

# HERITAGE IMPACT ASSESSMENT

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

FOR THE H2 ENERGY POWER STATION, MPUMALANGA PROVINCE.

**Type of development:**

Coal Fired Power station

**Client:**

Savannah Environmental (Pty) Ltd

**Client info:**

Sarah Watson

**E – mail:** sarah@savannahsa.com

**Developer:** H2 Clean Energy (Pty) Ltd



**HCAC - Heritage Consultants**

Private Bag X 1049

Suite 34

Modimolle

0510

Tel: 082 373 8491

Fax: 086 691 6461

E-Mail: [jaco.heritage@gmail.com](mailto:jaco.heritage@gmail.com)

Report Author:

Mr. J. van der Walt

Project Reference:



**SAHRA case number:** 10530

Report date:

October 2017

**DOCUMENT PROGRESS**  
**Heritage Impact Assessment**

**Document status**

<b>Document Version</b>	<b>v1.0</b>		
<b>Report Purpose</b>	<b>Draft for review Savannah Environmental (Pty) Ltd</b>		
<b>Report Ref. No.</b>	<b>SAHRA case number: 10530</b>		
	<b>Name</b>	<b>Signature</b>	<b>Date</b>
<b>Document Compilation</b>	<b>Mr. J. van der Walt</b>		<b>October 2017</b>
<b>Field Survey</b>	<b>Marko Hutton</b>		<b>October 2017</b>

**Distribution List**

<b>Date</b>	<b>Report Reference number</b>	<b>Document Distribution</b>	<b>Number of Copies</b>
2017/10/05	<b>SAHRA case number: 10530</b>	Savannah Environment (Pty) Ltd	Electronic copy

**Amendments on Document**

<b>Date</b>	<b>Report Reference Number</b>	<b>Description of Amendment</b>

### **INDEMNITY AND CONDITIONS RELATING TO THIS REPORT**

The findings, results, observations, conclusions and recommendations given in this report are based on the author's best scientific and professional knowledge as well as available information. The report is based on survey and assessment techniques which are limited by time and budgetary constraints relevant to the type and level of investigation undertaken and HCAC reserves the right to modify aspects of the report including the recommendations if and when new information becomes available from ongoing research or further work in this field, or pertaining to this investigation.

Although HCAC exercises due care and diligence in rendering services and preparing documents, HCAC accepts no liability, and the client, by receiving this document, indemnifies HCAC against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, directly or indirectly by HCAC and by the use of the information contained in this document.

This report must not be altered or added to without the prior written consent of the author. This also refers to electronic copies of this report which are supplied for the purposes of inclusion as part of other reports, including main reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must make reference to this report. If these form part of a main report relating to this investigation or report, this report must be included in its entirety as an appendix or separate section to the main report.

### **COPYRIGHT**

Copyright on all documents, drawings and records, whether manually or electronically produced, which form part of the submission and any subsequent report or project document, shall vest in HCAC.

The client, on acceptance of any submission by HCAC and on condition that the client pays to HCAC the full price for the work as agreed, shall be entitled to use for its own benefit:

- The results of the project;
- The technology described in any report; and
- Recommendations delivered to the client.

Should the applicant wish to utilise any part of, or the entire report, for a project other than the subject project, permission must be obtained from HCAC to do so. This will ensure validation of the suitability and relevance of this report on an alternative project.

## 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 Section 12
(b) Declaration that the specialist is independent in a form as may be specified by the competent authority	Declaration of Independence
(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 and 7.1.
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	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 a site plan identifying site alternatives;	Section 8 and 9
(g) Identification of any areas to be avoided, including buffers	Section 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 9
(k) Mitigation measures for inclusion in the EMPr	Section 9 and 10
(l) Conditions for inclusion in the environmental authorisation	Section 9 and 10
(m) Monitoring requirements for inclusion in the EMPr or environmental authorisation	Section 9 and 10
(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 10.2
(o) Description of any consultation process that was undertaken during the course of preparing the specialist report	Section 6
(p) A summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Refer to EIA report
(q) Any other information requested by the competent authority	Section 10

## Executive Summary

H2 Clean Energy (Pty) Ltd appointed Savanah Environmental (Pty) Ltd to conduct an environmental impact assessment for the proposed H2 Energy Power Station. The project site is located approximately 800m north of the Palesa Coal Mine, and 9km south of KwaMhlanga, in Ward 32 of the Thembisile Hani Local Municipality (LM), which forms part of the Nkangala District Municipality (DM), in the Mpumalanga Province. HCAC was appointed to conduct a Heritage Impact Assessment of the proposed development footprint to determine the presence of cultural heritage sites and the impact of the proposed development on these non-renewable resources. The study area was assessed both at desktop level (van der Walt 2016) and by a field survey. The field survey was conducted as a non-intrusive pedestrian survey to cover the extent of the development footprint.

In terms of the archaeological component of Section 35 no archaeological sites or artefacts of significance were recorded during the survey and no further archaeological mitigation prior to construction is recommended. According to the SAHRA palaeontological sensitivity map the project site is located in an area of high to low palaeontological sensitivity and in terms of the palaeontological component of Section 35 an independent assessment should be conducted.

In terms of the built environment of the area (Section 34 of the NHRA) several structures and dwellings occur in the study area (Feature 2 -5). Feature 2 is a stone and mud brick ruin that is located **outside** of the development footprint. The structure is destroyed to the extent that it is of no significance. Since the site will not be impacted on no mitigation is necessary at this point. Features 3 -5 are dilapidated vernacular structures and sheds of unknown age. According to archival maps structures did occur at these locations by 1969 but have been mostly demolished and rebuilt replacing the original structures with recent structures. These features are of low significance and no further mitigation is recommended for these features. Sites like these are known to contain unmarked graves and it is recommended that during construction these sites should be monitored.

In terms of Section 36 of the NHRA one cemetery has been recorded as Feature 1. The cemetery is located within the development footprint and based on the current lay out this site will require mitigation. No public monuments are located within or close to the study area.


During the public participation process conducted for the project no heritage concerns were raised. The study area is mostly rural in character although several mining projects have recently been established in the area.

Feature No	Longitude	Latitude	Type Site	Impact
Feature 1	28° 44' 26.6135" E	25° 30' 54.9719" S	Cemetery	Direct Impact by proposed Infrastructure
Feature 2	28° 45' 20.2912" E	25° 31' 16.9087" S	Ruin	Indirect Impact power line
Feature 3	28° 44' 31.2690" E	25° 30' 46.4522" S,	Dwelling	Direct Impact by proposed Infrastructure
Feature 4	28° 44' 39.7358" E	25° 30' 49.1465" S	Dwelling	Direct Impact by proposed Infrastructure
Feature 5	28° 44' 40.2334" E	25° 31' 05.0706" S,	Ruin	Direct Impact by proposed Infrastructure

The impacts on identified heritage resources in the study area resulting from this project can be mitigated to an acceptable level with the correct mitigation measures and management actions. Furthermore, the socio-economic benefits derived from this project outweigh the impact on heritage resources with the correct mitigation measures in place. It is therefore recommended the project is authorised from a heritage perspective on the condition that the recommendations as made below are implemented as part of the EMPr and based on approval from SAHRA

- It is recommended that a heritage management plan should be developed for the project to manage known and unknown heritage resources;
- An independent palaeontological study should be conducted for the project;
- The cemetery (Feature 1) will be impacted on based on the current development lay out. It is recommended that the site should be preserved *in situ* with a 20 meter buffer zone. If additional graves are identified it is recommended that the graves should be preserved *in situ*.
- The areas in which feature 3 – 5 occur should be monitored for unmarked graves during construction.
- Due to the subsurface nature of heritage resources it is recommended that a chance find procedure should be implemented for the project as described in Section 10;

## Declaration of Independence

<b>Specialist Name</b>	Jaco van der Walt
<b>Declaration of Independence</b>	<p>I declare, as a specialist appointed in terms of the National Environmental Management Act (Act No 108 of 1998) and the associated 2014 Environmental Impact Assessment (EIA) Regulations, that I:</p> <ul style="list-style-type: none"> <li>• I act as the independent specialist in this application;</li> <li>• 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;</li> <li>• I declare that there are no circumstances that may compromise my objectivity in performing such work;</li> <li>• 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;</li> <li>• I will comply with the Act, Regulations and all other applicable legislation;</li> <li>• I have no, and will not engage in, conflicting interests in the undertaking of the activity;</li> <li>• 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;</li> <li>• All the particulars furnished by me in this form are true and correct; and</li> <li>• I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.</li> </ul>
<b>Signature</b>	
<b>Date</b>	02/10/2017

### a) Expertise of the specialist

Jaco van der Walt has been practising as a CRM archaeologist for 15 years. He obtained an MA degree in Archaeology from the University of the Witwatersrand focussing on the Iron Age in 2012 and is a PhD candidate at the University of Johannesburg focussing on Stone Age Archaeology with specific interest in the Middle Stone Age (MSA) and Later Stone Age (LSA). Jaco is an accredited member of ASAPA (#159) and have conducted more than 500 impact assessments in Limpopo, Mpumalanga, North West, Free State, Gauteng, KZN as well as he Northern and Eastern Cape Provinces in South Africa.

Jaco has worked on various international projects in Zimbabwe, Botswana, Mozambique, Lesotho, DRC Zambia and Tanzania. Through this he has a sound understanding of the IFC Performance Standard requirements, with specific reference to Performance Standard 8 – Cultural Heritage.

## TABLE OF CONTENTS

<b>REPORT OUTLINE .....</b>	<b>3</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>4</b>
<b>DECLARATION OF INDEPENDENCE .....</b>	<b>1</b>
A) EXPERTISE OF THE SPECIALIST .....	1
<b>ABBREVIATIONS .....</b>	<b>6</b>
<b>GLOSSARY .....</b>	<b>7</b>
<b>1 INTRODUCTION AND TERMS OF REFERENCE:.....</b>	<b>8</b>
1.1 TERMS OF REFERENCE.....	8
<b>2 LEGISLATIVE REQUIREMENTS.....</b>	<b>14</b>
<b>3 METHODOLOGY .....</b>	<b>16</b>
3.1 LITERATURE REVIEW .....	16
3.2 GENEALOGICAL SOCIETY AND GOOGLE EARTH MONUMENTS .....	16
3.3 PUBLIC CONSULTATION AND STAKEHOLDER ENGAGEMENT: .....	16
3.4 SITE INVESTIGATION.....	17
3.5 SITE SIGNIFICANCE AND FIELD RATING .....	19
3.6 IMPACT ASSESSMENT METHODOLOGY.....	20
3.7 LIMITATIONS AND CONSTRAINTS OF THE STUDY.....	21
<b>4 DESCRIPTION OF SOCIO ECONOMIC ENVIRONMENTAL .....</b>	<b>22</b>
<b>5 DESCRIPTION OF THE PHYSICAL ENVIRONMENT.....</b>	<b>23</b>
<b>6 RESULTS OF PUBLIC CONSULTATION AND STAKEHOLDER ENGAGEMENT: .....</b>	<b>26</b>
<b>7 LITERATURE / BACKGROUND STUDY: .....</b>	<b>26</b>
7.1 LITERATURE REVIEW .....	26
7.2 ARCHAEOLOGY OF THE AREA.....	27
7.3 IRON AGE REMAINS.....	28
7.4 BRIEF HISTORY OF SETTLEMENT IN THE AREA .....	30
7.5 BATTLEFIELD SITES .....	31
7.6 CULTURAL LANDSCAPE .....	35
<b>8 FINDINGS OF THE SURVEY.....</b>	<b>41</b>
<b>9 DESCRIPTION OF IDENTIFIED HERITAGE RESOURCES (NHRA SECTION 34 -36):</b>	<b>43</b>
9.1 BUILT ENVIRONMENT (SECTION 34 OF THE NHRA) – FEATURE 2 -5.....	43



---

9.2	ARCHAEOLOGICAL AND PALAEOLOGICAL RESOURCES (SECTION 35 OF THE NHRA).....	46
9.3	BURIAL GROUNDS AND GRAVES (SECTION 36 OF THE NHRA): FEATURE 1. ....	47
9.4	CULTURAL LANDSCAPES, INTANGIBLE AND LIVING HERITAGE. ....	48
9.5	BATTLEFIELDS AND CONCENTRATION CAMPS .....	48
9.6	POTENTIAL IMPACT .....	48
<b>10</b>	<b>RECOMMENDATIONS AND CONCLUSION .....</b>	<b>50</b>
10.1	CHANCE FIND PROCEDURES .....	52
10.2	REASONED OPINION.....	53
<b>11</b>	<b>REFERENCES .....</b>	<b>54</b>
<b>12</b>	<b>APPENDICES: .....</b>	<b>55</b>
	CURRICULUM VITAE OF SPECIALIST .....	55

