in future, which might change the results of this Impact Assessment.
- Due to Project layout changes after the survey was conducted, areas of the Project have not been surveyed. A Heritage Walk-Down must be conducted of the final layout in order to cover any areas which have not been surveyed.

4 Description of Socio-Economic Environment

According to Census 2011, Msukaligwa Local Municipality has a total population of 149 377 people, of which 88,1% are black African, 9,8% are white, 1,1% are Indian/Asian, and 0,6% are coloured. The other population groups make up the remaining 0,3%. Of those aged 20 years and older, 4,5% have completed primary school, 32,7% have some secondary education, 29,3% have completed matric, 9,6% have some form of higher education, and 12,3% have no form of schooling. According to Census 2011, 41 698 are employed whereas 5 311 are discouraged work-seekers. The unemployment rate is 26,8%. There are 15 267 unemployed people. Of the youth aged 15–34, 20 261 are employed while 10 679 are unemployed. The unemployment rate for the youth is 34,5% (statssa.gov.za).

5 Results of Public Consultation and Stakeholder Engagement:

In line with the NHRA, stakeholder engagement is a key component of any EA process, it involves stakeholders interested in, or affected by the proposed development. At the time of writing no heritage concerns have been raised.

6 Contextualising the study area

6.1 Archaeological Background

6.1.1 Stone Age

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

Middle Stone Age (MSA) artefacts represent archaic and modern humans that occupied the landscape between 300 000 to 40 000 years before present. Later Stone Age (LSA) occupational sequences reflect San and Khoisan communities from 40 000 years ago until recently (Dusseldorp *et al.* 2013). Although the MSA and LSA has not been extensively studied in Mpumalanga, evidence for these periods has been excavated from Bushman Rock Shelter in the Ohrigstad District (Esterhuysen & Smith 2007; Lombard *et al.* 2012) and it is known that San communities lived near Lake Chrissie as recently as the 1950s (e.g., Schlebusch *et al.* 2016). MSA and LSA surface scatters have also been investigated in the vicinity of Piet Retief, and De Wittekrans nearby Camden is a Later Stone Age archaeological rock art site complex (Nel & Karodia 2013).

6.1.2 Iron Age

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

The Late Iron Age (LSA - 1300-1840s CE) marks the arrival and spread of ancestral Eastern Bantu-speaking Nguni and Sotho-Tswana communities into southern Africa. The location of Late Iron Age settlements is usually on or near hilltops for defensive purposes. The Late Iron Age as an archaeological period ended by 1840 CE, when the Mfecane caused major socio-political disruptions in southern Africa (Huffman 2007). Close to Ermelo, on Tafelkop Mountain, is the well-known LIA Tafelkop Settlement. It consists of various settlement complexes with over 100 corbelled huts in numerous clusters on the mountain top (Esterhuysen & Smith 2007; Figure 3). The site was declared a Provincial Heritage Site.

Dates from Early Iron Age sites indicated that by the beginning of the 5th century CE Bantu-speaking farmers had settled in the Mpumalanga lowveld. Subsequently, farmers continued to move into and between the lowveld and highveld of Mpumalanga. Iron Age sites such as Welgelegen Shelter, Robertsdrift situated 50-100 km west of Camden dates from the 12th to the 18th century (Derricourt & Evers 1973; Esterhuysen & Smith 2007).

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

6.1.3 Historical Background

Camden power station was commissioned in 1967 (Gaigher 2011; Matenga 2020). However, the nearby town of Ermelo has a rich history. The earliest record for settlers in Ermelo is from 1860, when the area

was under the jurisdiction of Zulu-speaking Nhlapo communities (Nhlapo 1945). The construction of the town of Ermelo was initiated by the Dutch Reform Church, which purchased the eastern part of the farm Nooitgedacht on 26 May 1879. The town was officially proclaimed on 12 February 1880 by William Owen Lanyon, the Administrator of the Transvaal (Greyling 2017).

6.1.4 Battlefield and War History

Due to the proximity of Ermelo to the Nederlandsche Zuid-Afrikaansche Spoorweg-Maatskappij railway line linking Pretoria with Lourenço Marques (Maputo), the area was subject to various skirmishes during the Anglo-Boer War of 1899-1902. At the time there were about 100 families residing in the town and many women and children were sent to British concentration camps. In 1901, British troops burnt the town down due to their scorched earth policy, and Ermelo was rebuilt in 1903 (Moody 1977; Pretorius 2000; Van Schalkwyk 2012; Greyling 2017).

6.2 Literature Review (SAHRIS)

Several Cultural Resource Management (CRM) surveys are on record for the general area and the relevant results of these studies are briefly discussed below and outlined in Table 8.

Table 7. Studies consulted for the project.

Author	Year	Project	Findings
Van Schalkwyk, L.	2006	Heritage Impact Assessment for the Majuba-Umfolozi 765 KV Transmission Line in Mpumalanga and KwaZulu-Natal, South Africa, Pietermaritzburg: eThembeni Cultural Heritage	Ancestral graves: Rock painting sites that were recorded along and below the eastern uKhahlamba escarpment; Stone Age open air sites; Stone walled settlements dating to the Late Iron Age; Battlefields of: - Majuba (1887); - Hlobane (1879); - Holkrantz (1879); - Khambula (1879)
Fourie, W.	2008	Camden Power Station Rail expansion project on portions of the farm Mooiplaats 290 IT and the farm Camden Power Station 329 IT, District Ermelo, Mpumalanga	The remains of a stone ruin were identified at this location. The structure consists of two rooms. Only the foundations and rubble remain of the structure. Recent historic
Gaigher, S.	2011	First Phase Heritage Impact Assessment for the Proposed Extension to the Camden Ash Disposal Facilities	Small graveyard (5 graves), historic farmland reservoirs, furrows, pathways.
Pistorius, J.C.C.	2011	Kusipongo Expansion Project: A Heritage Baseline Study for Proposed Adit Positions in a Project Area near the Heyshope Dam to the West of Piet Retief in the Mpumalanga Province of South Africa, KwaZulu-Natal: Environmental Resources Management (South Africa) Pty Ltd (ERM)	A single, historic informal grave with stone dressing. A single square cattle enclosure. Late Iron Age site with stone wall enclosures. historical graveyard demarcated with stone walling. A sandstone bank that may be associated with Stone Age sites.
Van Schalkwyk, J.	2012	Basic assessment and environmental management programme: Construction of a 132kV transmission Line from the Kliphoek to Panbult Substation and Kliphoek to Uitkoms Substation: Mpumalanga Province	Some farmsteads and other farming related features. A number of formal and informal cemeteries
Nel, J. & Karodia, S.	2013	Heritage Impact Assessment Report Kangra Coal	Historical structures and associated trees, cemeteries, sandstone outcrop with potential for Rock Art
Van der Walt, J.	2015	Camden Ash Disposal – Grave confirmation study	Four cemeteries and two historical structures as well as stone cairns.
Gaigher, S.	2015	Report on the Social Consultation Regarding the Relocation of Graves within the Proposed Development Area for the Camden Ash Disposal Facilities	Burial sites (19 graves, 7 graves 2 graves and 5 graves respectively).
Van Schalkwyk, J.	2016	Cultural Heritage Impact assessment for the planned borrow pits and quarries for the improvement of the national route N2, km 60 (Leiden) to km 87.4 (Camden), Gert Sibande District Municipality, Mpumalanga Province	Historic informal cemetery with more than 35 graves. Three old railway culverts that formed part of the original railroad alignment which was constructed in 1911. An old sheep dip constructed from concrete.
Matenga, E.	2020	Heritage Impact Assessment for the proposed improvements to the existing waste reticulation system at Camden power station in Ermelo, Mpumalanga Province	No sites were identified.
Van der Walt, J.	2022a	Heritage Impact Assessment for the proposed Camden I Wind Grid Connection, Mpumalanga Province	Burial sites and structural remains
Van der Walt, J.	2022b	Heritage Impact Assessment for the Proposed Camden I Solar Energy Facility (100MW), Mpumalanga Province, South Africa	Burial sites and structural remains

Author	Year	Project	Findings
Van der Walt, J.	2022c	Heritage Impact Assessment for the Proposed Camden I Wind Energy Facility (up to 210MW), Mpumalanga Province, South Africa	Burial sites and structural remains
Van der Walt, J.	2022d	Heritage Impact Assessment for the Proposed Camden II Wind Energy Facility (up to 210MW), Mpumalanga Province, South Africa.	Burial sites and structural remains
Van der Walt, J.	2022e	Heritage Impact Assessment for the proposed Camden powerline and collector substation, Mpumalanga Province	Burial sites and structural remains
Van der Walt, J.	2022f	Heritage Impact Assessment for the Hendrina South Wind Energy Facility	Burial sites and structural remains
Van der Walt, J.	2022g	Heritage Impact Assessment for the Hendrina North Wind Energy Facility	Burial sites and structural remains
Van der Walt, J.	2022h	Heritage Impact Assessment for the Hendrina South Grid Infrastructure	Burial sites and structural remains

6.3 Google Earth and the Genealogical Society of South Africa (Graves and Burial Sites)

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where archaeological and historical sites might be located. Numerous burial sites are indicated by the Genealogical Society of the South Africa (GSSA) for the study area. The known cemeteries are summarised in Table 9. These cemeteries must be avoided with a 30m buffer zone.

Table 8. Cemeteries indicated by the GSSA.

Cemetery	Location	Number of Graves
Witbank	26°19'0.00"S; 29°43'60.00"E	11
Nooitgedacht 237	26°21'17.64"S; 29°48'26.16"E	1
Bosmanskrans 217 (3)	26°14'56.70"S; 29°49'48.72"E	8
Bosmanskrans 217 (2)	26°16'13.20"S; 29°50'12.54"E	8
Bosmanskrans 217 (1)	26°17'16.86"S; 29°50'35.40"E	8
Elim 247	26°18'17.76"S; 29°51'18.72"E	12
Nooitgedacht 237	26°21'17.64"S; 29°48'26.16"E	1

7 Heritage Baseline

7.1 Description of the Physical Environment

The vegetation of the Project area belongs to the Eastern Highveld Grassland and Soweto Highveld Grassland of the Grassland Biome. The Eastern Highveld Grassland is described as Slightly to moderately undulating plains, including some low hills and pan depressions. The vegetation is short dense grassland dominated by the usual highveld grass composition (*Aristida*, *Digitaria*, *Eragrostis*, *Themeda*, *Tristachya* etc.) with small, scattered rocky outcrops with wiry, sour grasses and some woody species (*Acacia caffra*, *Celtis africana*, *Diospyros lycioides* subsp *lycioides*, *Parinari capensis*, *Protea caffra*, *P. welwitschii* and *Rhus magalismsontanum*). The Soweto Highveld Grassland is described as Gently to moderately undulating landscape on the Highveld plateau supporting short to medium-high, dense, tufted grassland dominated almost entirely by *Themeda triandra* and accompanied by a variety of other grasses such as *Elionurus muticus*, *Eragrostis racemosa*, *Heteropogon contortus* and *Tristachya leucothrix*. In places not disturbed, only scattered small wetlands, narrow stream alluvia, pans and occasional ridges or rocky outcrops interrupt the continuous grassland cover (Mucina and Rutherford 2006).

The proposed project area is situated in the large triangular open landscape between Hendrina, Ermelo and Bethal surrounding the small town of Davel in Mpumalanga. The proposed project landscape is dominated by large open fields of grass and small thickets of shrubs and trees scattered throughout. Large sections of the proposed project landscape also consist of agricultural activities. These mainly include cultivated crops and cattle farming. The cultivated crops consist of large, ploughed fields as well as circular crops under pivot irrigation. The landscape is divided mainly into large farms with scattered farmsteads throughout. Informal settlements and labour housing is also scattered throughout the landscape creating a high probability of graves near these areas.

The landscape is largely flat with some low hills visible throughout. Some of the hills within the proposed project landscape have rocky sandstone outcrops. A high number of small streams and drainage lines run throughout the proposed project area.

A degraded and disused railway line runs through the proposed project area. General site conditions are indicated in (Figure 7.1 to 7.4).



Figure 7.1. General site conditions showing large, ploughed fields.



Figure 7.2. General site conditions showing a generally flat terrain.



Figure 7.3. Large, ploughed fields are found across the Project area.



Figure 7.4. Existing powerlines within the Project area.

7.2 Heritage Resources

Heritage observations within the study area included multiple burial sites, farmsteads, ruins, and circular stone enclosures and were recorded as waypoints. General site distribution of the recorded observations in relation to the Project layout is spatially illustrated in Figure 7.5 and briefly described in Table 10. Selected features are illustrated in Figure 7.6 to 7.125.