**LIST OF FIGURES**

FIGURE 1. PROVINCIAL LOCALITY MAP (1: 250 000 TOPOGRAPHICAL MAP) INDICATING THE STUDY AREA.	11
FIGURE 2: REGIONAL LOCALITY MAP (1:50 000 TOPOGRAPHICAL MAP) INDICATING THE DEVELOPMENT FOOTPRINT. ....	12
FIGURE 3. GOOGLE IMAGE INDICATING THE LAY OUT OF THE PROPOSED COAL FIRED POWER STATION .....	13
FIGURE 4: TRACK LOGS OF THE SURVEY IN BLACK. ....	18
FIGURE 5. CLUSTER OF TREES IN THE STUDY AREA .....	24
FIGURE 6. CAHORA BASSA POWERLINE .....	24
FIGURE 7. CATTLE KRAAL IN THE STUDY AREA.....	24
FIGURE 8. FENCING IN THE STUDY AREA .....	24
FIGURE 9. VEGETATION IN THE STUDY AREA .....	24
FIGURE 10. GENERAL SITE CONDITIONS .....	24
FIGURE 11. PLOUGHED AREA .....	25
FIGURE 12. ROCKY RIDGE IN THE WESTERN PORTION OF THE STUDY AREA. ....	25
FIGURE 13. MOVEMENT OF BANTU SPEAKING FARMERS (HUFFMAN 2007).....	29
FIGURE 14. TWO 1891 MAPS WITH DESIGNS FOR THE TOWN BRONKHORSTSPRUIT. (NASA MAPS: S3/964; NASA MAPS: S3/998) .....	31
FIGURE 15. THE BRITISH MONUMENT OUTSIDE BRONKHORSTSPRUIT.....	33
FIGURE 16. THE BOER MONUMENT, BRONKHORSTSPRUIT. ....	34
FIGURE 17. HISTORICAL AERIAL PHOTOGRAPH OF BRONKHORSTSPRUIT WITH THE DUTCH REFORMED CHURCH IN THE FOREFRONT. (ANON 1949) .....	35
FIGURE 18. 1943 – 1944 TOPOGRAPHICAL MAP OF THE STUDY AREA. SOME HUTS ARE INDICATED IN THE WESTERN PORTION OF THE STUDY AREA WITH SEVERAL FARM ROADS TRAVERSING THE STUDY AREA. NO OTHER DWELLINGS ARE INDICATED. ....	36
FIGURE 19. 1969 TOPOGRAPHICAL MAP OF THE STUDY AREA. VARIOUS DWELLINGS ARE NOW INDICATED IN THE WESTERN AND CENTRAL PORTIONS OF THE STUDY AREA. THE MAJORITY OF THE FARM ARE NOW BEING USED FOR AGRICULTURAL PURPOSES.....	37
FIGURE 20. 1984 TOPOGRAPHICAL MAP OF THE STUDY AREA. A POWERLINE TRAVERSES THE STUDY AREA IN A NORTH TO SOUTH DIRECTION WITH MORE EXTENSIVE AGRICULTURAL FIELDS. SEVERAL DWELLINGS ARE ALSO INDICATED IN THE WESTERN PORTION OF THE STUDY AREA. ....	38
FIGURE 21. 1995 TOPOGRAPHICAL MAP OF THE STUDY AREA. THE LANDSCAPE IS SIMILAR TO 1984 WITH THE ADDITION OF ANOTHER POWER LINE. ....	39
FIGURE 22. 2001- 2003 TOPOGRAPHICAL MAP OF THE STUDY AREA. THE LANDSCAPE IS SIMILAR TO 1995. ....	40
FIGURE 23: RECORDED FEATURES IN RELATION TO THE DEVELOPMENT FOOTPRINT. ....	42
FIGURE 24. GENERAL SITE CONDITIONS AT FEATURE 2. ....	44
FIGURE 25. REMAINING STONE WALL FEATURE 2. ....	44
FIGURE 26. MUD BRICK AND STONE WALLS AT FEATURE 2.....	44
FIGURE 27. FEATURE 3 – RESIDENTIAL DWELLING. ....	44

FIGURE 28. CORRUGATED ADD ON STRUCTURES AT FEATURE 4.....	44
FIGURE 29. CEMENT BRICK RUIN .....	44
FIGURE 30: FEATURE 2 IN RELATION TO THE PROPOSED DEVELOPMENT. ....	45
FIGURE 31: FEATURE 3 -5 IN RELATION TO THE DEVELOPMENT FOOTPRINT.....	45
FIGURE 32. PALAEOLOGICAL SENSITIVITY MAP OF THE STUDY AREA. THE GREEN POLYGON INDICATES THE PROPOSED DEVELOPMENT FOOTPRINT.....	46
FIGURE 33. GENERAL SITE CONDITIONS .....	47
FIGURE 34.GRAVE AT FEATURE 2 .....	47
FIGURE 35. GRAVE WITH STONE DRESSING AT FEATURE 2 .....	47
FIGURE 36. GRAVE DRESSING AT FEATURE 2 .....	47
FIGURE 37: FEATURE 1 IN RELATION TO THE PROPOSED DEVELOPMENT. ....	48

#### LIST OF TABLES

TABLE 1. SPECIALIST REPORT REQUIREMENTS.....	3
TABLE 2: PROJECT DESCRIPTION.....	9
TABLE 3: INFRASTRUCTURE AND PROJECT ACTIVITIES.....	9
TABLE 4: SITE INVESTIGATION DETAILS .....	17
TABLE 6. IMPACT TABLE – OF THE H2 ENERGY POWER STATION ON HERITAGE RESOURCES. ....	49

**ABBREVIATIONS**

AIA: Archaeological Impact Assessment
ASAPA: Association of South African Professional Archaeologists
BGG Burial Ground and Graves
BIA: Basic Impact Assessment
CFPs: Chance Find Procedures
CMP: Conservation Management Plan
CRR: Comments and Response Report
CRM: Cultural Resource Management
DEA: Department of Environmental Affairs
EA: Environmental Authorisation
EAP: Environmental Assessment Practitioner
ECO: Environmental Control Officer
EIA: Environmental Impact Assessment*
EIA: Early Iron Age*
EIA Practitioner: Environmental Impact Assessment Practitioner
EMP: 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
MSA: Middle Stone Age
NEMA National Environmental Management Act, 1998 (Act No. 107 of 1998)
NHRA National Heritage Resources Act, 1999 (Act No. 25 of 1999)
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)

Early 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 recently, 100 years ago)

The Iron Age (~ AD 400 to 1840)

Historic (~ AD 1840 to 1950)

Historic building (over 60 years old)

## **1 Introduction and Terms of Reference:**

Heritage Contracts and Archaeological Consulting CC (**HCAC**) has been contracted by Savannah Environment (Pty) Ltd to conduct a heritage impact assessment of the proposed H2 Energy Coal Fired Power Station. The report forms part of the Environmental Impact Assessment (EIA) and Environmental Management Programme Report (EMPR) for the project.

The aim of the study is to survey the proposed development footprint to identify cultural heritage sites, document, and assess their importance within local, provincial and national context. It serves to assess the impact of the proposed project on non-renewable heritage resources, and to 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. It is also conducted to protect, preserve, and develop such resources within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999). 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, a cemetery and a ruin were recorded as well as three structures. General site conditions and features on sites were recorded by means of photographs, GPS locations, and site descriptions. Possible impacts were identified and mitigation measures are proposed in the following report. SAHRA as a commenting authority under section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) require all environmental documents, compiled in support of an Environmental Authorisation application as defined by NEMA EIA Regs section 40 (1) and (2), to be submitted to SAHRA. 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).

### **1.1 Terms of Reference**

#### **Field study**

Conduct a field study to: (a) locate, identify, 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 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 ASAPA.

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).

**Table 2: Project Description**

<b>Size of farm and portions</b>	568 ha on Hartebeestspruit No. 434 Portion Number: Portion 21 – 21/434 Portion 22 – 22/434 Portion 23 – 23/434
<b>Magisterial District</b>	Nkangala District Municipality (DC31)
<b>1: 50 000 map sheet number</b>	2528 DB
<b>Central co-ordinate of the development</b>	25° 30' 49.9850" S, 28° 45' 24.6659" E

**Table 3: Infrastructure and project activities**

<b>Type of development</b>	Coal Fired Power Station
<b>Project size</b>	170 ha
<b>Project Components</b>	<p>Component Description/ Dimensions</p> <p>Power generation unit technology</p> <ul style="list-style-type: none"> <li>» Pulverised Coal (PC) or Circulating Fluidised Bed (CFB) boiler technology.</li> <li>» Supercritical (SC) or Ultra-supercritical (USC) steam generation technology.</li> <li>» Direct or indirect dry (i.e. air) cooling methods.</li> <li>» Zero Liquid Effluent Discharge (ZLED) facility.</li> </ul> <p>Associated Project Infrastructure and Components</p> <ul style="list-style-type: none"> <li>» Overland coal conveyor.</li> <li>» Coal crusher (and screening plant in the case of PC technology).</li> <li>» Emission stacks.</li> <li>» Flue gas cleaning (Flue Gas Desulphurisation (FGD) plant and Selective Non-Catalytic Reduction (SNCR) plant in the case of PC technology).</li> </ul> <p>Office and maintenance areas and buildings.</p> <ul style="list-style-type: none"> <li>» » Substation.</li> <li>» » Access and internal roads.</li> </ul> <p>Raw material storage areas</p> <ul style="list-style-type: none"> <li>» Strategic coal stockpile with a storage capacity of 225 000 tonnes (equivalent to a 30-day capacity).</li> </ul>

	<ul style="list-style-type: none"><li>» Covered limestone storage shed with a storage capacity of 15 000 tonnes (required as sorbent in the case of CFB technology).</li><li>» Ammonia storage (required for the SNCR plant in the case of PC technology).</li><li>» Ash dump Dry ash disposal methods to be used (above-ground membrane lined ash dump).</li></ul> <p>Water infrastructure</p> <ul style="list-style-type: none"><li>» Raw water storage dam.</li><li>» Stormwater runoff dam.</li><li>» Ash dump runoff dam.</li><li>» Wastewater treatment plant.</li></ul>
--	--



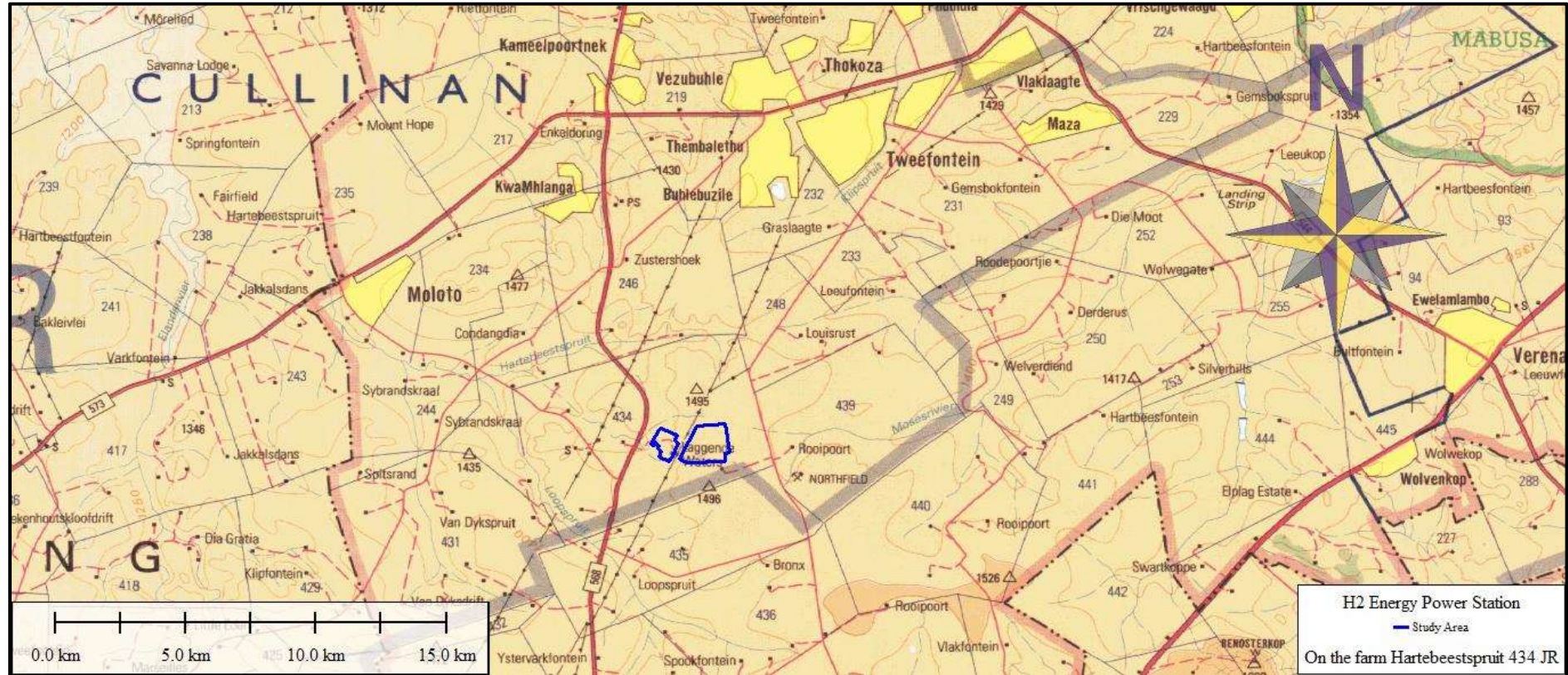


Figure 1. Provincial locality map (1: 250 000 topographical map) indicating the study area.

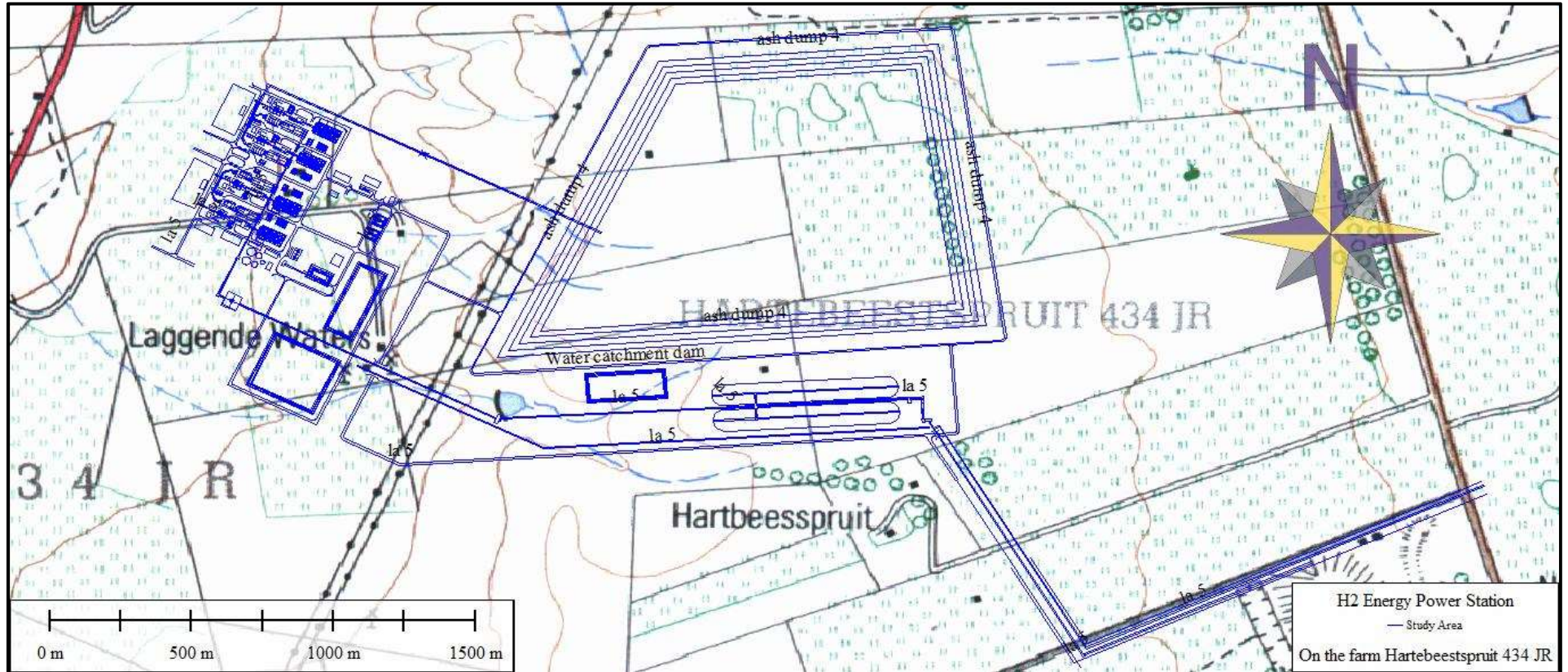


Figure 2: Regional locality map (1:50 000 topographical map) indicating the development footprint.