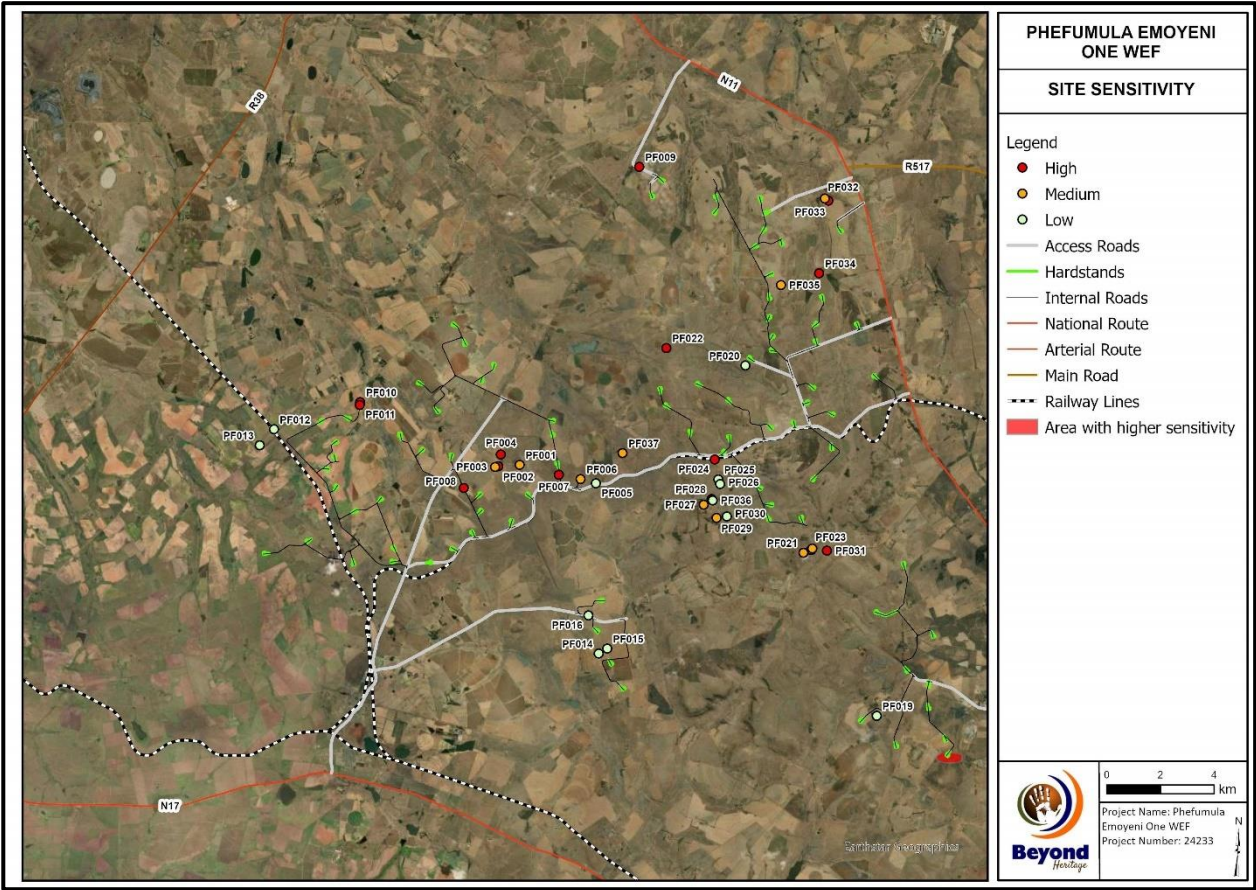


Figure 7.5. Site distribution map. Zoomed in maps are included in Appendix A.

Table 9. Sites recorded in the study area.

Label	Longitude	Latitude	Description	Significance
PF001	29°43'30.73"E	26°21'46.70"S	Historical farmstead – Still occupied	Medium Significance GP B
PF002	29°43'2.21"E	26°21'49.53"S	Historical Burial site – 6 graves located within a brick-built family cemetery	High Significance 3A
PF003	29°42'57.77"E	26°21'50.46"S	Historical farmstead – Still occupied	Medium Significance GP B
PF004	29°43'4.94"E	26°21'35.42"S	Large burial site – 65 – 70 packed stone and various cement graves, some graves have newer granite headstones and skirting.	High Significance 3A
PF005	29°45'14.07"E	26°22'5.62"S	Ruins/Packed stone foundations related to possible historical railroad	Low Significance GP C
PF006	29°44'53.51"E	26°22'1.12"S	Ruins/Packed stone foundations and semi-circular enclosures.	Medium Significance GP B
PF007	29°44'24.13"E	26°21'56.96"S	Burial site. 13 to 15 graves situated within a cement and concrete built cemetery. The graves consist of various degraded and collapsed granite headstones and skirting.	High Significance 3A
PF008	29°42'16.53"E	26°22'17.56"S	Burial site situated under a large thicket of trees along the edge of existing agricultural fields. – 70 to 80 various graves built from granite, packed stone, cement and brick. Sections of the cemetery is still being maintained.	High Significance 3A
PF009	29°45'56.03"E	26°15'41.45"S	Burial site – 3 graves situated on the edge of an existing agricultural field on top of the ploughed contour line. 1 grave has a granite headstone and skirting with the other 2 having degraded brick and stone skirting. The burial site is highly disturbed.	High Significance 3A
PF010	29°39'52.78"E	26°20'38.67"S	Burial site – 1 brick built grave situated in a small open field.	High Significance 3A
PF011	29°39'52.12"E	26°20'42.16"S	Burial site – 1 fenced off grave with an overgrown granite headstone.	High Significance 3A
PF012	29°37'58.02"E	26°21'15.57"S	Ruin/Degraded railway structure.	Low Significance GP C
PF013	29°37'39.59"E	26°21'35.23"S	Historical farmstead - Ruins	Low Significance GP C
PF014	29°45'27.12"E	26°25'30.85"S	Possible historical plantation of trees.	Low Significance GP C
PF015	29°45'38.22"E	26°25'24.46"S	Possible historical lane of trees.	Low Significance GP C
PF016	29°45'11.15"E	26°24'45.46"S	Broken down and degraded informal settlement.	Low Significance GP C but graves may be associated with the ruins and will then be High Significance
PF017	29°50'7.41"E	26°23'15.59"S	Two packed stone graves situated within a circular packed stone enclosure.	High Significance 3A
PF018	29°50'7.75"E	26°23'15.77"S	Packed stone ruins with circular packed stone enclosures.	Medium Significance GP B

Label	Longitude	Latitude	Description	Significance
PF019	29°51'44.90"E	26°26'32.68"S	Broken down informal settlement – Site is completely demolished – Only some evidence left such as lower grinding stone.	Low Significance GP C but graves may be associated with the ruins and will then be High Significance
PF020	29°48'29.40"E	26°19'36.12"S	Ruins - Packed stone foundations - Historical	Low Significance GP C
PF021	29°49'57.57"E	26°23'19.22"S	Ruins – Packed stone ruins with some circular packed stone enclosures.	Medium Significance GP B
PF022	29°46'42.13"E	26°19'18.65"S	Burial site – 28 graves. Majority have granite headstones and skirting. Some made from packed stone, and some built from brick and cement. Fenced off.	High Significance 3A
PF023	29°50'9.33"E	26°23'13.73"S	Packed stone ruins/Circular packed stone walling and enclosures	Medium Significance GP B
PF024	29°47'53.13"E	26°21'31.13"S	Burial site – Large cemetery situated next to a possible historical railway line. Contains 75+ graves made from various materials such as packed stone, granite and brick.	High Significance 3A
PF025	29°47'58.84"E	26°21'54.99"S	Ruins/Broken down structure	Low Significance GP C
PF026	29°48'1.64"E	26°22'0.51"S	Degraded school building/fairly recent.	Low Significance GP C
PF027	29°47'40.90"E	26°22'26.23"S	Large historical farmstead – Currently occupied.	Medium Significance GP B
PF028	29°47'51.12"E	26°22'18.92"S	Burial site containing two packed stone graves and metal grave markers.	High Significance 3A
PF029	29°47'58.85"E	26°22'41.36"S	Historical farmhouse – Intact but not occupied.	Medium Significance GP B
PF030	29°48'12.50"E	26°22'39.17"S	Large historical packed stone kraal. 25x15m	Low Significance GP C
PF031	29°50'29.24"E	26°23'15.85"S	Burial site containing 20-25 graves made from various materials such as granite, cement and brick and packed stone.	High Significance 3A
PF032	29°50'7.05"E	26°16'10.68"S	Historical farmstead-Various masoned stone ruins and structures. Some of the historical structures have been renovated.	Medium Significance GP B
PF033	29°50'12.11"E	26°16'13.07"S	Burial site – Historical cemetery with large cement and brick wall. Containing 8 graves with granite and cement headstones and covers. Oldest grave 1908	High Significance 3A
PF034	29°50'3.57"E	26°17'41.09"S	Burial site – Large informal burial site containing 30 – 35 graves made from packed stone, granite and cement.	High Significance 3A
PF035	29°49'12.76"E	26°17'57.31"S	Historical farmstead – Fairly degraded and abandoned. Structures fairly intact.	Medium Significance GP B
PF036	29°47'52.40"E	26°22'20.52"S	Large broken down and degraded informal settlement. Only building rubble remains.	Low Significance GP C
PF037	29°43'30.73"E	26°21'46.70"S	Historical farmstead – Abandoned and degraded.	Medium Significance GP B



Figure 7.6. General view of the farmstead at PF001.



Figure 7.7. Occupied building at the farmstead PF001.



Figure 7.8. Brick fenced burial site at PF002.



Figure 7.9. Grave at PF002.



Figure 7.10. Mouton grave at PF002.

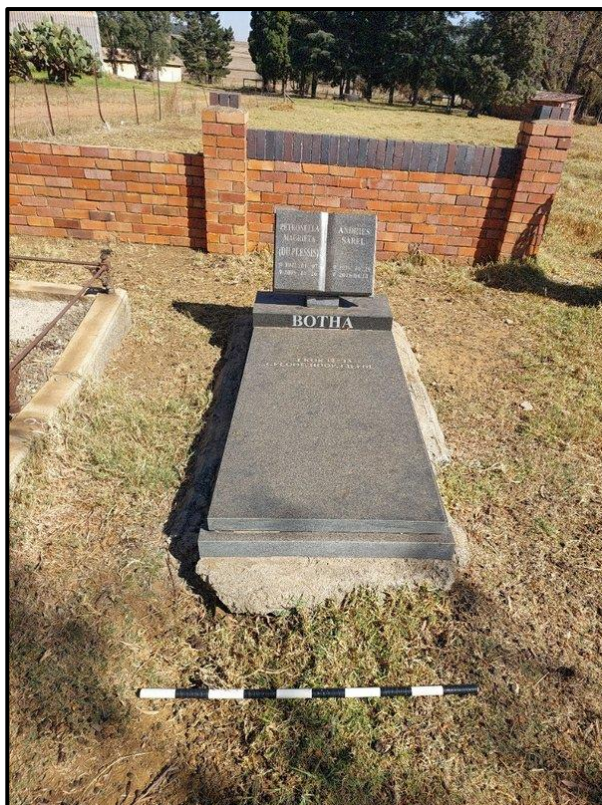


Figure 7.11. Botha grave at PF002 (2005 and 2018).



Figure 7.12. Structure at the farmstead PH003.



Figure 7.13. Occupied building at farmstead PH003.



Figure 7.14. Overview of graves at burial site PF004.



Figure 7.15. Stone packed graves at PF004.

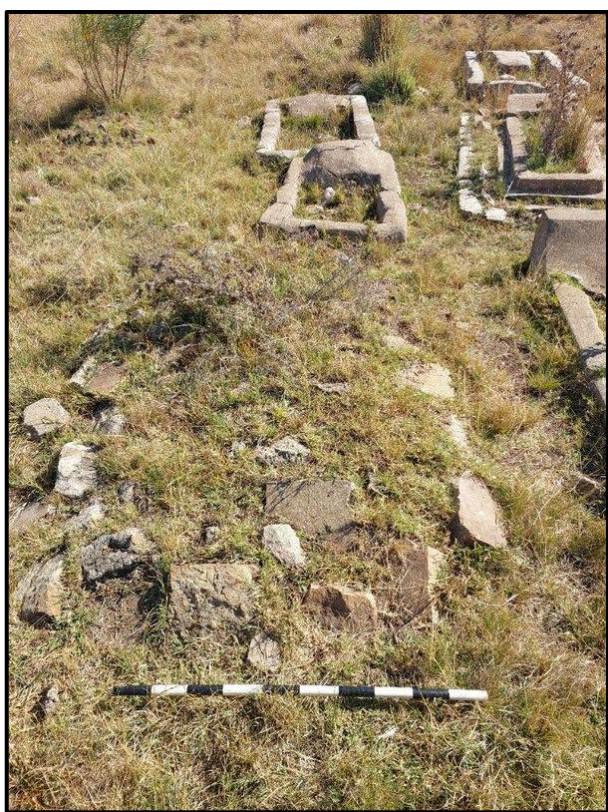


Figure 7.16. Overgrown stone packed grave at PF004.

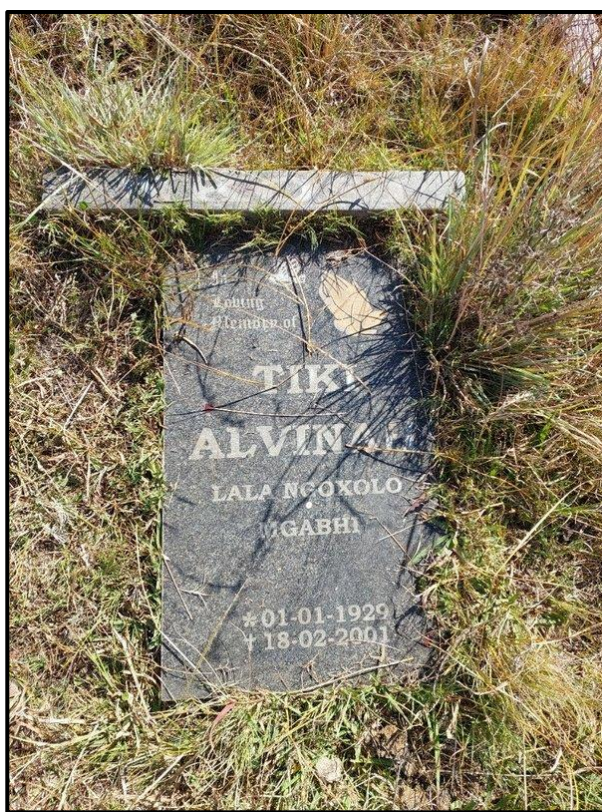


Figure 7.17. Grave at PF004 (2001).

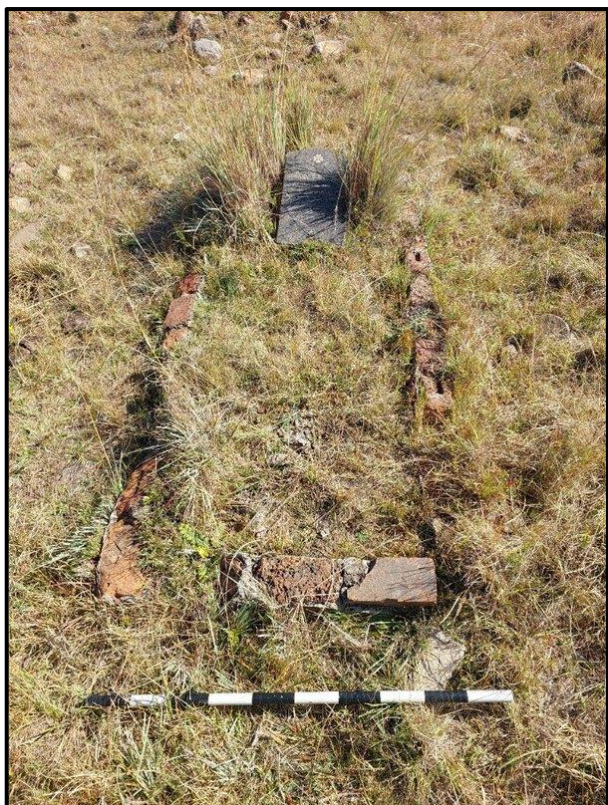


Figure 7.18. Grave at PF004.

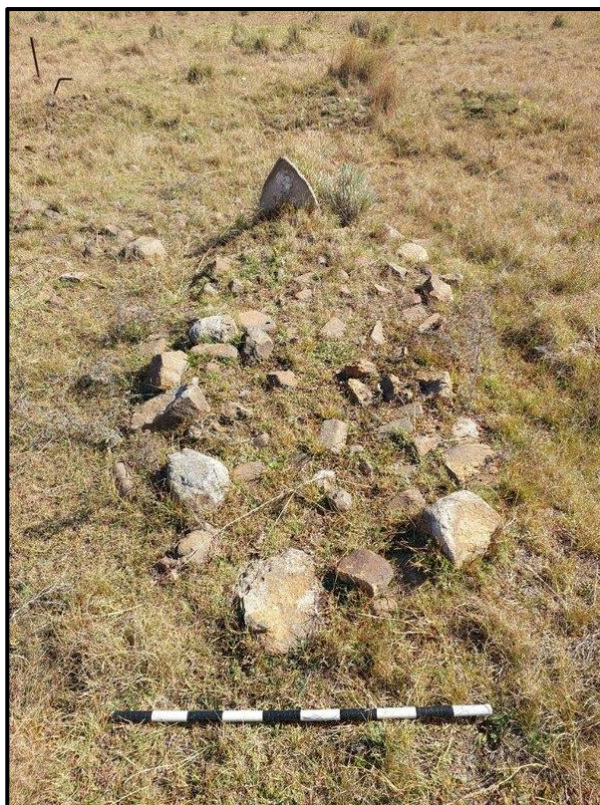


Figure 7.19. Grave at PF004.



Figure 7.20. Grave at PF004.



Figure 7.21. Grave at PF004.



Figure 7.22. Ruins at PF005.

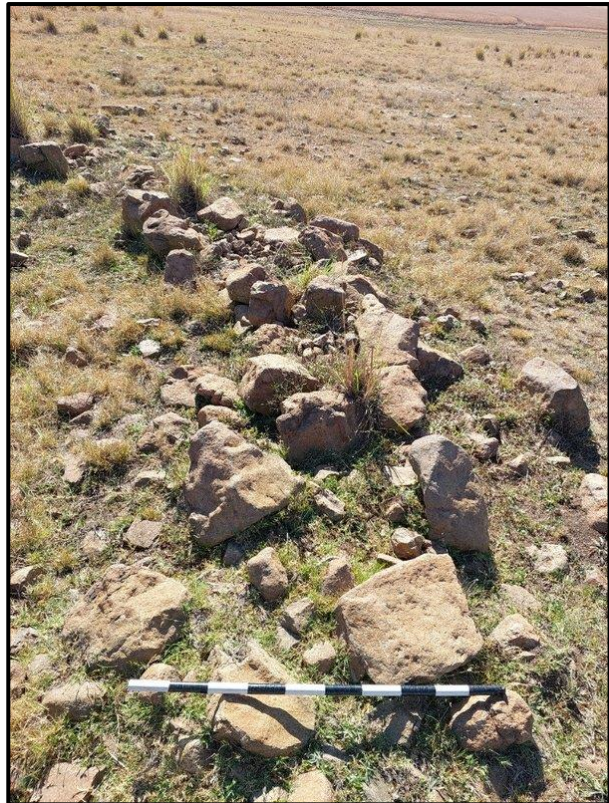


Figure 7.23. View of a semi- circular enclosure at PF006.



Figure 7.24. Overview of the ruins at PF006.



Figure 7.25. Overview of burial site PF007.

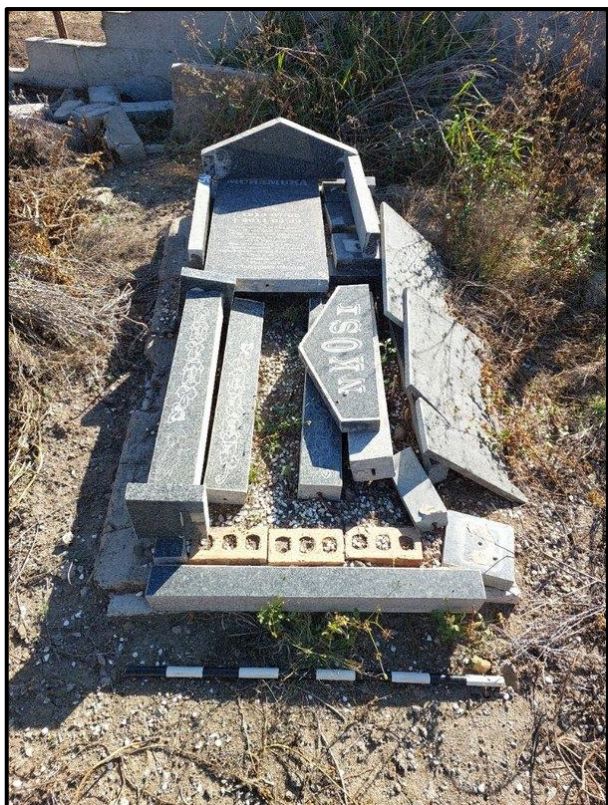


Figure 7.26. Degraded granite grave at PF007 (2011).



Figure 7.27. Granite and cement grave at PF007 (1965).



Figure 7.28. Granite and cement grave at PF007 (1953).



Figure 7.29. Stone packed grave at PF007.

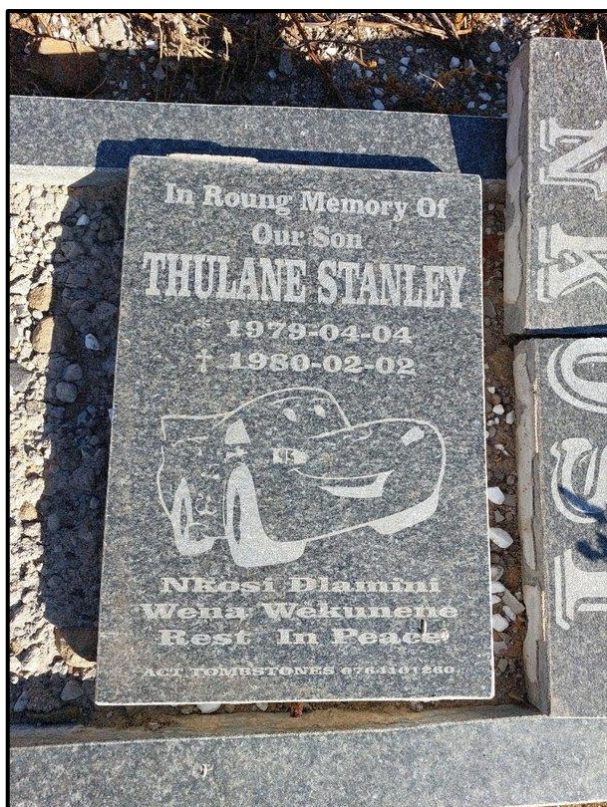


Figure 7.30. Granite grave at PF007 (1980).



Figure 7.31. Grave at PF007.



Figure 7.32. View of graves in the burial site PF008.



Figure 7.33. Overgrown grave at PF008.



Figure 7.34. Grave at PF008.

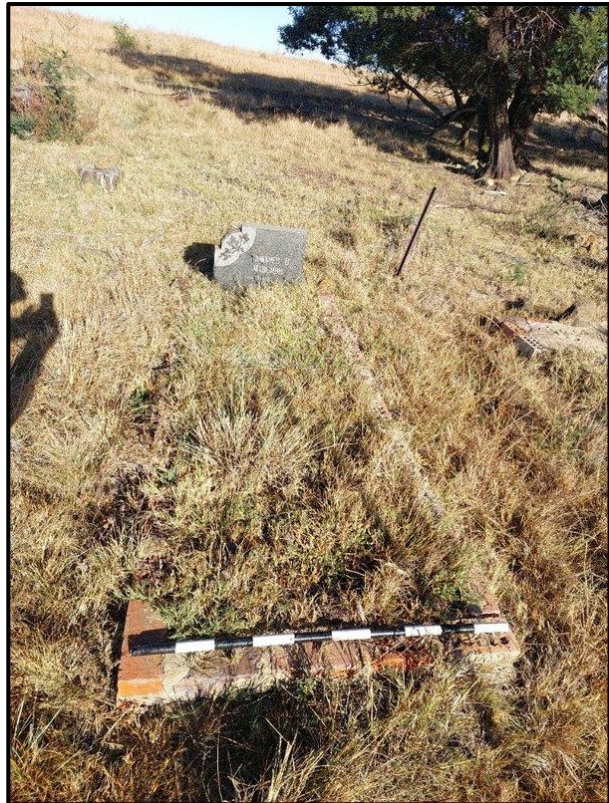


Figure 7.35. Brick grave at PF008 (1978).

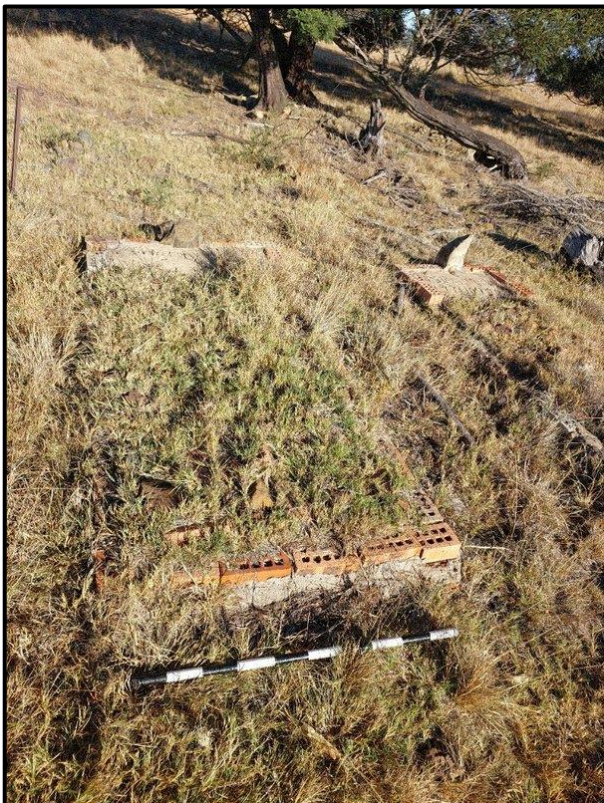


Figure 7.36. Brick built grave at PF008.