Figure 3. Google image indicating the lay out of the proposed Coal Fired Power Station

## 2 Legislative Requirements

The HIA, as a specialist sub-section of 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)
- Mineral and Petroleum Resources Development Act (MPRDA), Act No. 28 of 2002 - Section 39(3)(b)(iii)

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;
- Establish heritage informants/constraints to guide the development process through establishing thresholds of impact significance;
- Assess the negative and positive impact of the development on these resources; and
- Make recommendations for the appropriate heritage management of these impacts.

The HIA should be submitted, as part of the impact assessment report or EMPr, to the PHRA if established in the province or to SAHRA. SAHRA will ultimately be responsible for the professional evaluation of Phase 1 AIA reports upon which review comments will be issued. 'Best practice' requires Phase 1 AIA 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 AIA reports authored by professional archaeologists, accredited with ASAPA or with a proven ability to do archaeological work.

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 AIA's 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. Relevant conservation or Phase 2 mitigation recommendations should be made. Recommendations are subject to evaluation by SAHRA.

Conservation or Phase 2 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. Graves older than 60 years, but younger than 100 years fall under Section 36 of Act 25 of 1999 (National Heritage Resources Act), as well as the Human Tissues Act (Act 65 of 1983), 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), as well as the Human Tissues Act (Act 65 of 1983), 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. This function is usually delegated to the Provincial MEC for Local Government and Planning; or in some cases, the MEC for Housing and Welfare. 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 Section 24 of Act 65 of 1983 (Human Tissues Act).

### **3 METHODOLOGY**

#### **3.1 Literature Review**

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).

#### **3.2 Genealogical Society and Google Earth Monuments**

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where sites of heritage significance might be located; these locations were marked and visited during the field work phase. The database of the Genealogical Society was consulted to collect data on any known graves in the area.

#### **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 was to capture and address any issues raised by community members and other stakeholders during key stakeholder and public meetings. The process involved:

- Placement of advertisements and site notices
- Stakeholder notification (through the dissemination of information and meeting invitations);
- Stakeholder meetings undertaken with I&APs;
- Authority Consultation
- The compilation of a Environmental Impact Assessment Report (EIA).
- The compilation of a Comments and Response Report (CRR).

### 3.4 Site Investigation

Conduct a field study to: a) systematically survey the proposed project area to locate, identify, 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 4: Site Investigation Details**

	<b>Site Investigation</b>
Date	4 October 2017
Season	Spring – Vegetation is low and archaeological visibility is high. The study area was sufficiently covered (Figure 4) to adequately record the range of heritage resources expected in the study area.

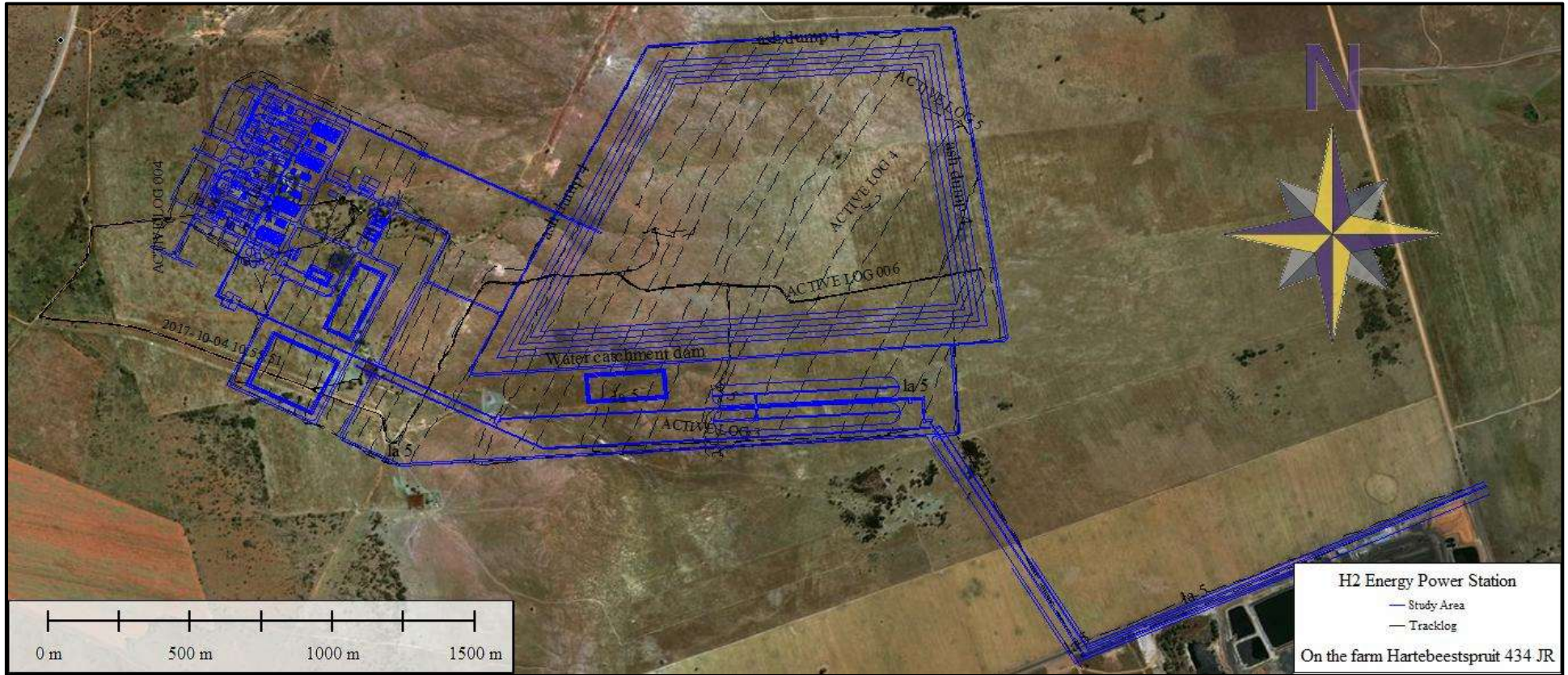


Figure 4: Track logs of the survey in black.



### 3.5 Site Significance and Field Rating

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.

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 10 of this report.

<b>FIELD RATING</b>	<b>GRADE</b>	<b>SIGNIFICANCE</b>	<b>RECOMMENDED MITIGATION</b>
---------------------	--------------	---------------------	-----------------------------------

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 below are used to establish the impact rating on sites:

- The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high):
- The **duration**, wherein it will be indicated whether:
  - \* the lifetime of the impact will be of a very short duration (0-1 years), assigned a score of 1;
  - \* the lifetime of the impact will be of a short duration (2-5 years), assigned a score of 2;
  - \* medium-term (5-15 years), assigned a score of 3;
  - \* long term (> 15 years), assigned a score of 4; or
  - \* permanent, assigned a score of 5;
- The **magnitude**, quantified on a scale from 0-10 where; 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- The **probability of occurrence**, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1-5 where; 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).
- The **significance**, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
- the **status**, which will be described as either positive, negative or neutral.
- the degree to which the impact can be reversed.

- the degree to which the impact may cause irreplaceable loss of resources.
- the *degree* to which the impact can be mitigated.

The **significance** is calculated by combining the criteria in the following formula:

$$S=(E+D+M)P$$

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- » < 30 points: Low (i.e., where this impact would not have a direct influence on the decision to develop in the area),
- » 30-60 points: Medium (i.e., where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- » 60 points: High (i.e., where the impact must have an influence on the decision process to develop in the area).

### **3.7 Limitations and Constraints of the study**

The authors acknowledge that the brief literature review is not exhaustive on the literature of the area. Due to the subsurface nature of archaeological artefacts, the possibility exists that some features or artefacts may not have been discovered/recorded during the survey and the possible occurrence of unmarked graves and other cultural material cannot be excluded. Similarly, the depth of the deposit of heritage sites cannot be accurately determined due its subsurface nature. This report only deals with the footprint area of the proposed development and consisted of non-intrusive surface surveys. This study did not assess the impact on medicinal plants and intangible heritage as it is assumed that these components would have been highlighted through the public consultation process if relevant. It is possible that new information could come to light in future, which might change the results of this Impact Assessment.

#### 4 Description of Socio Economic Environmental

The following information was obtained from the Thembisile Hani Local Municipality website based on the 2017 – 2022 IDP.

*"The municipality covers an area of approximately 2 384 km<sup>2</sup> in the Nkangala district and has a population size of 310 458 people. The Municipality is predominately rural in nature and its main economic sectors include public services, retail, business services and agriculture.....The five primary settlement clusters within the municipal boundaries are namely Moloto, KwaMhlanga, Kwaggafontein, Tweefontein and Verena. Other settlements include, Boekenhouthoek, Bundu, Ekangala, Ekandustria, Enkeldoornoog, Goederede, Phola Park, Seringkop, Sybrandskraal, Vlakfontein, and Witnek".*

For this project the Kwamhlanga settlement is of relevance:

##### **"Kwamhlanga Settlement**

*The KwaMhlanga nodal point is the highest order node in the Thembisile Hani municipal area that lies to the north-east of the City of Tshwane, along the Moloto Road. The spatial structure is characterised with a business core branching out along the main roads surrounded by a strong residential component. The node also enjoys very good access and visibility from two provincial roads, namely the R 573 and R568. The majority of the energy of the node is centred on the intersection of the R 573 and R568 including Crossroads Plaza with linear development taking place along the two roads. The land uses range from retail, business and service industry..."*

In terms of employment:

*"About 97 744 people are economically active (employed or unemployed but looking for work), and of these, 37% are unemployed. Of the 48 741 economically active youth (15 – 34 years) in the area, almost half (49, 4%) are unemployed. The unemployment rate in the municipality is currently standing at 37% with the female population accounting for most of the unemployment status. The loss of jobs and the decline in new job opportunities in neighbouring urban areas such as Witbank, Middelburg and Pretoria exacerbate the unemployment rate. "*

The municipality indicated the following as key priorities:

- » *Maximising the provincial benefits from the mining and energy sectors while mitigating any environmental impacts*
- » *Using indigenous resources to create jobs*
- » *Supporting the industrial and service sectors to create jobs*
- » *Reducing impact of poverty through social services*
- » *Strengthening sustainable development*
- » *Governance and Spatial Integration*

## 5 Description of the Physical Environment

The project is located approximately 9 km south of KwaMhlanga, and approximately 1 km north of the Palesa Coal Mine in the Thembisile Hani Local Municipality of the Nkangala District in Mpumalanga Province (Figure 1 & 2).

The project site comprises the following properties

<b>Description:</b>	<b>SG 21 Code</b>	<b>Parcel</b>
Portion 21 of the Farm Hartebeestspruit No. 434	TOJR00000000043400021	21/434
Portion 22 of the Farm Hartebeestspruit No. 434	TOJR00000000043400022	22/434
Portion 23 of the Farm Hartebeestspruit No. 434	TOJR00000000043400023	23/434

The prevailing vegetation type and landscape features of the region are described as the “Rand Highveld Grassland” (Mucina & Rutherford, 2006). It is described as a highly variable landscape with extensive sloping plains and a series of ridges slightly elevated over undulating plains. The vegetation is species-rich, wiry, sour grassland alternating with low sour shrubland on rocky outcrops and steeper slopes. Most common grasses on the plains belonged to the genera *Themeda*, *Eragrostis*, *Heteropogon* and *Elionurus*. High diversity of herbs, many of which belong to the Asteraceae, is also a typical feature. Rocky hills and ridges carry sparse (savannoid) woodlands with *Protea caffra*, *Acacia caffra* and *Celtis Africana*, accompanied by a rich suite of shrubs among which the genus *Rhus* is most prominent (Mucina & Rutherford, 2006).

As mentioned before, the Cahora Bassa Power Line dissects the layout of the project in two. Other power lines service the needs of the farms as is. Several tracks also cross the property and provide access to critical farm infrastructure such as dams and cattle kraals. Several fences also cross the property.



Figure 5. Cluster of trees in the study area



Figure 6. Cahora Bassa Powerline



Figure 7. Cattle Kraal in the study area



Figure 8. Fencing in the study area



Figure 9. Vegetation in the study area



Figure 10. General site conditions



Figure 11. Ploughed area



Figure 12. Rocky ridge in the western portion of the study area.

## **6 Results of Public Consultation and Stakeholder Engagement:**

Adjacent landowners and the public at large were informed of the proposed activity as part of the EIA process. Site notices and advertisements notifying interested and affected parties were placed at strategic points and in local newspapers as part of the process.

## **7 Literature / Background Study:**

### **7.1 Literature Review**

One previous heritage study was conducted close to the study area by Johan Nel (2010). No sites of archaeological significance were identified. However, a total of six burial grounds, as well as three structures were identified and recorded

#### **7.1.1 Genealogical Society and Google Earth Monuments**

No known grave sites are indicated close to the development footprint.



## 7.2 Archaeology of the area

### 7.2.1 The Stone Age

South Africa has a long and complex Stone Age sequence of more than 2 million years. The broad sequence includes the Later Stone Age, the Middle Stone Age and the Earlier Stone Age. Each of these phases contains sub-phases or industrial complexes, and within these we can expect regional variation regarding characteristics and time ranges. For Cultural Resources Management (CRM) purposes it is often only expected/ possible to identify the presence of the three main phases.