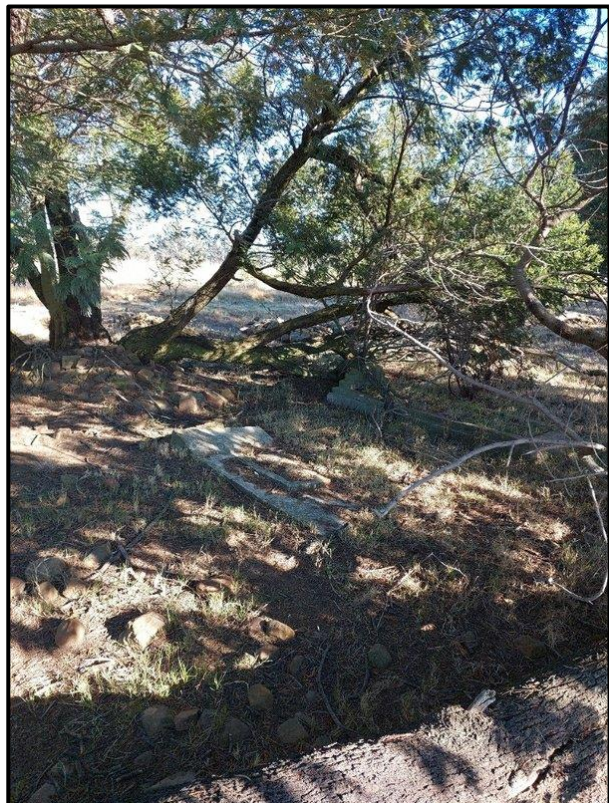


Figure 7.37. View of graves under thickets of trees at PF008.

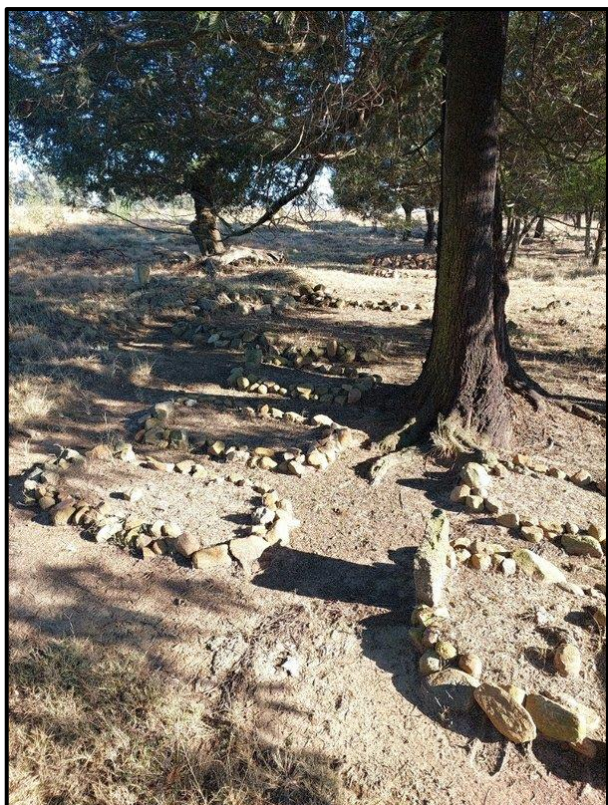


Figure 7.38. View of graves under thicket of trees at PF008.



Figure 7.39. Graves at PF008.

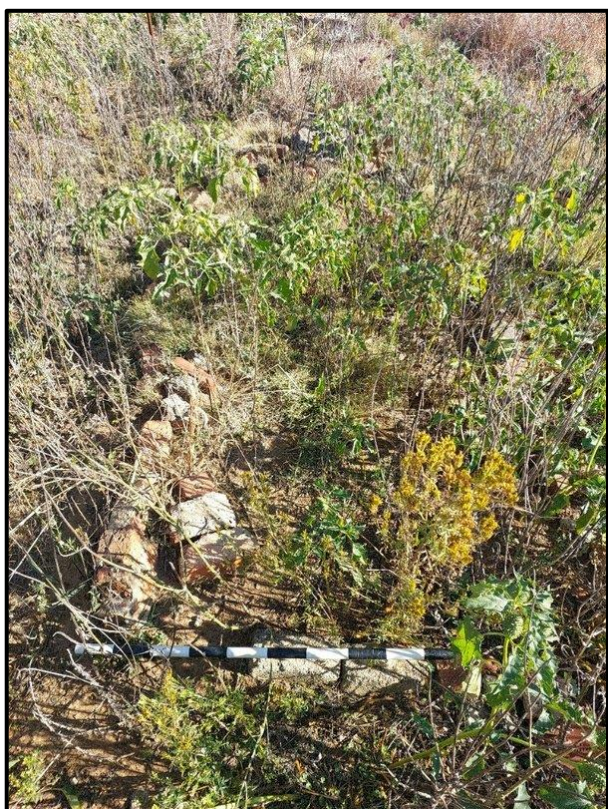


Figure 7.40. Overgrown grave at PF009.



Figure 7.41. Granite grave at PF009 (1990).



Figure 7.42. Overgrown grave at PF009.

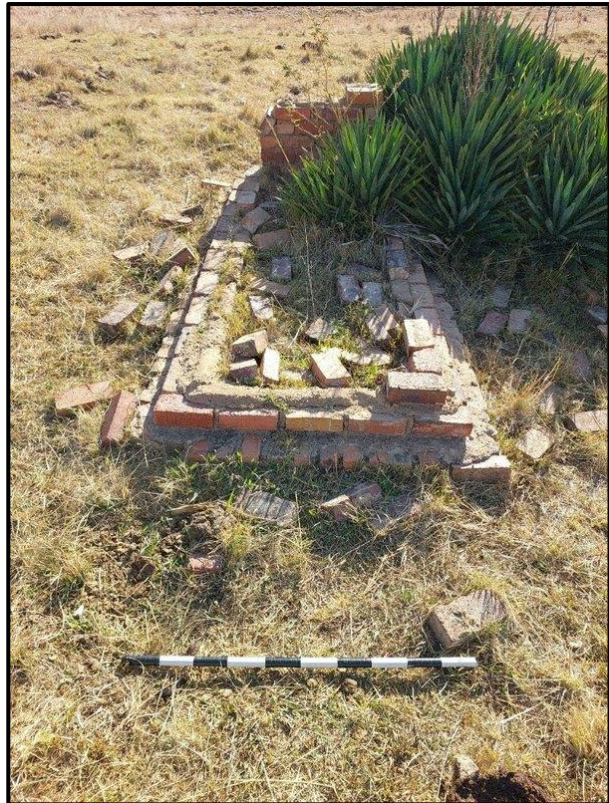


Figure 7.43. Single grave at PF010.



Figure 7.44. Single fenced off grave at PF011.



Figure 7.45. Single grave at PF011.



Figure 7.46. Ruins at PF012.



Figure 7.47. Ruin at PF012.



Figure 7.48. Ruin at PF013.



Figure 7.49. Ruins at PF013.



Figure 7.50. View of possible Historical tree plantation at PF014.

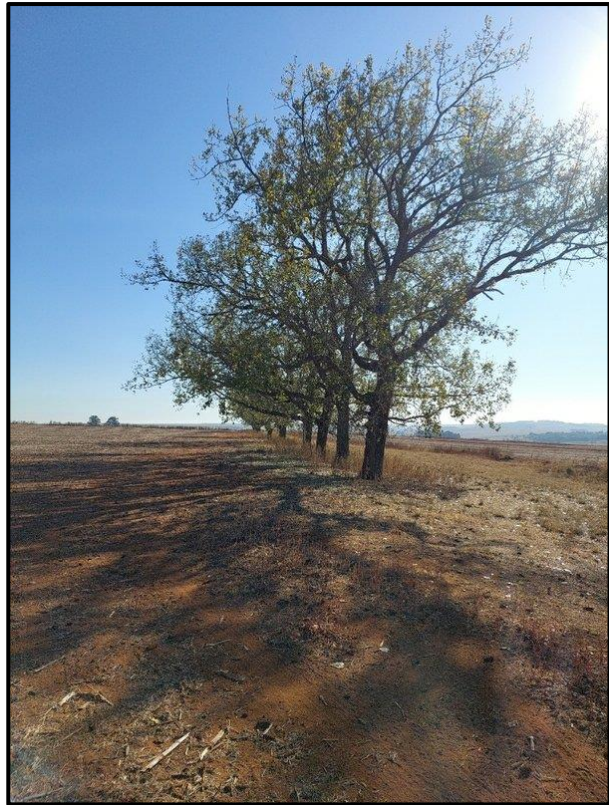


Figure 7.51. Possible historical lane of trees at PF015.



Figure 7.52. Ruins at PF016.



Figure 7.53. Site overview of burial site PF017.

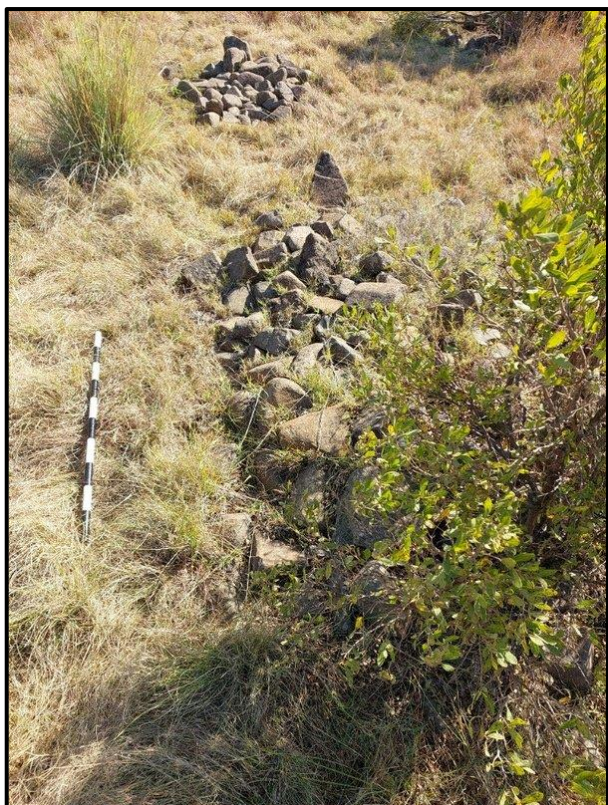


Figure 7.54. Stone packed grave at PF017.

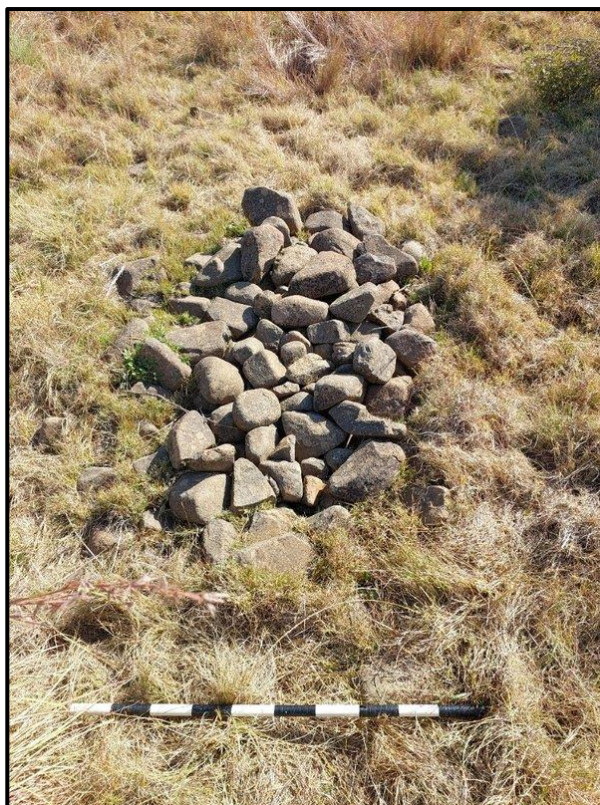


Figure 7.55. Stone packed grave at PF017.



Figure 7.56. Site overview of stone ruins at PF018.



Figure 7.57. Section of packed stone enclosure at PF018.



Figure 7.58. View of demolished structures at PF019.



Figure 7.59. Stone foundations at PF020.



Figure 7.60. Stone foundations at PF020.

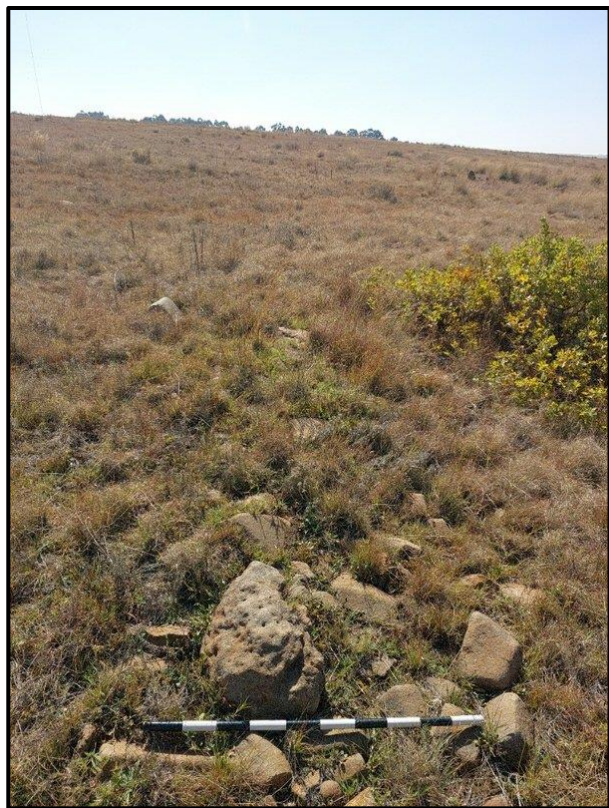


Figure 7.61. Packed stone ruins at PF021.



Figure 7.62. General site overview of stone packed ruins at PF021.



Figure 7.63. View of stone packed graves at PF022.



Figure 7.64. Grave at PF022 (1976).

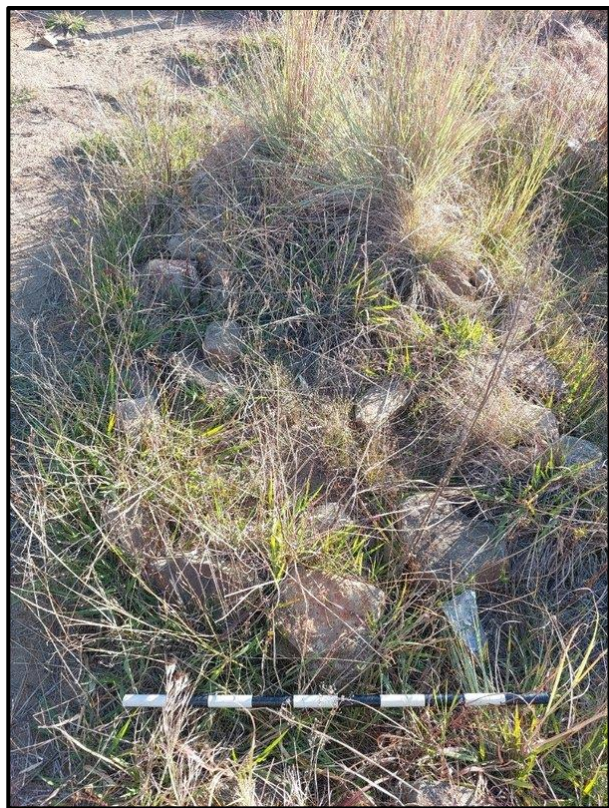


Figure 7.65. Overgrown stone packed grave at PF022.



Figure 7.66. Overgrown brick-built grave at PF022.

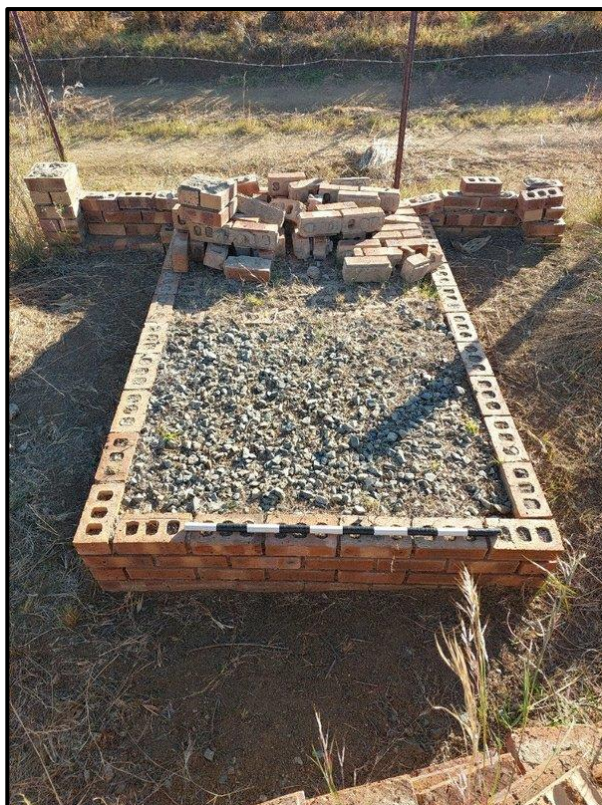


Figure 7.67. Brick built grave at PF022.



Figure 7.68. Stone packed graves at PF022.

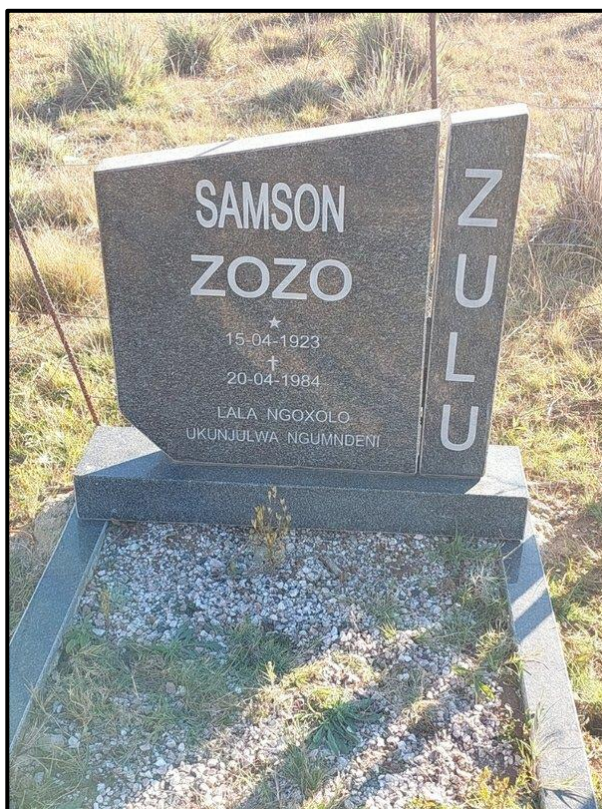


Figure 7.69. Granite grave at PF022 (1984).



Figure 7.70. Fenced off grave at PF022.



Figure 7.71. View of fenced off graves at PF022.



Figure 7.72. Overview of packed stone ruins at PF023.



Figure 7.73. Section of stone packed wall at PF023.



Figure 7.74. Overview of burial site PF024.



Figure 7.75. Stone packed grave at PF024.



Figure 7.76. Granite grave at PF024 (2014).



Figure 7.77. Granite grave at PF024 (2011).



Figure 7.78. Granite and stone grave at PF024.



Figure 7.79. Overgrown stone packed grave at PF024.

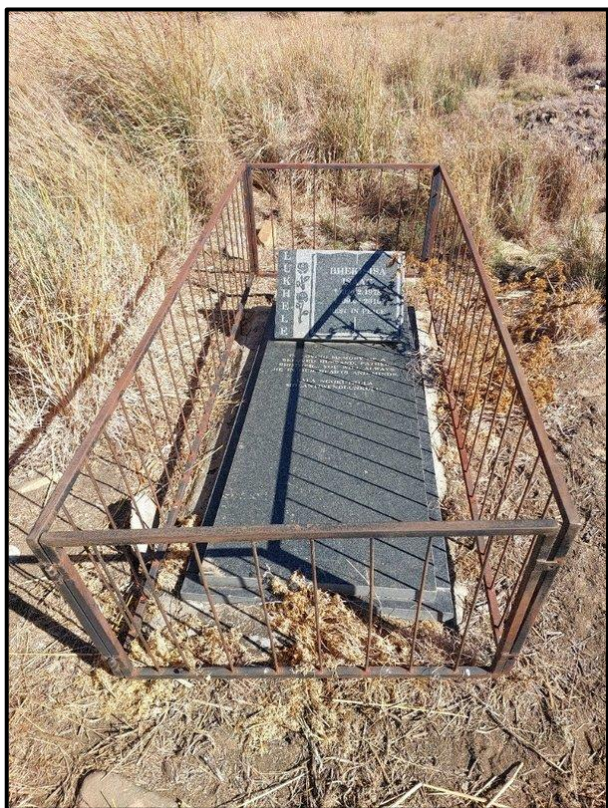


Figure 7.80. Fenced off granite grave at PF024.



Figure 7.81. Fenced off granite grave at PF024 (2022).



Figure 7.82. Overgrown and degraded grave at PF024 (1998).

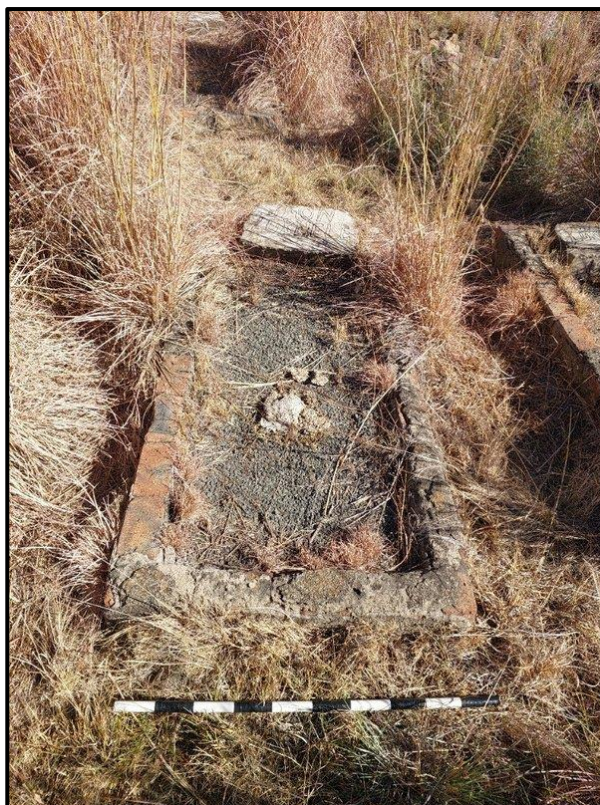


Figure 7.83. Brick built grave at PF024.

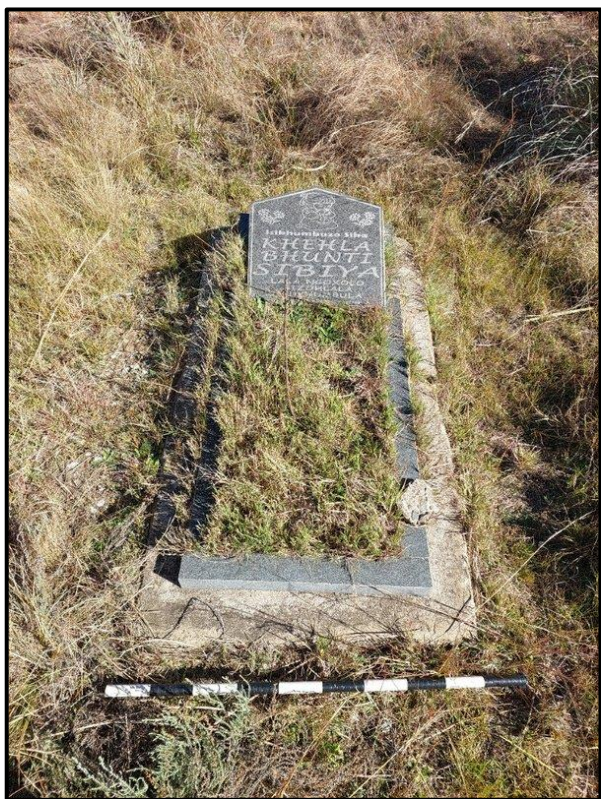


Figure 7.84. Overgrown granite and cement grave at PF024.



Figure 7.85. View of broken down structure at PF025.



Figure 7.86. Broken down structure at PF025.



Figure 7.87. Degraded school building at PF026.



Figure 7.88. View of various structures at the farmstead PF027.



Figure 7.89. View of occupied farmstead at PF027.



Figure 7.90. View of the two graves at burial site PF028.



Figure 7.91. Stone packed grave with headstone at PF028.



Figure 7.92. Stone packed grave with headstone at PF028.



Figure 7.93. View of intact farmhouse at PF029.



Figure 7.94. Alternative view of the farmhouse at PF029.