Yet sometimes the recognition of cultural groups, affinities or trends in technology and/or subsistence practices, as represented by the sub-phases or industrial complexes, is achievable. The three main phases can be divided as follows:

- Later Stone Age: associated with Khoi and San societies and their immediate predecessors. Recently to ~30 thousand years ago
- Middle Stone Age: associated with Homo sapiens and archaic modern humans. 30-300 thousand years ago.
- Earlier Stone Age: associated with early Homo groups such as Homo habilis and Homo erectus. 400 000-> 2 million years ago

The Later phases of the Stone Age began at around 20 000 years BP (Before Present). This period was marked by numerous technological innovations and social transformations within these early hunter-gatherer societies. Hunting tools now included the bow and arrow. More particularly, the link-shaft arrow which comprises a poisoned bone tip loosely linked to a shaft which fell away when an animal was shot and left the arrow tip embedded in the prey animal. Other innovations included bored stones used as digging – stick weights to help with uprooting of tubers and roots, small stone tools, normally less than 25mm long, which was used for cutting meat and scraping hides. There were also polished bone needles, twine made from plant fibres, tortoiseshell bowls, fishing equipment including bone hooks and stone sinkers, ostrich eggshell beads and other decorative artwork (Delius, 2007).

These people may be regarded as the first modern inhabitants of Mpumalanga, known as the San or Bushmen. They were a nomadic people who lived together in small family groups and relied on hunting and gathering of food for survival. Evidence of their existence is to be found in numerous rock shelters throughout the Eastern Mpumalanga where some of their rock paintings are still visible. A number of these shelters have been documented throughout the Province (Bornman, 1995; Schoonraad in Barnard, 1975; Delius, 2007). These include areas such as Witbank, Ermelo, Barberton, Nelspruit, White River, Lydenburg and Ohrigstad.

San paintings in Mpumalanga are characterized by representations of animals and human figures and are normally fine-lined paintings which are produced by using brushes made of plant material, sticks and quills.

The colours are usually red and black or sometimes white. It has been argued that the red ochre source for some of these paintings is to be found at Dumaneni, near Malelane (Bornman, 1995).

The closest Stone Age occurrence found to the study area is the Late Stone Age site at Fort Troje, close to Cullinan (Bergh 1999: 4).

### **7.3 Iron Age remains**

The Iron Age as a whole represents the spread of Bantu speaking people and includes both the pre-Historic and Historic periods. It can be divided into three distinct periods:

The Early Iron Age: Most of the first millennium AD.

The Middle Iron Age: 10th to 13th centuries AD

The Late Iron Age: 14th century to colonial period.

The Iron Age is characterised by the ability of these early people to manipulate and work Iron ore into implements that assisted them in creating a favourable environment to make a better living. No Sites dating to the Early or Middle Iron Age have been recorded or is expected for the study area. According to Bergh (1999) there are 125 Late Iron sites on record in the greater study area. Several Stone Walled Settlements is found in the general study area associated with the Manala Ndebele. These Southern Ndebele speaking people occupied the area between the 1600's up to the 1800's

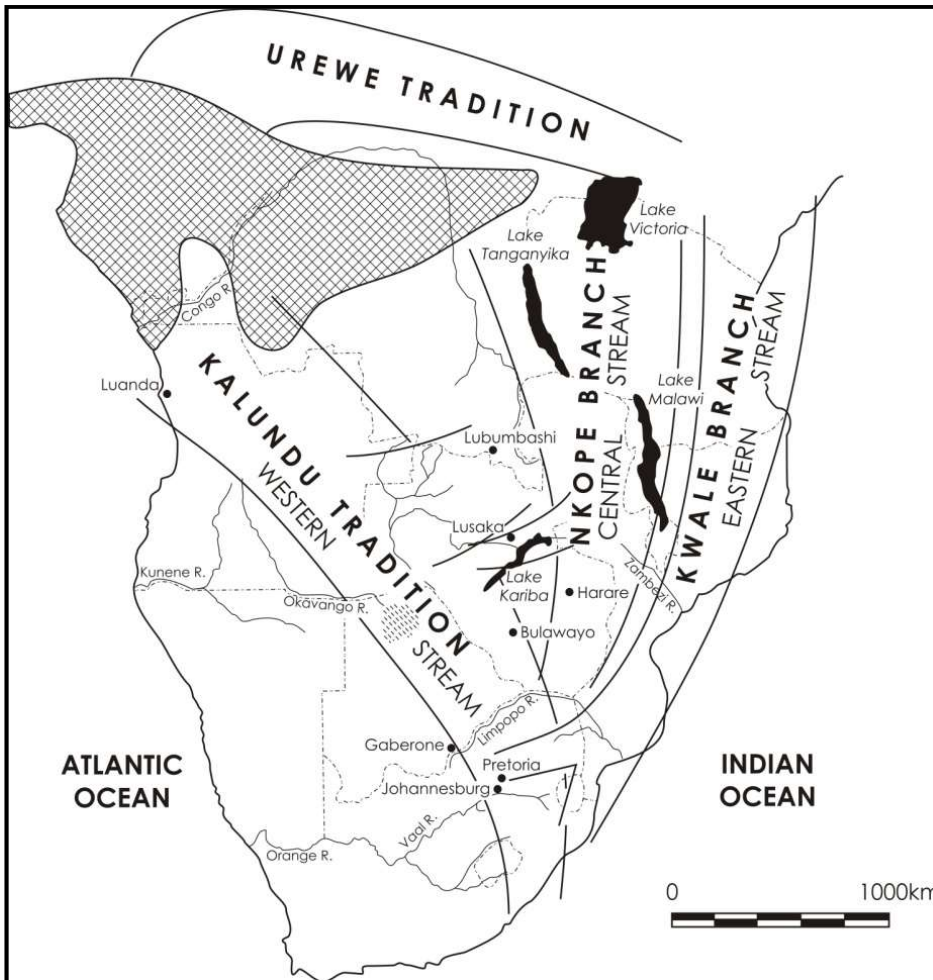


Figure 13. Movement of Bantu speaking farmers (Huffman 2007)

There are no known Iron Age sites in the immediate area. The closest known Late Iron Age settlement sites are found in and around Pretoria and the Cullinan area (Bergh 1999: 6-7).

#### **7.4 Brief history of settlement in the area**

Long before European settlers moved inland, Stone Age and Iron Age communities had left their mark on the old Transvaal landscape. It was only by the late 1830s that a mass-movement of Dutch speaking people in the Cape Colony started advancing into the northern areas. This was due to feelings of mounting dissatisfaction caused by economical and other circumstances under British rule in the Cape. This movement later became known as the Great Trek. This migration resulted in a massive increase in the extent of that proportion of modern South Africa dominated by people of European descent. (Ross 2002: 39)

The movement of whites into the interior would have a significant impact on the black people who populated the land. This was also the case in the area where the farm under investigation is located. Farms were surveyed in a large area, which included the present-day Bronkhorstspuit area, between 1839 and 1840. By 1860, the population of whites in the central Transvaal was already very dense and the administrative machinery of their leaders was firmly in place. Many of the policies that would later be entrenched as legislation during the period of apartheid had already been developed. (Bergh 1999: 15, 170)

Today, Bronkhorstspuit is a small town, 50 kilometers east of Pretoria in Gauteng, South Africa, along the N4 highway towards Witbank. It lies on the border between the Gauteng and Mpumalanga Provinces. Before the establishment of the town, in 1858, a group of Voortrekkers settled in the Bronkhorstspuit creek, which was originally called Kalkoenkransrivier. A railway station was established on the present-day site of Bronkhorstspuit in 1894. In June 1897, the South African Republic gave its approval for the establishment of the town, by that time already named Bronkhorstspuit by locals. It was however only in 1905 that Bronkhorstspuit, also referred to as Erasmus, was officially proclaimed as a town. There is disagreement about how the town originally got its name. Some say that it was named after the farmer J. G. Bronkhorst, whereas others believe that it was named after the plant *brankors* (the Afrikaans name for watercress), that grew in the region of the creek. (Internet Archive N/d; Routes 2013).

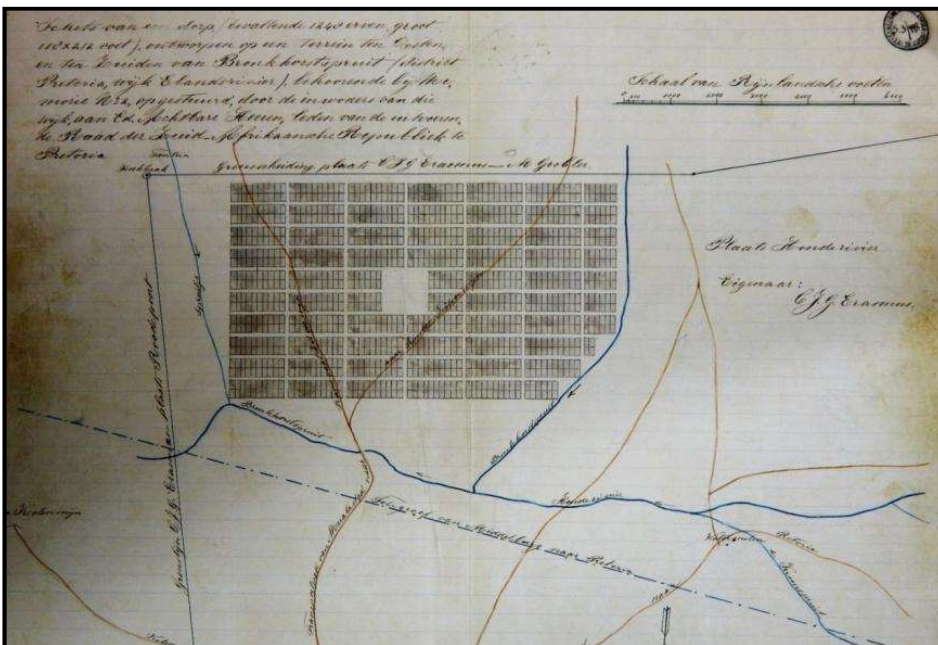
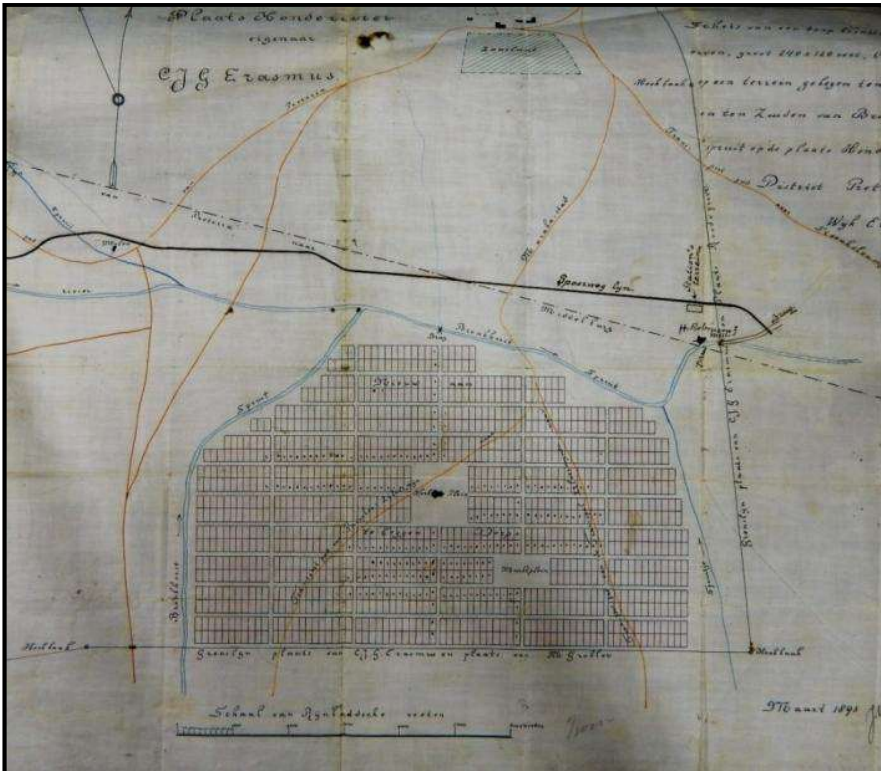


Figure 14. Two 1891 Maps with designs for the town Bronkhorstspuit. (NASA Maps: S3/964; NASA Maps: S3/998)

### 7.5 Battlefield sites

### **7.5.1 The First War Of Independence, 1880-1881 – The ‘Battle’ Of Bronkhorstspuit (20 December 1880)**

#### Background

The final British annexation of the Cape in 1806 marked the beginning of a strong rift between the inhabitants of the Cape who were mainly from Dutch, French and later German descent and the new British Cape Colonial government. The community at the Cape and the cattle farmers further north east, towards Port Elizabeth, Grahamstown and Colesberg had developed a unique African character and a strong sense of independence and self-rule. When this was threatened by the Colonial Government they chose to move into the interior of South Africa in pursuit of their own, independent republic. Eventually two Boer Republics then known as the Transvaal Republic and the Republic of the Orange Free State were established. They first obtained independence from Britain in 1852 after the Sand River Convention and for nearly 30 years the Boers led a mainly agrarian existence. (Duxbury 1981: 1-8)

#### Causes of the war:

The two Boer republics were however in the way of Britain’s plans for a confederation of the states in Southern Africa and in 1877 they annexed the Transvaal. The Boers regarded this as a direct violation of the Sand River Convention and a threat to their hard earned independence and many protest meetings were held across this Republic. In the three years after annexation, the British failed to acknowledge the smouldering discontent and when the authorities began to clamp down on non-payment of taxes, it sparked the first uprising of many in the small town of Potchefstroom in the then western Transvaal in December 1880. This marked the outbreak of what later became known as the First War of Independence or the Transvaal War. As early as November, however, British Forces were ordered to Pretoria as the hostile attitude of the Boers became more imminent. Other forces were stationed at Rustenburg, Lydenburg, Marabastad, Wakkerstroom and Standerton. (Duxbury 1981: 1-8)

#### Bronkhorstspuit:

British forces, (the 94th Regiment) stationed at Lydenburg received orders to move to Pretoria and reached Middelburg on 15 December. Boer movements and gatherings were noticed and the column under command of Lt. Col. Anstruther moved its wagons in laager style every night as a precautionary matter. On 20 December the column reached a small stream called the Bronkhorstspuit. It was then that a party of 150 Boers were noticed on a nearby ridge. The column stopped and a Boer messenger delivered a note to Anstruther giving him two minutes to answer. Meanwhile the Boers under command of Commandant Frans Joubert grew in numbers and moved closer. There was no way that Anstruther would negotiate as he had orders to obey. There is ambiguity as to what happened next, but fire was opened which lasted for about 15 minutes. (Duxbury 1981: 9-18)

Although accurate figures are not available, names on monuments indicate that the British suffered 78 killed, 79 wounded and several prisoners of war taken. Anstruther died of wounds six days later. On Boer side one was killed in action, one died of wounds and five were wounded. (Duxbury 1981: 9-18)



Figure 15. The British Monument outside Bronkhorstspuit.