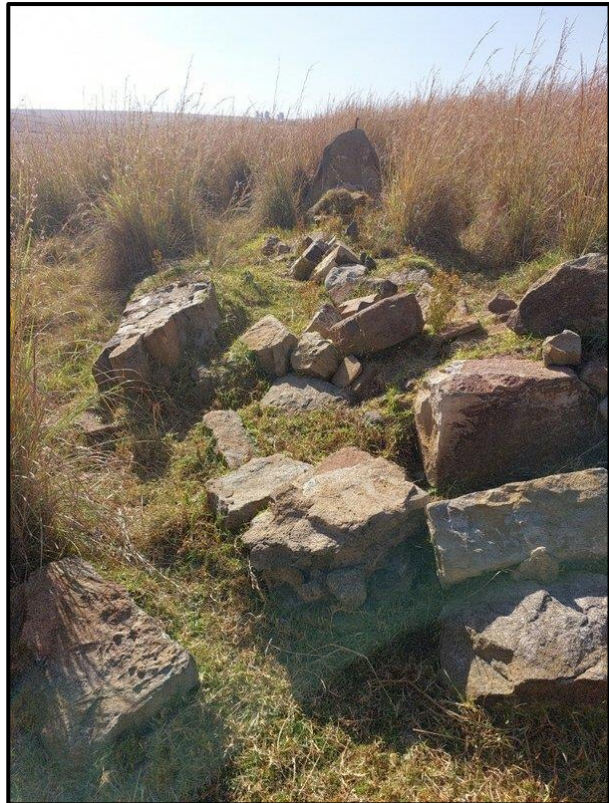


Figure 7.95. Stone packed kraal at PF030.



Figure 7.96. Stone packed kraal at PF030.



Figure 7.97. View of fenced off burial site PF031.



Figure 7.98. Granite grave at PF031.



Figure 7.99. Overgrown stone packed grave at PF031.



Figure 7.100. Granite grave at PF031 (1971).



Figure 7.101. Granite grave at PF031 (1974).



Figure 7.102. Granite grave at PF031 (1980).



Figure 7.103. Packed grave at PF031.

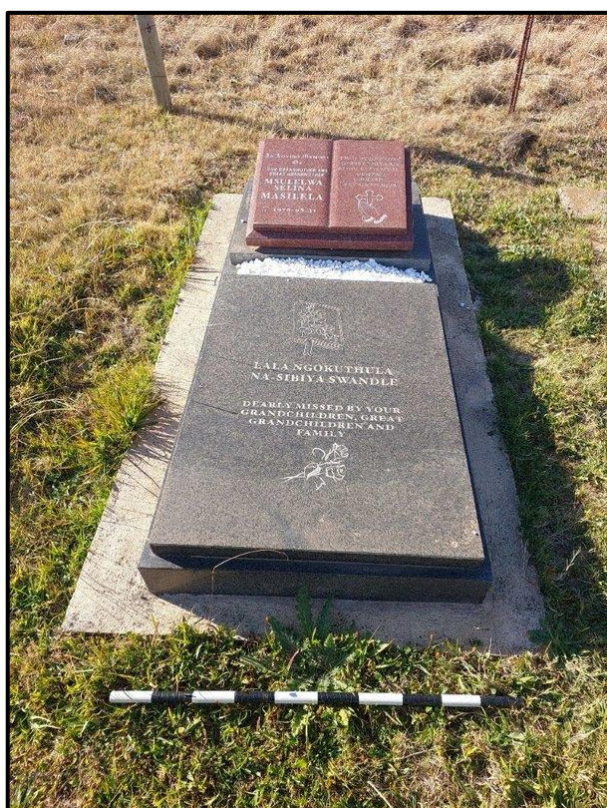


Figure 7.104. Granite grave at PF031 (1976).



Figure 7.105. Granite grave at PF031 (1961).



Figure 7.106. Cement and brick grave at PF031 (1950).



Figure 7.107. Granite grave at PF031 (1997).

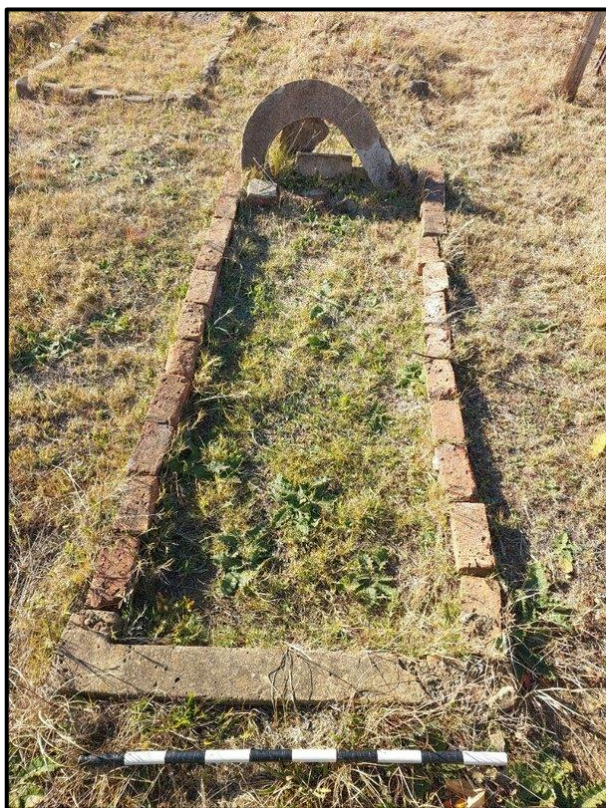


Figure 7.108. Brick built grave at PF031.



Figure 7.109. Overview of the farmstead PF032.



Figure 7.110. Structure ruin at PF032.



Figure 7.111. Cement and brick wall enclosing burial site PF033.



Figure 7.112. Family grave at PF033.



Figure 7.113. Stone and granite grave at PF033 (1932).



Figure 7.114. Stone and granite grave at PF033 (1903).



Figure 7.115. Grave with cover at PF033.



Figure 7.116. Overview of burial site PF034.



Figure 7.117. Stone circle packed graves at PF034.



Figure 7.118. Granite and stone grave at PF034 (1958).

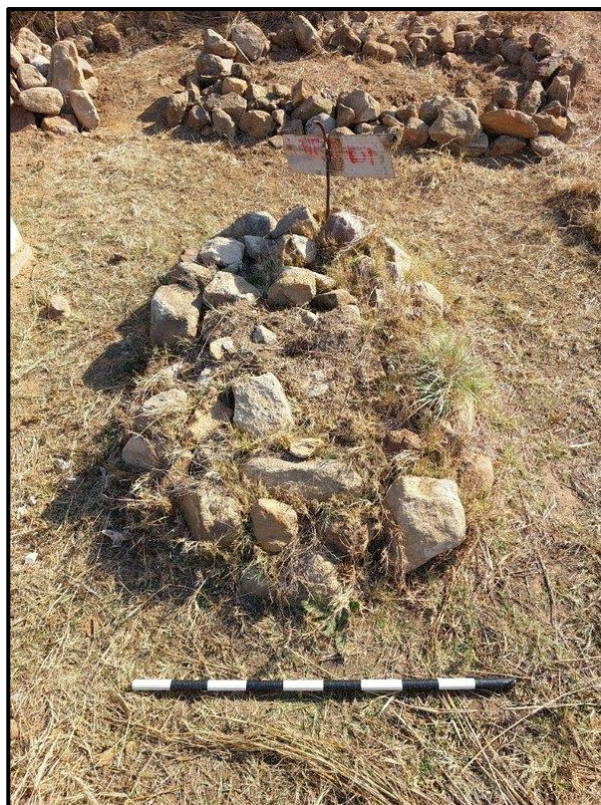


Figure 7.119. Stone packed grave at PF034.



Figure 7.120. Granite grave at PF034 (1972).



Figure 7.121. Stone packed grave at PF034.

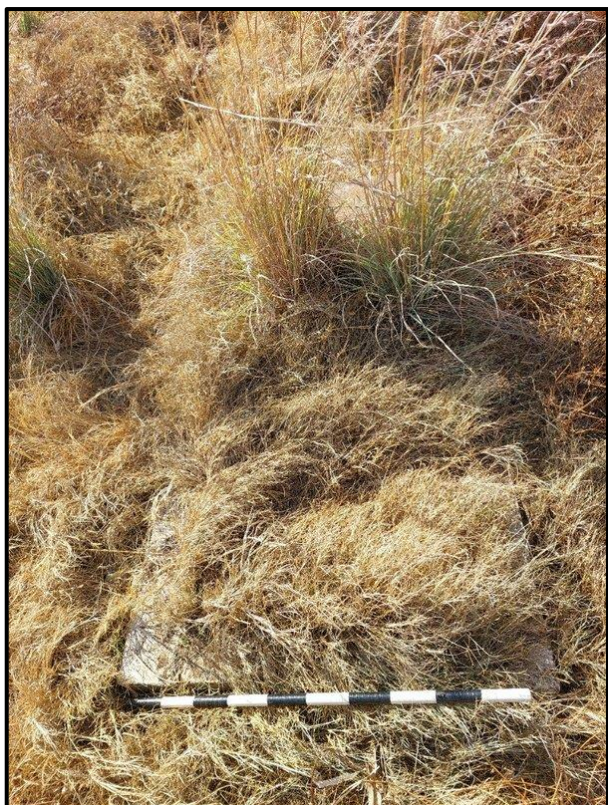


Figure 7.122. Overgrown grave at PF034.



Figure 7.123. Historical farmstead PF035.



Figure 7.124. Degraded structures at PF035.



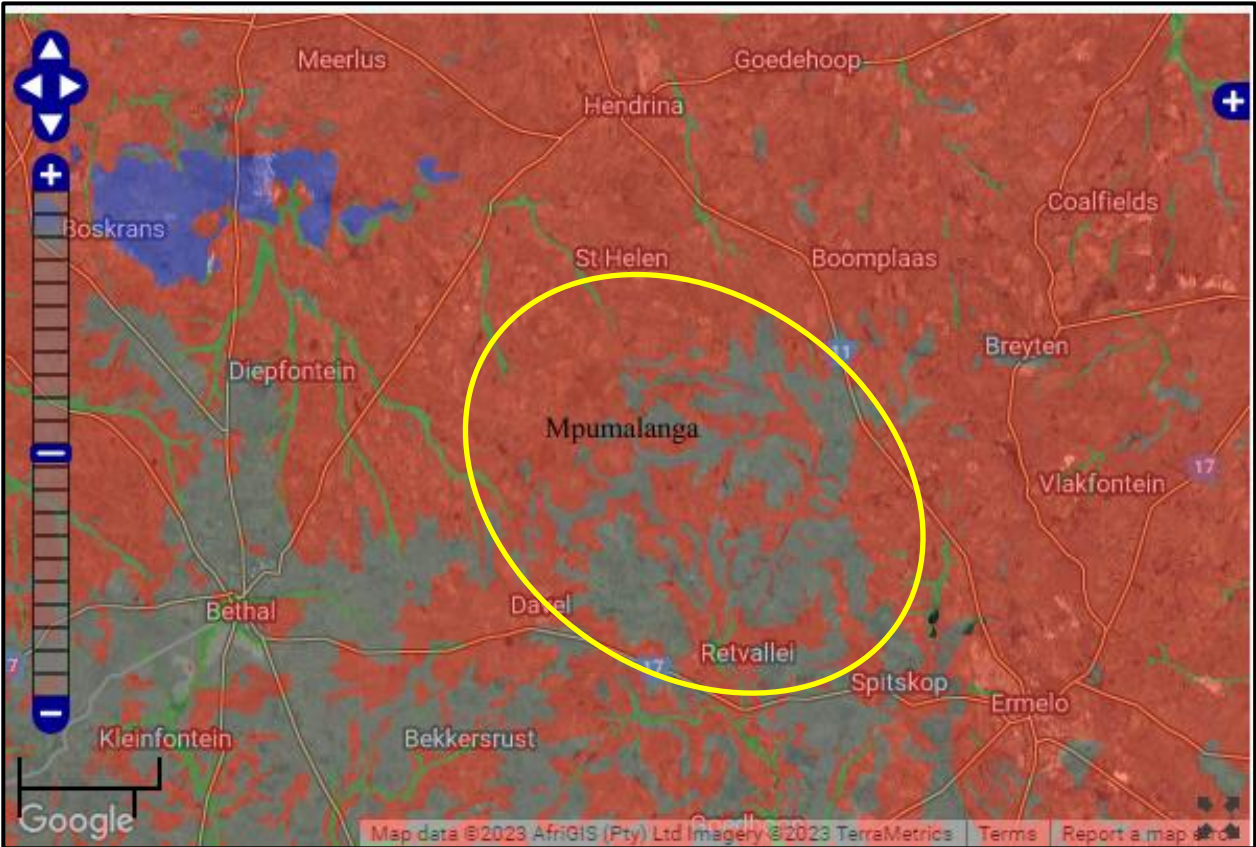
Figure 7.125. Broken down structure at PF036.

7.3 Cultural Landscape

The surrounding and most of the impact area are cultivated, and forms part of a landscape characterised by wide scale cultivation and mining activities. Development in the study area is limited to farming infrastructure such as access roads, fences, and agricultural developments. The clusters of trees around farmsteads are generally planted to protect the houses from wind and they form part of the cultural landscape.

7.4 Paleontological Heritage

According to the SAHRA palaeontological sensitivity map, the study area is indicated as insignificant and very high palaeontological sensitivity (Figure 7.126), and an independent study was commissioned for this aspect (Bamford 2024).



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

Figure 7.126. Paleontological sensitivity of the approximate study area (yellow polygon) as indicated on the SAHRA Palaeontological sensitivity map.

8 Assessment of impacts

8.1 Impacts on tangible heritage resources.

The main cause of impacts to archaeological resources is physical disturbance of the material itself and its context during removal of topsoil and vegetation as well as the excavations associated with the establishment of infrastructure. In terms of this project the main source of impacts will happen during the following activities:

- Establishment of new roads and upgrade of existing roads;
- Excavations of foundations for the turbines at WEF;
- Flicker effect associated with rotating blades of the WEF towers on the surrounding landscape;
- Visual impact of the WEF towers on the landscape and sense of place;
- Establishment of laydown areas;
- Excavation and levelling of the WEF facility footprint;
- Trenches for cables and erection of powerlines;
- Excavations during construction of the sub stations;

On the current layout the ruins/packed stone foundations and semi-circular enclosures at PF006 will be impacted by the WTG55 and its hardstand as the extent of the site extends into the area of the Turbine. As the site is of medium significance, avoidance of the site is preferable. If avoidance is not possible, the site will require mitigation through recording and mapping prior to applying for the appropriate destruction permit.

Three burial sites (PF007, PF008, PF009) will be impacted by access roads. Burial site PF007 will be impacted by the access road which leads to WTG58. Burial site PF008 is situated next to an existing gravel road but the burial site will be impacted by widening of the road as well as during the use of the road. Burial site PF009 which is situated between ploughed fields next to an existing gravel road leading to WTG13. The expanding of this road and use thereof will encroach the 30m buffer zone of the burial site. It is always preferable to avoid all burial sites with a 30m buffer zone. If avoidance of these three burial sites is not possible, the graves can be moved with the relevant permits. A Grave management plan for the burial sites will also have to be compiled as well as access provided to burial sites for family members wishing to visit the graves.

Although the other burial sites and medium significance sites will not be impacted by the current layout, they must be added to development plans and avoided with a 30m buffer zone.

As the layout changed after the survey was conducted, some areas of the Project area were not surveyed and impacts to these areas cannot be yet determined. To combat this limitation, the final layout of the Project will be subject to a Heritage Walk-Down in order to assess areas which were not covered.

8.1.1 Cumulative impacts

Cumulative impacts within the region are expected to rise with the accumulation of renewable projects within the 55km radius of the Project area. Cumulative impacts to the Project can be mitigated to an acceptable level as only four heritage resources will be impacted on the current layout, all of which can be mitigated through recommendations in this report.

8.2 Impact Assessment Tables

Table 10. Impact assessment for Construction phase of the Project.

Impact number	Aspect	Description	Stage	Character	Ease of Mitigation	Pre-Mitigation							Post-Mitigation						
						(M+	E+	R+	D)x	P=	S	Rating	(M+	E+	R+	D)x	P=	S	Rating
Impact 1:	PF006	Loss of heritage resources	Construction	Negative	moderate	3	1	5	5	3	42	N3	3	1	5	5	1	14	N1
Significance						N3 - Moderate							N1 - Very Low						
Impact 2:	PF007, PF008, PF009	Impact to graves in burial sites	Construction	Negative	moderate	4	2	5	5	3	48	N3	4	2	5	5	1	16	N2
Significance						N3 - Moderate							N2 - Low						

Table 11. Impact assessment for Operational phase of the Project.

Impact number	Aspect	Description	Stage	Character	Ease of Mitigation	Pre-Mitigation							Post-Mitigation						
						(M+	E+	R+	D)x	P=	S	Rating	(M+	E+	R+	D)x	P=	S	Rating
Impact 1:	PF006	Loss of heritage resources	Construction	Negative	moderate	3	1	5	5	3	42	N3	3	1	5	5	1	14	N1
Significance						N3 - Moderate							N1 - Very Low						
Impact 2:	PF007, PF008, PF009	Impact to graves in burial sites	Construction	Negative	moderate	4	2	5	5	3	48	N3	4	2	5	5	1	16	N2
Significance						N3 - Moderate							N2 - Low						

Table 12. Impact assessment for Decommissioning phase of the Project.

Impact number	Aspect	Description	Stage	Character	Ease of Mitigation	Pre-Mitigation							Post-Mitigation						
						(M+	E+	R+	D)x	P=	S	Rating	(M+	E+	R+	D)x	P=	S	Rating
Impact 1:	PF006	Loss of heritage resources	Construction	Negative	moderate	3	1	5	5	3	42	N3	3	1	5	5	1	14	N1
Significance						N3 - Moderate							N1 - Very Low						
Impact 2:	PF007, PF008, PF009	Impact to graves in burial sites	Construction	Negative	moderate	4	2	5	5	3	48	N3	4	2	5	5	1	16	N2
Significance						N3 - Moderate							N2 - Low						

Table 13. Cumulative Impact Assessment for the Project

Impact number	Receptor	Description	Stage	Character	Ease of Mitigation	Pre-Mitigation							Post-Mitigation						
						(M+	E+	R+	D)x	P=	S		(M+	E+	R+	D)x	P=	S	
Impact 1:	Impacted sites (PF006, PF007, PF008, PF009)	Cumulative impacts to heritage resources	Cumulative	Negative	Moderate	4	2	5	5	3	48	N3	4	2	5	5	1	16	N2
Significance						N3 - Moderate							N2 - Low						

9 Conclusion and recommendations

The Project area is situated within a large, open landscape of which large sections have been used for agricultural activities as well as cattle farming. Many farmsteads are also situated throughout the Project area, with some still being occupied.

During the survey, 37 sites were recorded which includes multiple burial sites, farmsteads, ruins, circular stone enclosures, and possibly Historically planted trees. Informal settlements and labour housing and ruins thereof are found across the Project area and these sites pose the risk of associated graves and should preferably be avoided.

On the current layout the ruins/packed stone foundations and semi-circular enclosures at PF006 will be impacted by the WTG55 and its hardstand as the extent of the site extends into the area of the Turbine. As the site is of medium significance, avoidance of the site is preferable. If avoidance is not possible, the site will require mitigation through recording and mapping prior to applying for the appropriate destruction permit.

Three burial sites (PF007, PF008, PF009) will be impacted by access roads. Burial site PF007 will be impacted by the access road which leads to WTG58. Burial site PF008 is situated next to an existing gravel road but the burial site will be impacted by widening of the road as well as during the use of the road. Burial site PF009 which is situated between ploughed fields next to an existing gravel road leading to WTG13. The expanding of this road and use thereof will encroach the 30m buffer zone of the burial site. It is always preferable to avoid all burial sites with a 30m buffer zone. If avoidance of these three burial sites is not possible, the graves can be moved with the relevant permits. A Grave management plan for the burial sites will also have to be compiled as well as access provided to burial sites for family members wishing to visit the graves.

Although the other burial sites and medium significance sites will not be impacted by the current layout, they must be added to development plans and avoided with a 30m buffer zone.

As the layout changed after the survey was conducted, some areas of the Project area were not surveyed and impacts to these areas cannot be yet determined. To combat this limitation, the final layout of the Project will be subject to a Heritage Walk-Down in order to assess areas which were not covered.

According to the South African Heritage Resource Authority (SAHRA) Paleontological sensitivity map the study area is of insignificant, and very high palaeontological sensitivity and an independent study was commissioned for this aspect (Bamford 2024).

The impact to heritage resources can be mitigated to an acceptable level provided that the recommendations in this report are adhered to, based on the South African Heritage Resource Authority (SAHRA) 's approval.

9.1 Recommendations for condition of authorisation

The following recommendations for Environmental Authorisation apply and the Project may only proceed based on approval from SAHRA:

- The ruins and semi-circular stone enclosures at PF006 impacted by WTG55 should preferably be avoided;
 - » If avoidance is not possible, the site can be mitigated through mapping and recording prior to applying for a destruction permit.
- Burial sites which will be impacted by access roads (PF007, PF008, PF009) should preferably be avoided with a 30m buffer zone with access provided to family members

- » If avoidance is not possible, the graves can be moved with the necessary permits.
- All sites of medium and high significance should be added to development plans and avoided with a 30m buffer zone;
- Although of low significance, ruins should preferably be avoided as they have the risk of having associated graves present;
- A Grave Management Plan should be compiled for the burial sites present within the Project area;
- Due to layout changes to the Project after the survey was conducted, the final layout of the Project including final Turbine positions, and ancillary infrastructure will all be subject to a Heritage Walk-Down prior to construction in order to ensure no significant heritage resources will be impacted;
- Development activities must be confined to the approved development footprint only;
- Monitoring of the Project area by the ECO during pre-construction and construction phases for heritage and palaeontology chance finds, if chance finds are encountered to implement the Chance Find Procedure for the Project as outlined in Section 9.

9.2 Chance Find Procedure

9.2.1 Heritage Resources

The possibility of the occurrence of subsurface finds cannot be excluded. Therefore, if during construction any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped, and a qualified archaeologist must be contacted for an assessment of the find and therefore chance find procedures should be put in place as part of the EMP. A short summary of chance find procedures is discussed below and monitoring guidelines applicable to the Chance Find procedure is discussed below and monitoring guidelines for this procedure are provided in Section 9.5.

This procedure applies to the developer's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. The aim of this procedure is to establish monitoring and reporting procedures to ensure compliance with this policy and its associated procedures. Construction crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds as discussed below.

- If during the pre-construction phase, construction, operations or closure phases of this Project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
- It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area.
- The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA.

9.2.2 Monitoring Programme for Palaeontology – to commence once the excavations / drilling activities begin.

1. The following procedure is only required if fossils are seen on the surface and when drilling/excavations commence.
2. When excavations begin the rocks and discard must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (trace fossils, fossils of plants, insects, bone or coalified material) should be put aside in a suitably protected place. This way the Project activities will not be interrupted.
3. Photographs of similar fossils must be provided to the developer to assist in recognizing the fossil plants, vertebrates, invertebrates or trace fossils in the shales and mudstones. This information will be built into the EMP's training and awareness plan and procedures.
4. Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment.
5. If there is any possible fossil material found by the developer/environmental officer then the qualified palaeontologist sub-contracted for this Project, should visit the site to inspect the selected material and check the dumps where feasible.
6. Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits.
7. If no good fossil material is recovered, then no site inspections by the palaeontologist will be necessary. A final report by the palaeontologist must be sent to SAHRA once the Project has been completed and only if there are fossils.
8. If no fossils are found and the excavations have finished then no further monitoring is required.

9.3 Reasoned Opinion

The overall impact of the Project with the recommended mitigation measures is acceptable and residual impacts can be managed to an acceptable level through implementation of the recommendations made in this report. The socio-economic benefits also outweigh the possible impacts of the development if the correct mitigation measures are implemented for the Project.

9.4 Potential risk

Potential risks to the proposed Project are the occurrence of intangible features and unrecorded cultural resources (of which graves, and subsurface cultural material are the highest risk). This can cause delays during construction, as well as additional costs involved in mitigation and possible layout changes. The stakeholder engagement process will assess intangible heritage resources further if this is listed as a concern.

9.5 Monitoring Requirements

Day to day monitoring can be conducted by the ECO. The ECO or other responsible persons should be trained along the following lines:

- *Induction training:*
 - Responsible staff identified by the developer should attend a short course on heritage management and identification of heritage resources.
 - Staff should also receive training on the CFP.
- *Site monitoring and watching brief:* As most heritage resources occur below surface, all earth-moving activities need to be routinely monitored in case of accidental discoveries. The greatest potential impacts are from pre-construction and construction activities. The ECO should monitor all such activities. If any heritage resources are found, the chance finds procedure must be followed as outlined above.