*Photograph: C Kruger, Heritage Foundation*

Joubert allowed for the establishment of a camp for the wounded and for 20 men to assist in the burying of the dead and caring for the wounded. The remainder were taken prisoner. (Duxbury 1981: 9-18)



Figure 16. The Boer Monument, Bronkhorstspuit.

*Photograph: C Kruger, Heritage Foundation*

After the Bronkhorstspuit incident the Boers besieged British garrisons at Lydenburg, Rustenburg, Standerton and Wakkerstroom. This was followed by the three major defeats of the British at Laingsnek, Schuinshoogte and eventually, Majuba. (Duxbury 1981: 17-44)

### **7.5.2 The Twentieth Century**

The Anglo-Boer War, which took place between 1899 and 1902 in South Africa, was one of the most turbulent times in South Africa's history. Even before the outbreak of war in October 1899 British politicians, including Sir Alfred Milner and Chamberlain, had declared that should Britain's differences with the South African Republic result in violence, it would mean the end of republican independence. This decision was not immediately publicized, and as a consequence, republican leaders based their assessment of British intentions on the more moderate public utterances of British leaders. Consequently, in March 1900, they asked Lord Salisbury to agree to peace on the basis of the status quo ante bellum. Salisbury's reply was; however, a clear statement of British war aims. (Du Preez 1977)

A black concentration camp was located next to the railway station at Bronkhorstspuit during the Anglo-Boer War. One of the conflicts of the war also took place a small distance to the southeast of the town. The battalion of B. Viljoen attacked that of the British commander Garrison on 18 November 1900. (Bergh 1999: 15)





Figure 17. Historical aerial photograph of Bronkhorstspuit with the Dutch Reformed Church in the forefront. (Anon 1949)

The Battle of Diamond Hill (or the Battle of Donkerhoek) was also fought close to the proposed development area on 11 June 1900. The Boers under leadership of General Louis Botha suffered a loss of around 30 men, of whom 11 were killed in this battle. The battle took place after Lord Roberts occupied Pretoria and the Boers moved their capital to Machadodorp. General Botha established a line of defence about 30 kilometres east of Pretoria on both sides of the railway line to prevent the British army moving east towards Machadodorp. The frontline stretched over 40 km (Bergh 1999). The British advanced against the Boers to clear the Boers from the areas close to Pretoria. The British suffered 180 casualties in the battle and on the 12<sup>th</sup> of June Botha led his men into the cover of darkness with a sense of victory. This battle boosted the Boers morale and the war continued for two more years (Von der Heyde 2013).

## 7.6 Cultural Landscape

The study area is located in an area that has been cultivated from the 1960's. The area has been subjected to the development of agricultural infrastructure as well as residential structures.

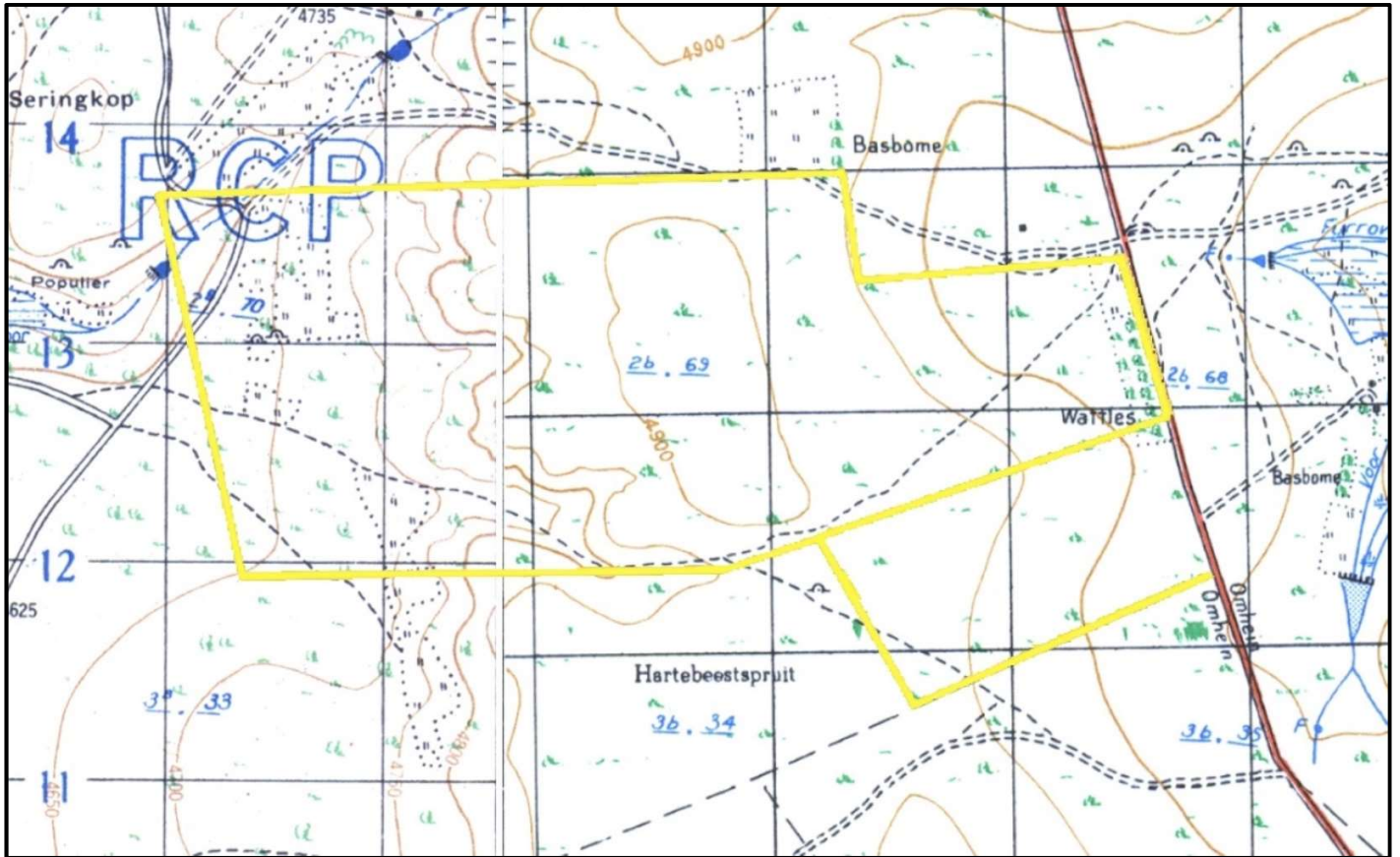


Figure 18. 1943 – 1944 Topographical map of the study area. Some huts are indicated in the western portion of the study area with several farm roads traversing the study area. No other dwellings are indicated.

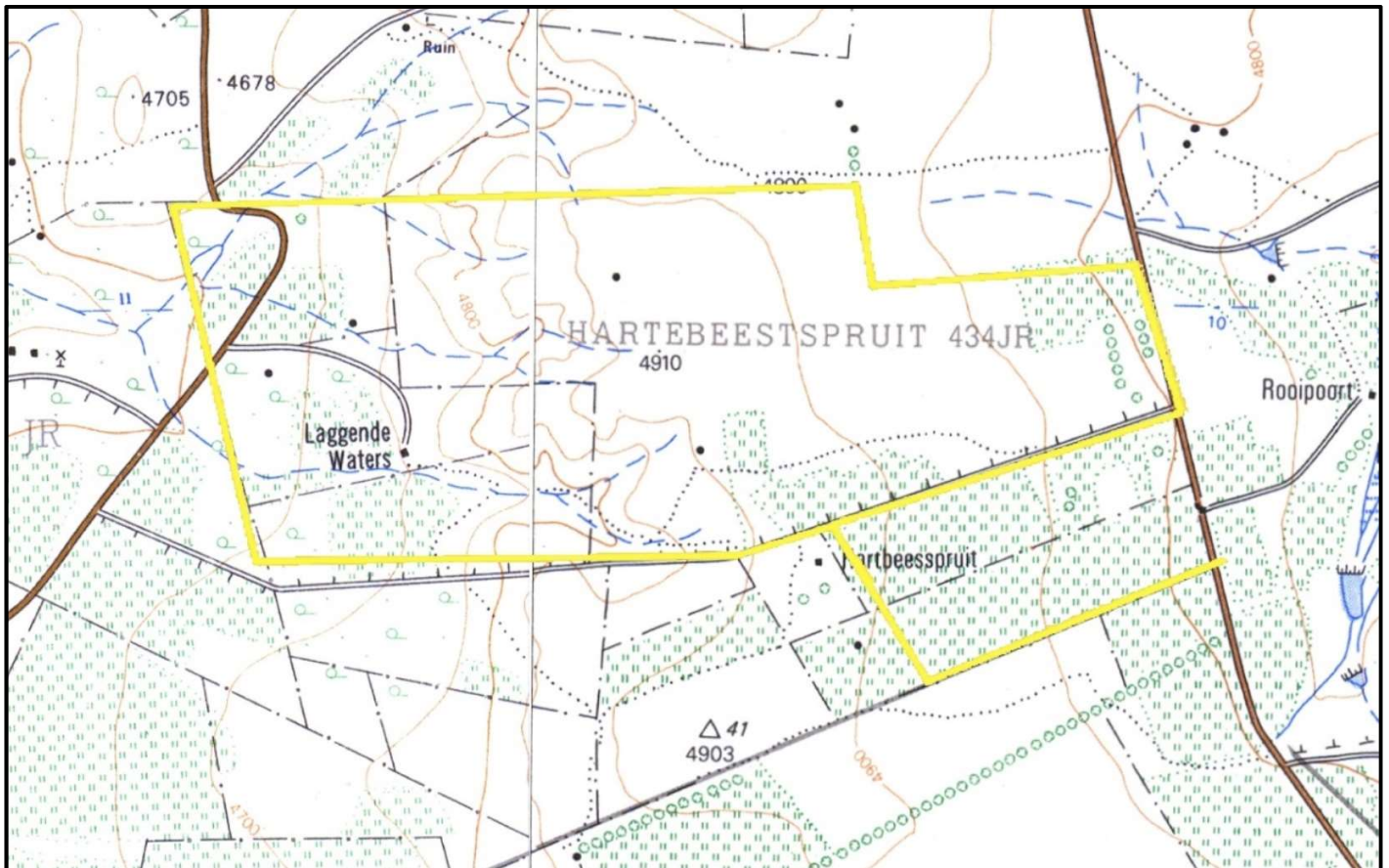


Figure 19. 1969 Topographical map of the study area. Various dwellings are now indicated in the western and central portions of the study area. The majority of the farm are now being used for agricultural purposes.

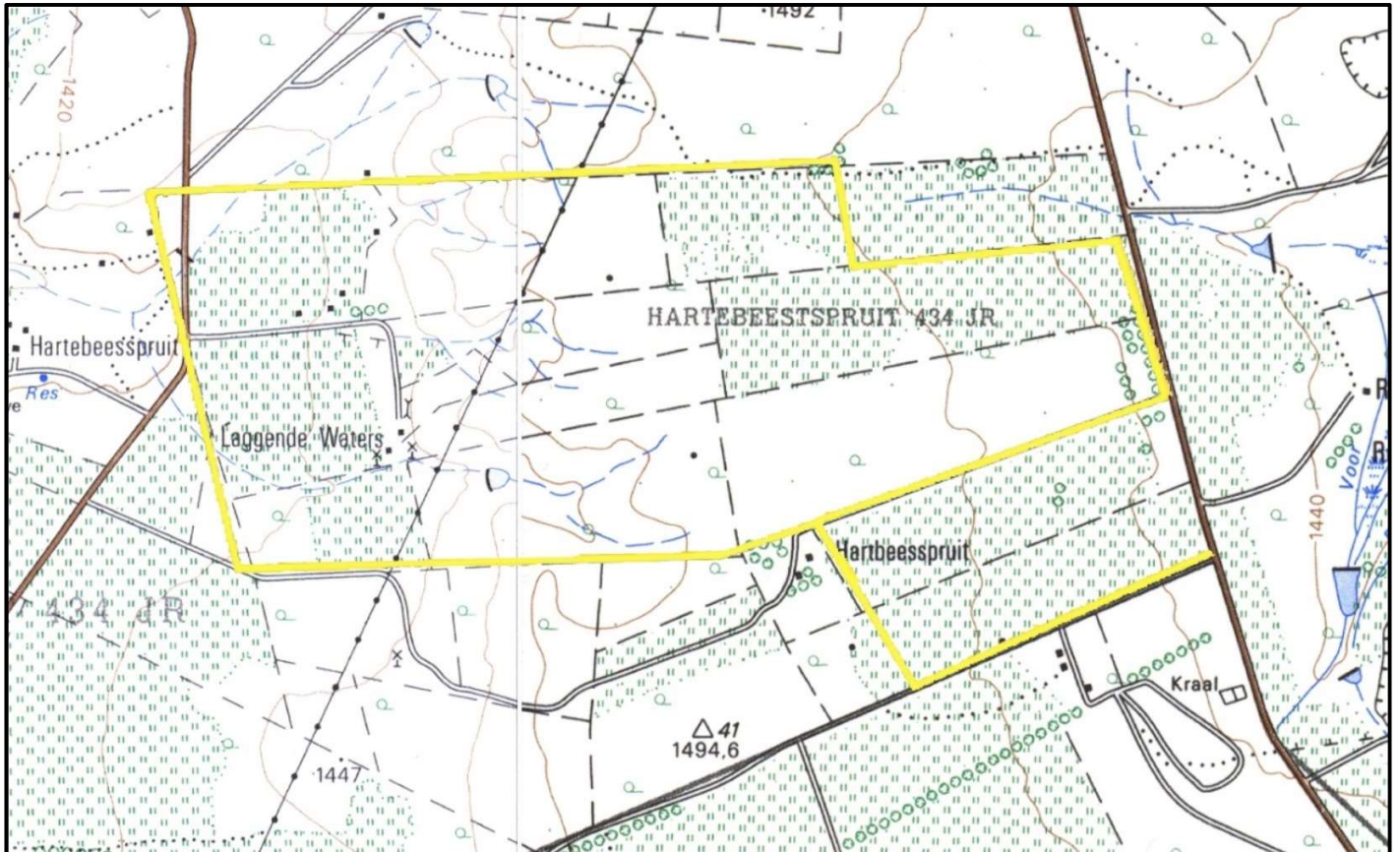


Figure 20. 1984 Topographical map of the study area. A powerline traverses the study area in a north to south direction with more extensive agricultural fields. Several dwellings are also indicated in the western portion of the study area.