Table 14. Monitoring requirements for the Project

Heritage Monitoring					
Aspect	Area	Responsible for monitoring and measuring	Frequency	Proactive or reactive measurement	Method
Cultural Heritage Resource Chance Find	Entire Project area	ECO	Weekly (Pre construction and construction phase)	Proactively	<p>If risks are manifested (accidental discovery of heritage resources) the chance find procedure should be implemented:</p> <ol style="list-style-type: none">1. Cease all works immediately;2. Report incident to the Sustainability Manager;3. Contact an archaeologist to inspect the site;4. Report incident to the competent authority; and5. Employ reasonable mitigation measures in accordance with the requirements of the relevant authorities. <p>Only recommence operations once impacts have been mitigated.</p>

9.7 Management Measures for inclusion in the EMP

Table 15. Heritage Management Plan for EMP implementation

Area	Mitigation measures	Phase	Timeframe	Responsible party for implementation	Target	Performance indicators (Monitoring tool)
General Project area	Monitoring of the Project area by the ECO during pre-construction and construction phases for chance finds, if chance finds are encountered to implement the Chance Find Procedure for the project	Pre-Construction & Construction	Weekly	Applicant Construction Contractor	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 34, 35, 36 and 38 of NHRA	ECO Checklist/Report
General Project Area	Development activities must be confined to the approved development footprint only.	Construction	Construction	Applicant Construction Contractor	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35, 36 and 38 of NHRA	ECO Checklist/Report
Final Project Layout	The Final Project Layout of the Turbines and ancillary infrastructure will be subject to a Heritage Walk-Down prior to construction.	Pre-Construction	Pre-Construction	Applicant Construction Contractor Appointed Archaeologist	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35, 36 and 38 of NHRA	ECO Checklist/Report
PF006	The ruins and semi-circular stone enclosures should preferably be added to development plans and avoided with a 30m buffer zone. If the site cannot be avoided, it must be mapped and recorded prior to the application of a destruction permit.	Throughout the Project	Throughout the Project	Applicant Construction Contractor	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35, 36 and 38 of NHRA	ECO Checklist/Report

PF007, PF008, PF009	<p>Avoidance of the burial sites is preferable with a 30 m buffer zone and demarcation of the features. An access protocol should be compiled for Next of Kin (NoK) who might want to visit the site as well as a grave management plan to ensure the site is protected.</p> <p>If the burial sites cannot be avoided, the graves can be relocated with the necessary approvals.</p>	Throughout the Project	Throughout the Project	Applicant Construction Contractor	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35, 36 and 38 of NHRA	ECO Checklist/Report
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11 Appendix A

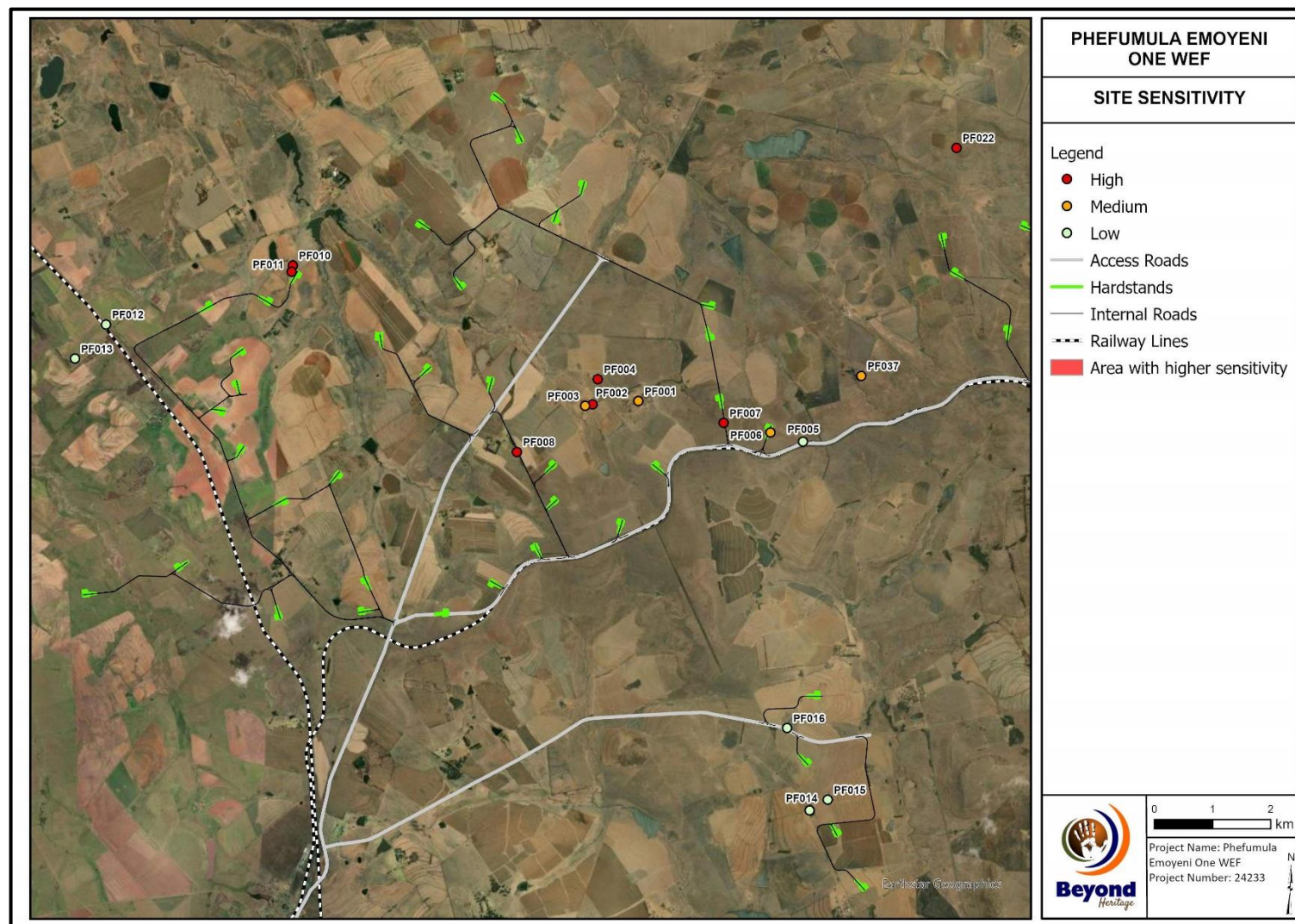


Figure 11.1. Zoomed in Site distribution map (1 of 3).

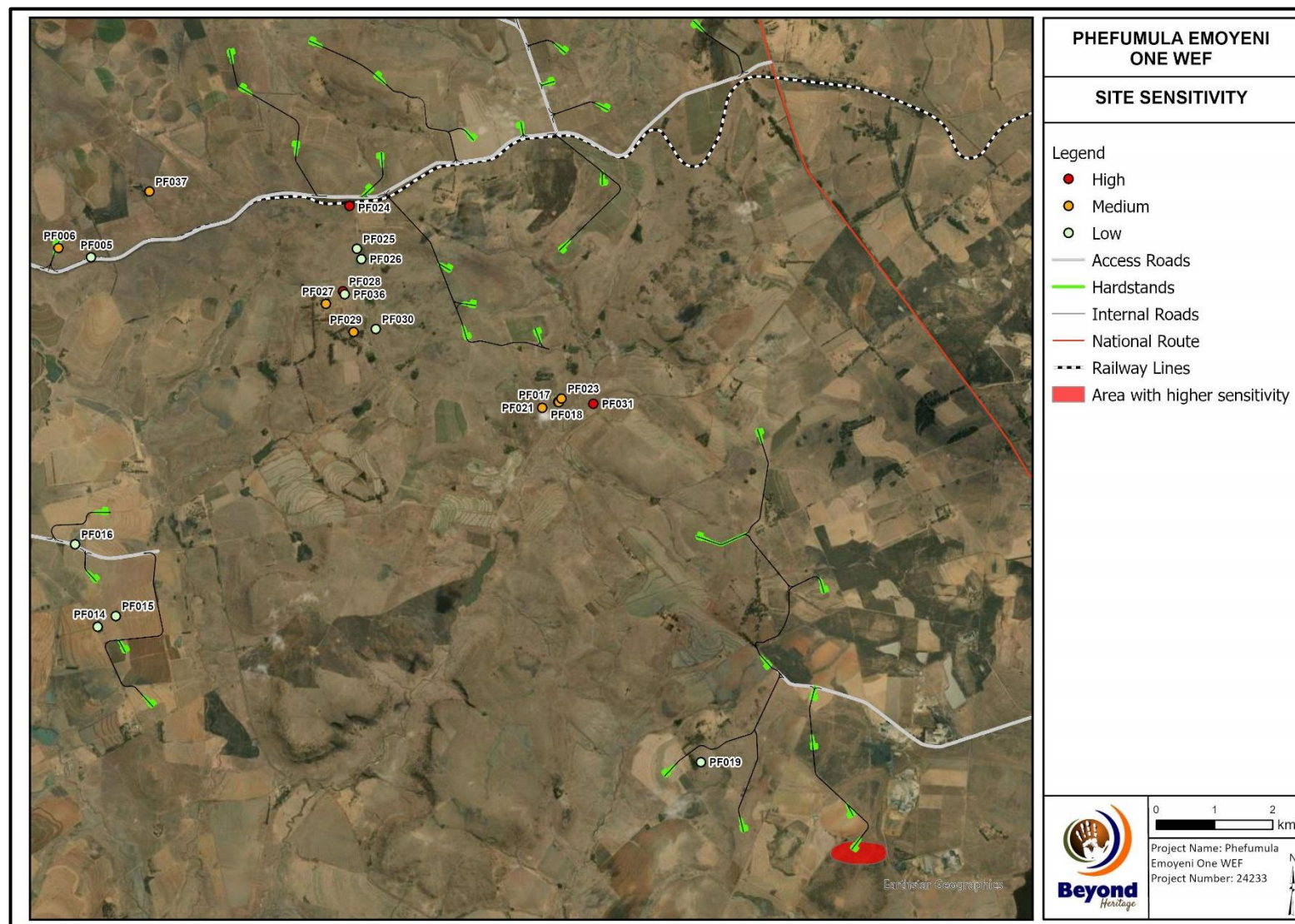


Figure 11.2. Zoomed in Site distribution map (2 of 3).

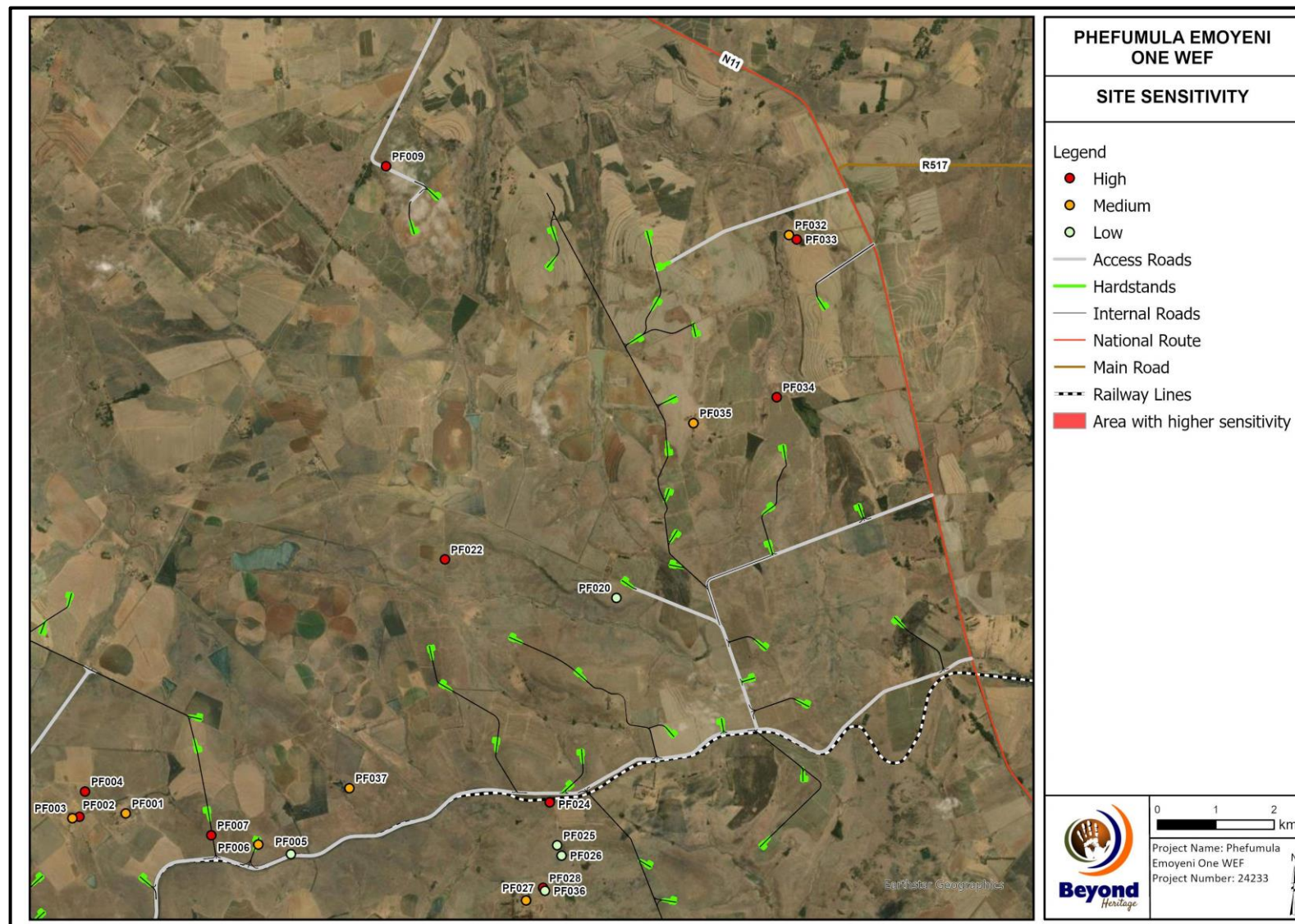


Figure 11.3. Zoomed in Site distribution map (3 of 3).