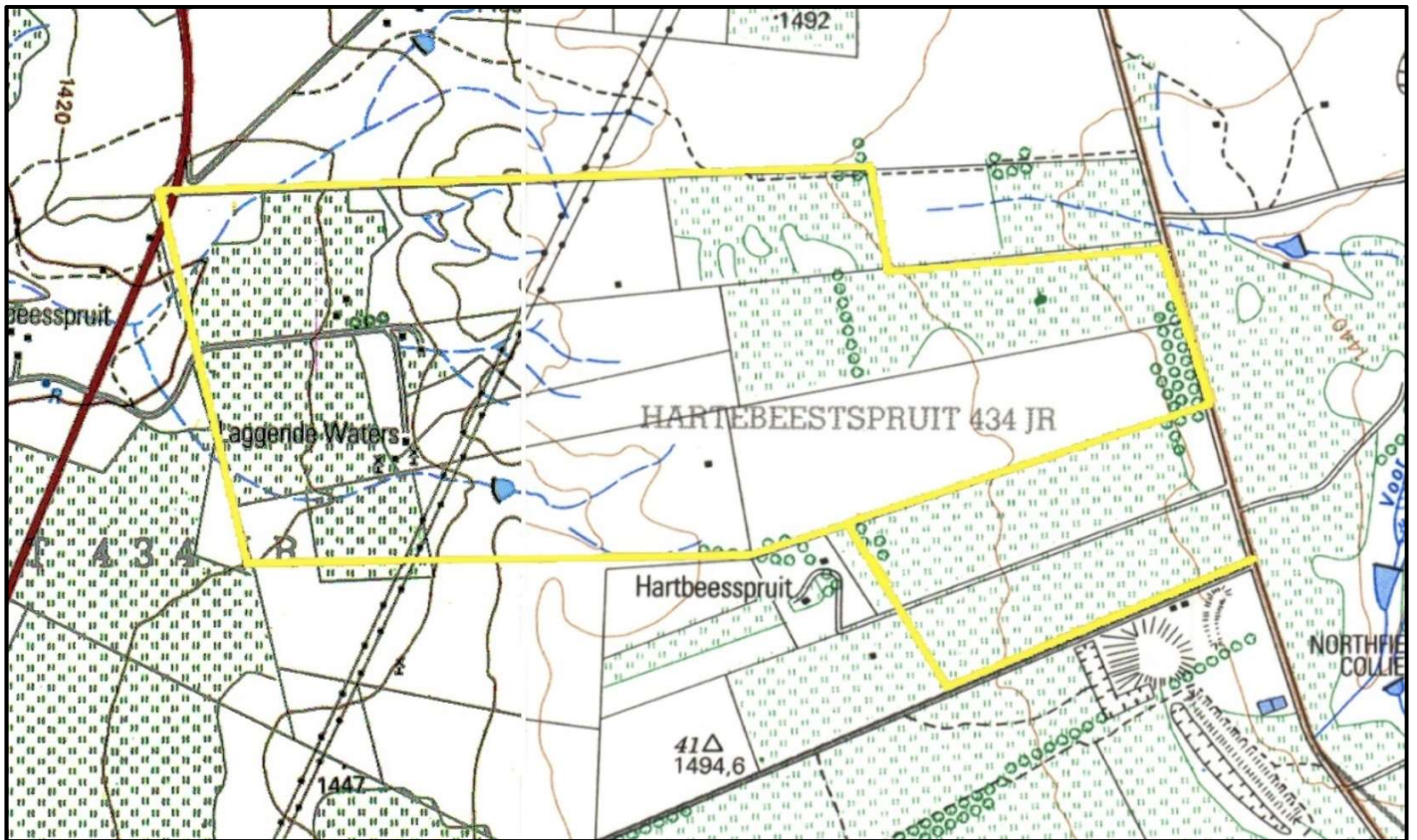


Figure 21. 1995 Topographical map of the study area. The landscape is similar to 1984 with the addition of another power line.

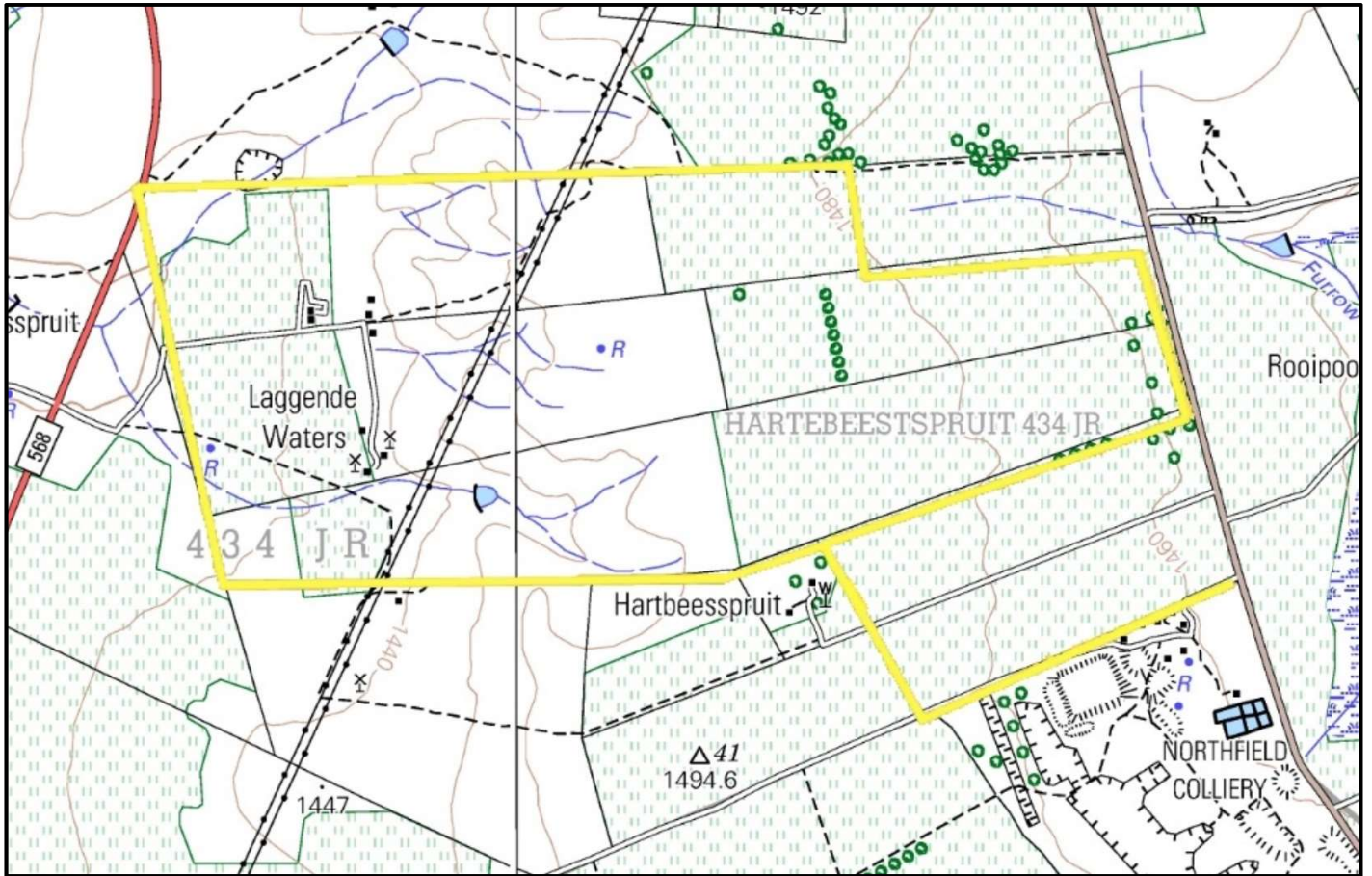


Figure 22. 2001- 2003 Topographical map of the study area. The landscape is similar to 1995.

## 8 Findings of the Survey

The Power Station and associated features will be situated directly to the east of the R568 tar road from Bronkhorstspuit to Vezubuhle township. It is situated in between the R568 tar road and the D1241 gravel road to the east. The Moses River is situated approximately 2km to the east of the main part of the proposed site. The proposed development consists of three distinctive new areas to be investigated.

The first area investigated was the area indicated to contain the Infrastructure Site of the proposed development. It is situated on the western extreme of the proposed development site and is situated on a low lying flat plain next to the more elevated Ash Dump Site further to the east. This development site measures approximately 70 ha in size and covers an area which was previously mostly cultivated and disturbed due to these agricultural activities. This area was previously bush cleared and used for agriculture. Presently it is being used as a grazing facility for cattle. The Cahora Bassa Power Line dissects the proposed Infrastructure Site and Ash Dump Site and is situated approximately central to the proposed development area.

The second area, the proposed Ash Dump Site is situated to the east of the proposed Infrastructure Site and on top of the adjacent ridge. This site measures approximately 200ha in size and is situated on top of a rise. This area is quite rocky and most parts of it were not previously used for cultivation. Large parts of this area were however used to harvest grass for cattle feed or for thatching. Most of the site has been fairly undisturbed and is currently being used as grazing facilities for cattle and other live stock.

The third component is the proposed Power Line. The proposed Power Line will run from the proposed Infrastructure Site eastwards, along the southern fringes of the proposed Ash Dump Site and will then turn further south to the northern boundaries of the Palesa Mine and its activities. The power line will then turn east again and will follow this boundary line eastwards up to the D1241 road where it is proposed to hook up with the national grid.

An identified farmstead and other labourer's cottages occupy the central part of the proposed Infrastructure Site (Feature 3-5). The farmstead and some of the labourer's cottage are being occupied at present. Other cottages are abandoned and in a dilapidated state at present. All of these structures have little or no heritage value or significance.

**Table 5:** Recorded heritage features

Feature No	Longitude	Latitude	Type Site	Impact
Feature 1	28° 44' 26.6135" E	25° 30' 54.9719" S	Cemetery	Direct Impact by proposed Infrastructure
Feature 2	28° 45' 20.2912" E	25° 31' 16.9087" S	Ruin	Indirect Impact power line
Feature 3	28° 44' 31.2690" E	25° 30' 46.4522" S,	Dwelling	Direct Impact by proposed Infrastructure
Feature 4	28° 44' 39.7358" E	25° 30' 49.1465" S	Dwelling	Direct Impact by proposed Infrastructure
Feature 5	28° 44' 40.2334" E	25° 31' 05.0706" S,	Ruin	Direct Impact by proposed Infrastructure

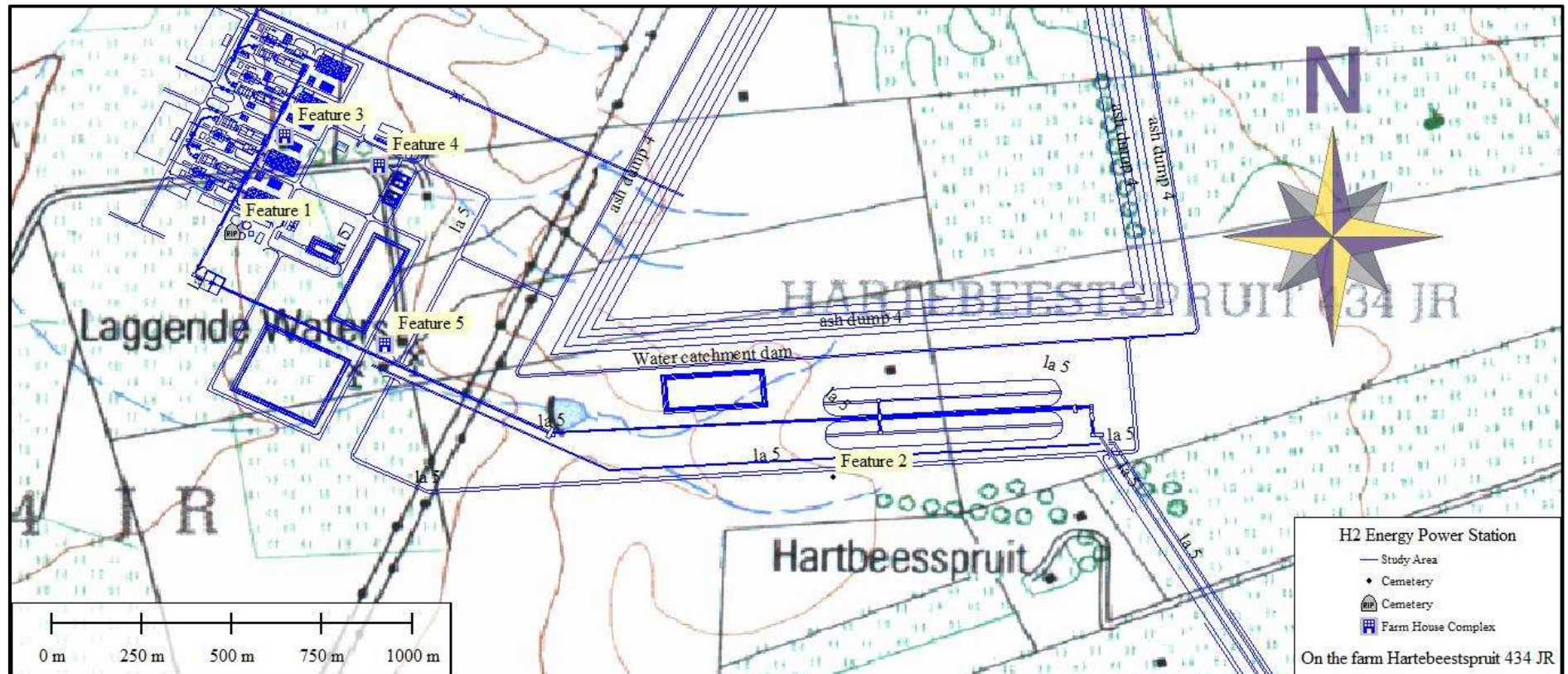


Figure 23: Recorded features in relation to the development footprint.



## 9 Description of Identified Heritage Resources (NHRA Section 34 -36):

### 9.1 Built Environment (Section 34 of the NHRA) – Feature 2 -5

<b>Site Number</b>	Feature 2 - 5	
<b>Type of Site</b>	Recent	
<b>Current Condition of site</b>	Demolished	
<b>Description and type of artefacts, approximate age and significant features of the site.</b>	<p><b>Feature 2:</b> The remains of a stone built cottage were identified at this location. The cottage measured approximately 12m x 8m in size and had a courtyard on the southern side. The courtyard measured approximately 14m x 8m in front of the cottage. An entrance/door on the southern side of the building opened up to the courtyard. The external walls of the structure were built with stone which was collected from the immediate surroundings. Mud was used as mortar to keep the walls together. Mud bricks were used for the inside walls of the cottage which was divided into four separate rooms. The building is in a dilapidated state and all of the walls have collapsed. The building doesn't have a roof anymore. A rectangular shaped stone built kraal is situated approximately 30m to the south-west of the identified cottage. The kraal measures approximately 20m x 10m in size. The walls of the kraal were also collapsed and in a dilapidated state. They measure approximately 0.7m wide and approximately 1m high in places.</p> <p>The cottage was most probably occupied by farm labourers or a farm labourer and his family. It has been abandoned for quite some time as can be seen by the dilapidated state of the structure.</p> <p>Site size: Approximately 30m x 50m.</p> <p><b>Feature 3:</b> Dilapidated farm house that have been altered over the years. The Verandas have been closed in. The dwelling is currently occupied and the team could not get access to the house.</p> <p><b>Feature 4</b> consists of farm labourer housing that is associated with Feature 3. Modern corrugated iron was used to add onto an existing structure.</p> <p><b>Feature 5</b> comprises the demolished remains of the Laggende Waters structures. The site comprises a cement shed without a roof and cattle kraal remains with a dam.</p>	
<b>Depth and stratification of the site</b>	Unknown	



Figure 24. General site conditions at feature 2.



Figure 25. Remaining stone wall feature 2.



Figure 26. Mud brick and stone walls at feature 2



Figure 27. Feature 3 – residential dwelling.



Figure 28. Corrugated add on structures at Feature 4



Figure 29. Cement brick ruin

**Statement of Significance**

Feature 2 - 5: The sites have no heritage significance apart from their age. According to archival maps these structures did occur at these locations by 1969 but have been mostly demolished and rebuilt, replacing the original

	structures with recent structures It must however be noted that sites like these might contain unmarked graves and will require the implementation of a chance find procedure during the construction phase if impacted on.
<b>Field Rating (Recommended grading or field significance) of the site:</b>	Generally Protected C (GP.C).
<b>Recommendations</b>	Feature 2: No further action is necessary prior to construction since the site is located 20 meters to the south of the proposed power line and will not be impacted directly. Feature 3 -5: Structures like these might contain unmarked graves and should therefore be monitored during construction.



Figure 30: Feature 2 in relation to the proposed development.

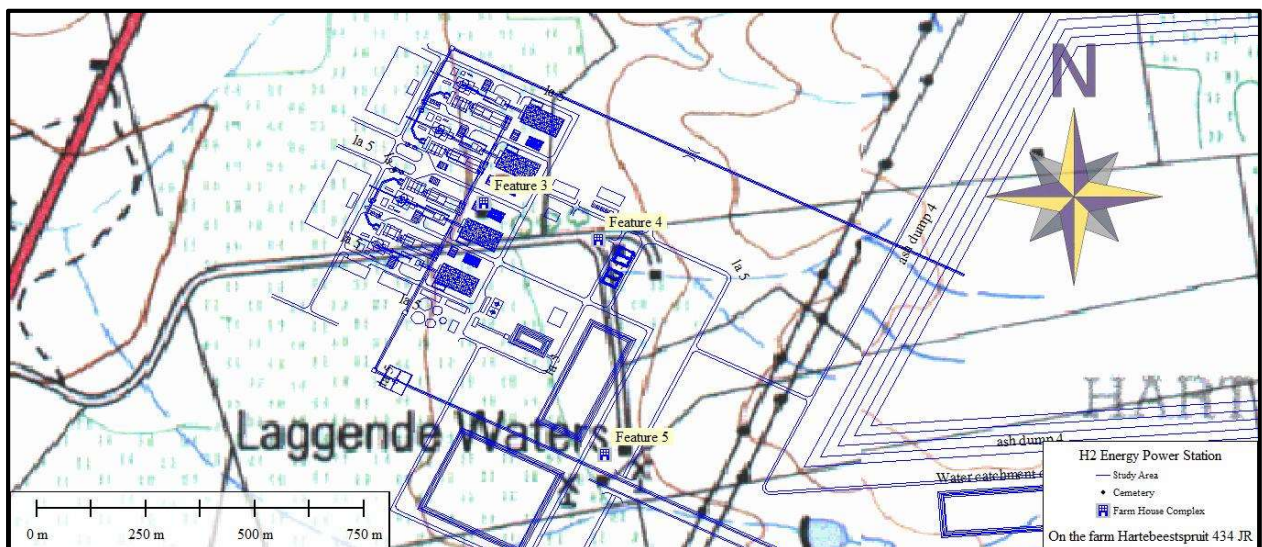
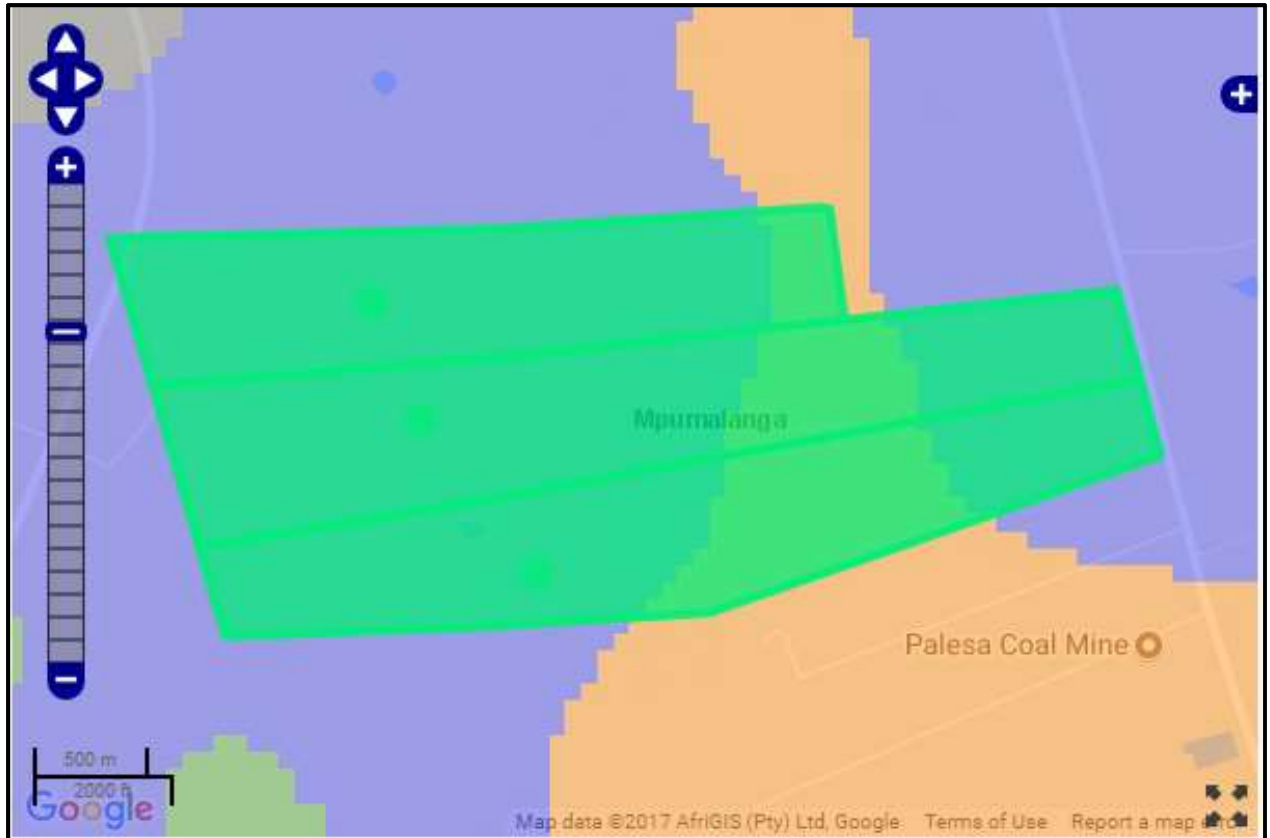


Figure 31: Feature 3 -5 in relation to the development footprint.

## 9.2 Archaeological and palaeontological resources (Section 35 of the NHRA)

No archaeological sites or features of significance were recorded within the development footprint. The study area is indicated as of high to low paleontological sensitivity (Orange and Blue) on the SAHRIS paleontological map (Figure 26) and an independent paleontological assessment was conducted for this project.



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 32. Palaeontological sensitivity map of the study area. The green polygon indicates the proposed development footprint.

**9.3 Burial Grounds and Graves (Section 36 of the NHRA): Feature 1.**

In terms of Section 36 of the Act, one burial site was recorded.

<b>Site Number</b>	Feature 1
<b>Type of Site</b>	Graves located outside of a municipal cemetery
<b>Geographical Setting</b>	Located in old agricultural fields.
<b>Description and type of artefacts, approximate age and significant features of the site.</b>	<p>Three informal graves were identified at this location. The graves were identified amongst a cluster of trees which is situated within a previously ploughed and planted field.</p> <p>The graves were placed in a rough line next to each other and were orientated from west to east. They have stone packed dressings and upright placed rocks as headstones. The dressings were damaged to some extent and the graves were not maintained. The graves don't have any inscribed headstones or identifications and no further information was available on these graves at the time of the investigation.</p> <p>Site size: Approximately 15m x 5m.</p>



Figure 33. General site conditions



Figure 34. Grave at Feature 2



Figure 35. Grave with stone dressing at Feature 2



Figure 36. Grave dressing at Feature 2

<b>Statement of Significance</b>	High social significance.
----------------------------------	---------------------------

<b>Field Rating (Recommended grading or field significance) of the site:</b>	Generally Protected A (GP.A).
<b>Recommendations</b>	Although it is possible to relocate graves (adhering to all legal requirements) this must be seen as a last resort. It is rather recommended that the graves are preserved <i>in situ</i> with at least a 20 meter buffer. If this is not possible the graves can be relocated adhering to legal requirements.



Figure 37: Feature 1 in relation to the proposed development.

#### 9.4 Cultural Landscapes, Intangible and Living Heritage.

The cultural landscape of the study area is related to agricultural activities. The overall landscape character is very natural with rural elements due to the minimally developed landscape. New mining activities in the greater area will have an impact on the landscape of the area.

#### 9.5 Battlefields and Concentration Camps

No battlefield or concentration camp sites occur in the study area.

#### 9.6 Potential Impact

The chances of impacting unknown archaeological sites in the study area is considered to be negligible. The only impact that might occur is on unmarked graves. Any direct impacts that might occur would be during the construction phase only and would be of medium to high significance. Cumulative impacts occur from the combination of effects of various impacts on heritage resources. The importance of identifying and assessing cumulative impacts is that the whole is greater than the sum of its parts. This and other projects in the area could have an indirect impact on the heritage/cultural landscape with specific reference to the sense of place.

### 9.6.1 Pre-Construction phase:

It is assumed that the pre-construction phase involves the removal of topsoil and vegetation as well as the establishment of infrastructure needed for the construction phase. These activities can have a negative and irreversible impact on heritage sites. Impacts include destruction or partial destruction of non-renewable heritage resources.

### 9.6.2 Construction Phase

During this phase, the impacts and effects are similar in nature but more extensive than the pre-construction phase. These activities can have a negative and irreversible impact on heritage sites. Impacts include destruction or partial destruction of non-renewable heritage resources.

### 9.6.3 Operation Phase:

No impact is envisaged for the recorded heritage resources during this phase.

Table 6. Impact table – Of the H2 Energy Power Station on Heritage resources.

<b>Nature:</b> During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological and paleontological material or objects.		
	<b>Without mitigation</b>	<b>With mitigation (Preservation/ excavation of site)</b>
<b>Extent</b>	Regional (4)	Regional (4)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Magnitude</b>	Low (4)	Low (3)
<b>Probability</b>	Probable (4)	Not Probable (2)
<b>Significance</b>	<b>52 (Medium to high)</b>	<b>24 (Low)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Not reversible	Not reversible
<b>Irreplaceable loss of resources?</b>	Yes	No
<b>Can impacts be mitigated?</b>	No	Yes
<b>Mitigation:</b> The graves at feature 1 will be directly impacted on and should ideally be preserved <i>in-situ</i> , if this is not possible the graves can be relocated adhering to all legal requirements. The ruin at feature 2 is located outside of the development footprint and no direct impact is expected and as such no further mitigation is recommended. Feature 3 – 5 should be monitored during construction as sites like these are known to contain unmarked graves.		
<b>Cumulative impacts:</b> Other authorised projects (e.g., mining) in the area could have a cumulative impact on the heritage landscape and on the sense of place of the area.		

## 10 Recommendations and conclusion

H2 Clean Energy (Pty) Ltd appointed Savanah Environmental (Pty) Ltd to conduct an environmental impact assessment for the proposed H2 Energy Coal Fired Power Station. The project site is located approximately 800m north of the Palesa Coal Mine, and 9km south of KwaMhlanga, in Ward 32 of the Thembisile Hani Local Municipality (LM), which forms part of the Nkangala District Municipality (DM), in the Mpumalanga Province. HCAC was appointed to conduct a Heritage Impact Assessment of the proposed development footprint to determine the presence of cultural heritage sites and the impact of the proposed development on these non-renewable resources. The study area was assessed both on desktop level (van der Walt 2016) and by a field survey. The field survey was conducted as a non-intrusive pedestrian survey to cover the extent of the development footprint.

In terms of the archaeological component of Section 35 no archaeological sites or artefacts of significance were recorded during the survey and no further archaeological mitigation prior to construction is recommended. According to the SAHRA palaeontological sensitivity map the project site is located in an area of high to low palaeontological sensitivity and in terms of the palaeontological component of Section 35 an independent assessment should be conducted.

In terms of the built environment of the area (Section 34 of the NHRA) several structures and dwellings occur in the study area (Feature 2 -5). Feature 2 is a stone and mud brick ruin that is located **outside** of the development footprint. The structure is destroyed to the extent that it is of no significance. Since the site will not be impacted on no mitigation is necessary at this point. Features 3 -5 are dilapidated vernacular structures and sheds of unknown age. According to archival maps structures did occur at these locations by 1969 but have been mostly demolished and rebuilt replacing the original structures with recent structures. These features are of low significance and no further mitigation is recommended for these features. Sites like these are known to contain unmarked graves and it is recommended that the presence of graves should be confirmed during the public participation and that during construction these sites should be monitored.

In terms of Section 36 of the NHRA one cemetery has been recorded as Feature 1. The cemetery is located within the development footprint and based on the current lay out this site will require mitigation. No public monuments are located within or close to the study area.

During the public participation process conducted for the project no heritage concerns were raised. The study area is mostly rural in character although several mining projects have recently been established in the area.



Feature No	Longitude	Latitude	Type Site	Impact
Feature 1	28° 44' 26.6135" E	25° 30' 54.9719" S	Cemetery	Direct Impact by proposed Infrastructure
Feature 2	28° 45' 20.2912" E	25° 31' 16.9087" S	Ruin	Indirect Impact power line
Feature 3	28° 44' 31.2690" E	25° 30' 46.4522" S,	Dwelling	Direct Impact by proposed Infrastructure
Feature 4	28° 44' 39.7358" E	25° 30' 49.1465" S	Dwelling	Direct Impact by proposed Infrastructure
Feature 5	28° 44' 40.2334" E	25° 31' 05.0706" S,	Ruin	Direct Impact by proposed Infrastructure

The impacts on identified heritage resources in the study area resulting from this project can be mitigated to an acceptable level with the correct mitigation measures and management actions. Furthermore, the socio-economic benefits derived from this project outweigh the impact on heritage resources with the correct mitigation measures in place. It is therefore recommended the project is authorised from a heritage perspective on the condition that the recommendations as made below are implemented as part of the EMP and based on approval from SAHRA

- It is recommended that a heritage management plan should be developed for the project to manage known and unknown heritage resources;
- An independent palaeontological study should be conducted for the project;
- The cemetery (Feature 1) will be impacted on based on the current development layout. It is recommended that the site should be preserved *in situ* with a 20-meter buffer zone. If additional graves are identified it is recommended that the graves should be preserved *in situ*.
- The areas in which feature 3 – 5 occur should be monitored for unmarked graves during construction.
- Due to the subsurface nature of heritage resources it is recommended that a chance find procedure should be implemented for the project as described below;

### **10.1 Chance Find Procedures**

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 therefor chance find procedures should be put in place as part of the EMP. A short summary of chance find procedures is discussed below.

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.

## **10.2 Reasoned Opinion**

The impacts on identified heritage resources in the study area resulting from this project can be mitigated to an acceptable level with the correct mitigation measures and management actions. Furthermore, the socio-economic benefits derived from this project outweigh the impact on heritage resources with the correct mitigation measures in place. It is therefore recommended the project is authorised from a heritage perspective on the condition that the recommendations as made in this report are implemented as part of the EMPr and based on approval from SAHRA.

## 11 References

- Archaeological Database Wits University Referenced 2009
- Anon. 1949. *Die wordingsgeskiedenis van Bronkhorstspuit: uitgegee met die ontvangs van die Rapportryers 10 Des.* Nederduitsch Hervormde Weeshuis-pers.
- Bergh, J.S., (ed.) Geskiedenisatlas van Suid-Afrika. Die vier noordelike provinsies. Pretoria: J. L. van Schaik Uitgewers. 1999
- Deacon, H.J. & Deacon, J. 1999. *Human Beginnings in South Africa: Uncovering the Secrets of the Stone Age.* Cape Town: David Phillips Publishers.
- Du Preez, S. J. 1977. Peace attempts during the Anglo Boer War until March 1901. Magister Artium thesis in History. Pretoria: University of Pretoria.
- Duxbury, GEO. R., *David and Goliath. The First War of Independence, 1880-1881.* SA National Museum of Military History, JHB, 1981.
- Huffman, T.N. 1982. Archaeology and ethnohistory of the African Iron Age. *Annual Review of Anthropology* 11: 133-50.
- Huffman, T.N. 2007. *Handbook to the Iron Age: The Archaeology of Pre-Colonial Farming Societies in Southern Africa.* University of KwaZulu-Natal Press, Scottsville.
- Kuman, K., 1998. The earliest South African Industries. In: *Lower Palaeolithic Settlement of the Old World.* Eds by M.D. Petraglia and R. Korisetter, pp 151-186. Routledge Press, London.
- Lewis-Williams, J.D., 1981. *Believing and Seeing: Symbolic Meanings in southern San Rock Paintings.* Academic Press, London.
- Mason, J.R. 1962. *The Prehistory of the Transvaal.* Johannesburg: Witwatersrand University Press.
- Mitchell, P. 2002. *The Archaeology of Southern Africa.* Cambridge: Cambridge University Press.
- Mucina, L. & Rutherford, M.C. 2006. *The vegetation map of South Africa, Lesotho and Swaziland.* SANBI, Pretoria.
- National Heritage Resources Act NHRA of 1999 (Act 25 of 1999)
- Nel, J. 2010. Archaeological Impact Assessment For The HCI Khusela Coal: Palesa Extension ESIA Update On portions of the farm Roodepoort 349 JR, Thembisile Local Municipality (Mpumalanga) & Kungwini Local Municipality (Gauteng). Unpublished report.
- Rasmussen, R.K. 1978 *Migrant kingdom: Mzilikaqzi's Ndebele in South Africa.* London: Rex Collings
- Ross, R. 1999. *A concise history of South Africa.* Cambridge University Press. Cambridge.
- Van der Ryst, M.M., 1998. *The Waterburg Plateau in the Northern Province, Republic of South Africa, in the Later Stone Age.* BAR International Series 715, Oxford.
- Van der Ryst, M.M., 2006. *Seeking Shelter: Later Stone Age Hunters, Gatherers and Fishers of Oliboompoot in the western Waterberg south of the Limpopo.* Unpublished doctoral thesis, University of the Witwatersrand, Johannesburg
- SAHRIS (Cited 2016)

[http://www.thembisilehanilm.gov.za/sites/default/files/FINAL%20IDP%202017\\_2022.pdf](http://www.thembisilehanilm.gov.za/sites/default/files/FINAL%20IDP%202017_2022.pdf)

## 12 Appendices:

### Curriculum Vitae of Specialist

Jaco van der Walt  
Archaeologist

jaco.heritage@gmail.com

+27 82 373 8491

+27 86 691 6461

---

#### Education:

---

#### Particulars of degrees/diplomas and/or other qualifications:

<b>Name of University or Institution:</b>	University of Pretoria
<b>Degree obtained</b>	: BA Heritage Tourism & Archaeology
<b>Year of graduation</b>	: 2001
<b>Name of University or Institution:</b>	University of the Witwatersrand
<b>Degree obtained</b>	: BA Hons Archaeology
<b>Year of graduation</b>	: 2002
<b>Name of University or Institution</b>	: University of the Witwatersrand
<b>Degree Obtained</b>	: MA (Archaeology)
<b>Year of Graduation</b>	: 2012
<b>Name of University or Institution</b>	: University of Johannesburg
<b>Degree</b>	: PhD
<b>Year</b>	: Currently Enrolled

---

#### EMPLOYMENT HISTORY:

---

2011 – Present: **Owner – HCAC (Heritage Contracts and Archaeological Consulting CC).**

2007 – 2010 : **CRM Archaeologist**, Managed the Heritage Contracts Unit at the  
University of the Witwatersrand.

2005 - 2007: **CRM Archaeologist**, Director of Matakoma Heritage Consultants

2004: **Technical Assistant**, Department of Anatomy University of Pretoria

2003: **Archaeologist**, Mapungubwe World Heritage Site

2001 - 2002: **CRM Archaeologists**, For R & R Cultural Resource Consultants,  
Polokwane

2000: **Museum Assistant**, Fort Klapperkop.



**Countries of work experience include:**

Republic of South Africa, Botswana, Zimbabwe, Mozambique, Tanzania, The Democratic Republic of the Congo, Lesotho and Zambia.

---

**SELECTED PROJECTS INCLUDE:**


---

**Archaeological Impact Assessments (Phase 1)**

Heritage Impact Assessment Proposed Discharge Of Treated Mine Water Via The Wonderfontein Spruit Receiving Water Body Specialist as part of team conducting an Archaeological Assessment for the Mmamabula mining project and power supply, Botswana  
 Archaeological Impact Assessment Mmamethlake Landfill  
 Archaeological Impact Assessment Libangeni Landfill

**Linear Developments**

Archaeological Impact Assessment Link Northern Waterline Project At The Suikerbosrand Nature Reserve  
 Archaeological Impact Assessment Medupi – Spitskop Power Line,  
 Archaeological Impact Assessment Nelspruit Road Development

**Renewable Energy developments**

Archaeological Impact Assessment Karoshoek Solar Project

**Grave Relocation Projects**

Relocation of graves and site monitoring at Chloorkop as well as permit application and liaison with local authorities and social processes with local stakeholders, Gauteng Province.  
 Relocation of the grave of Rifle Man Maritz as well as permit application and liaison with local authorities and social processes with local stakeholders, Ndumo, Kwa Zulu Natal.  
 Relocation of the Magolwane graves for the office of the premier, Kwa Zulu Natal  
 Relocation of the OSuthu Royal Graves office of the premier, Kwa Zulu Natal

**Phase 2 Mitigation Projects**

Field Director for the Archaeological Mitigation For Booyesdal Platinum Mine, Steelport, Limpopo Province. Principle investigator Prof. T. Huffman  
 Monitoring of heritage sites affected by the ARUP Transnet Multipurpose Pipeline under directorship of Gavin Anderson.  
 Field Director for the Phase 2 mapping of a late Iron Age site located on the farm Kameelbult, Zeerust, North West Province. Under directorship of Prof T. Huffman.  
 Field Director for the Phase 2 surface sampling of Stone Age sites effected by the Medupi – Spitskop Power Line, Limpopo Province

**Heritage management projects**

Platreef Mitigation project – mitigation of heritage sites and compilation of conservation management plan.

---

### MEMBERSHIP OF PROFESSIONAL ASSOCIATIONS:

---

- Association of Southern African Professional Archaeologists. Member number 159  
Accreditation:
  - Field Director            Iron Age Archaeology
  - Field Supervisor        Colonial Period Archaeology, Stone Age Archaeology and Grave Relocation
- Accredited CRM Archaeologist with SAHRA
- Accredited CRM Archaeologist with AMAFA
- Co-opted council member for the CRM Section of the Association of Southern African Association Professional Archaeologists (2011 – 2012)

---

### PUBLICATIONS AND PRESENTATIONS

---

- A Culture Historical Interpretation, Aimed at Site Visitors, of the Exposed Eastern Profile of K8 on the Southern terrace at Mapungubwe.
  - J van der Walt, A Meyer, WC Nienaber
  - Poster presented at Faculty day, Faculty of Medicine University of Pretoria 2003
- 'n Reddingsondersoek na Anglo-Boereoorlog-ammunisie, gevind by Ifafi, Noordwes-Provinsie. South-African Journal for Cultural History 16(1) June 2002, with A. van Vollenhoven as co-writer.
- Fieldwork Report: Mapungubwe Stabilization Project.
  - WC Nienaber, M Hutten, S Gaigher, J van der Walt
  - Paper read at the Southern African Association of Archaeologists Biennial Conference 2004
- A War Uncovered: Human Remains from Thabantšho Hill (South Africa), 10 May 1864.
  - M. Steyn, WS Boshoff, WC Nienaber, J van der Walt
  - Paper read at the 12<sup>th</sup> Congress of the Pan-African Archaeological Association for Prehistory and Related Studies 2005
- Field Report on the mitigation measures conducted on the farm Bokfontein, Brits, North West Province .
  - J van der Walt, P Birkholtz, W. Fourie
  - Paper read at the Southern African Association of Archaeologists Biennial Conference 2007



- Field report on the mitigation measures employed at Early Farmer sites threatened by development in the Greater Sekhukhune area, Limpopo Province. J van der Walt
  - Paper read at the Southern African Association of Archaeologists Biennial Conference 2008
- Ceramic analysis of an Early Iron Age Site with vitrified dung, Limpopo Province South Africa.
  - J van der Walt. Poster presented at SAFA, Frankfurt Germany 2008
- Bantu Speaker Rock Engravings in the Schoemanskloof Valley, Lydenburg District, Mpumalanga (*In Prep*)
  - J van der Walt and J.P Celliers
- Sterkspruit: Micro-layout of late Iron Age stone walling, Lydenburg, Mpumalanga. W. Fourie and J van der Walt. A Poster presented at the Southern African Association of Archaeologists Biennial Conference 2011
- Detailed mapping of LIA stone-walled settlements' in Lydenburg, Mpumalanga. J van der Walt and J.P Celliers
  - Paper read at the Southern African Association of Archaeologists Biennial Conference 2011
- Bantu-Speaker Rock engravings in the Schoemanskloof Valley, Lydenburg District, Mpumalanga. J.P Celliers and J van der Walt
  - Paper read at the Southern African Association of Archaeologists Biennial Conference 2011
- Pleistocene hominin land use on the western trans-Vaal Highveld ecoregion, South Africa, Jaco van der Walt.
  - J van der Walt. Poster presented at SAFA, Toulouse, France. Biennial Conference 2016

---

#### REFERENCES:

---

1. Prof Marlize Lombard     Senior Lecturer, University of Johannesburg, South Africa  
E-mail: mlombard@uj.ac.za
2. Prof TN Huffman     Department of Archaeology Tel: (011) 717 6040  
University of the Witwatersrand
3. Alex Schoeman     University of the Witwatersrand  
E-mail: Alex.Schoeman@wits.ac.za