

# HERITAGE IMPACT ASSESSMENT

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

## FOR THE TRANSALLOYS POWER PLANT PART II AMENDMENT, MPUMALANGA PROVINCE

**Type of development:**

Power Plant

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## APPROVAL PAGE

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3 April 2019	219003	Addressed technical comments from client Lay out changes
5 June 2019	219003	Second lay out change

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## REPORT OUTLINE

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

**Table 1. Specialist Report Requirements.**

<b>Requirement from Appendix 6 of GN 326 EIA Regulation 2017</b>	<b>Chapter</b>
(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	<i>Declaration of Independence</i>
(c) Indication of the scope of, and the purpose for which, the report was prepared	Section 1
(cA) an indication of the quality and age of base data used for the specialist report	Section 3.4 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 site plan identifying site alternatives;	Section 8 and 9
(g) Identification of any areas to be avoided, including buffers	Section 8 and 9
(h) Map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers	Section 8
(I) Description of any assumptions made and any uncertainties or gaps in knowledge	Section 3.7
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity <b>including identified alternatives on the environment</b> or activities;	Section 9
(k) Mitigation measures for inclusion in the EMPr	Section 9
(I) Conditions for inclusion in the environmental authorisation	Section 9
(m) Monitoring requirements for inclusion in the EMPr or environmental authorisation	Section 9
(n) Reasoned opinion - (i) as to whether the proposed activity, activities or portions thereof should be authorised; (iA) regarding the acceptability of the proposed activity or activities; and (ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	Section 9.2
(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 11

## Executive Summary

Savannah Environmental (Pty) Ltd is conducting an Environmental Impact Assessment for the proposed Transalloys Power Plant Part II Amendment, Mpumalanga Province. The proposed project is located adjacent to the existing Transalloys Smelter Complex which is located within 1km south-east of Evraz Highveld Steel. The study is conducted as an amendment to the impact assessment study conducted in 2014 (with an originally proposed capacity of 150MW). The study also reflects new power plant and ash storage facility layout located within the project implementation sites assessed in 2014 and successfully approved through the 2 March 2016 Environmental Authorisation (as per the final EIR dated May 2015). Currently, both a Water Use Licence (WUL) process and an Atmospheric Emissions Licence (EAL) is being submitted in parallel to the proposed Part II amendment process required for the amendment of the layout, amongst others.

The proposed power plant will have a net generating capacity of 120 MW - 150 MW in order to meet Transalloys' current electricity demands and future expansion requirements. An Environmental Authorisation (EA) was issued for the proposed project. However, the EA only authorises a maximum output capacity of 55MW. Transalloys now wish to amend the EA from 55MW to up to 120MW-150 MW based on information obtained from interim pre-feasibility assessments which maintain that a higher maximum output capacity is possible. In addition, the location of the power plant and the ash dump are proposed to be amended for technical reasons. The amended layout falls within the preferred site locations as assessed in the initial heritage assessment (van der Walt 2014).


The amended layout was assessed both on desktop level and by a field survey. The field survey was conducted as a non-intrusive pedestrian survey to cover the extent of the development footprint as no site development plans were available at the time of the survey.

The study area is disturbed from a heritage perspective by previous mining and agricultural activities and all of these activities would have impacted on surface indicators of heritage sites. This was confirmed during the survey and stone cairns (TA 4) from the clearing of fields were recorded. These cairns are of no heritage significance and warrant no further mitigation. In terms of the built environment (Section 34 of the NHRA) of the area the demolished remains of three structures (TA 1 – 3) were identified scattered over the study area. Due to the extent of the destruction of these structures they are of no heritage significance and not conservation worthy. **However unmarked graves (Section 36) can be associated with sites like these and the implementation of a chance find procedure is recommended.**

Due to the lack of significant heritage resources in the study area the impact of the proposed project on heritage resources is considered low and it is recommended that the proposed project can commence on the condition that the following recommendations are implemented as part of the EMP and based on approval from SAHRA:

- Implementation of a chance find procedure.

## 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>	4/02/2019

### 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.

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## 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 Environmental (Pty) Ltd to conduct a heritage impact assessment of the proposed Transalloys Power Plant consisting of a proposed power plant and ash dump, to inform the updated layout and amendment application (part II amendment under NEMA).

Transalloys (Pty) Ltd (Transalloys) is a ferro-metal plant recovering Silicon Manganese (SiMn) from its ore. Transalloys is located 9 kilometres south-west of Witbank (eMalahleni) in Mpumalanga province and directly south of the N4 freeway between Pretoria and Nelspruit. It is situated on portions 34 and 35 of the farm Elandsfontein 309JS and portions 20 and 24 of the farm Schoongezicht 308JS. It is bounded to the south-east by Clewer, a small township south-west of Witbank. The site falls within the jurisdiction of the eMalahleni Local Municipality, a constituent of the Nkangala District Municipality. Land use activities in the Transalloys neighbourhood include agriculture, residential and industrial. The study area is divided into two sections on either side of the main entrance road into the current, existing facility. This report forms part of the part II Amendment application, and Environmental Management Programme Report – updated (EMPr), for the development.

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, and in particular to compare the heritage impacts of the initial approved EIA, to that of the proposed amendment layout and development proposal. It serves to assess the impact of the proposed amendment 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, the remains of three demolished structures as well as stone cairns were identified. 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 Regulations section 40 (1) and (2), to be submitted to SAHRA. As such the Environmental Impact Assessment 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, as compared to the initially approved EIA study concerning Heritage resources.

#### 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>	Elandsfontein 309 JS Ash Dump (60 hectares) Power Plant (46 hectares)
<b>Magisterial District</b>	Emalahleni Local Municipality, Mandela Street, Witbank, Emalahleni
<b>1: 50 000 map sheet number</b>	2529 CC
<b>Central co-ordinate of the development</b>	Ash Dump 25°53'8.55"S 29° 7'27.02"E  Power Plant 25°53'41.43"S 29° 7'23.93"E

**Table 3: Infrastructure and project activities**

<b>Type of development</b>	Ash Dump and a Power Plant
<b>Project size</b>	38 and 40 hectares respectively
<b>Project Components</b>	<p><b>Power station (footprint of approximately 30ha)</b></p> <ul style="list-style-type: none"> <li>» Main Plant House for one 120MW-150MW unit</li> <li>» Auxiliary plant buildings, including administration building and warehouse</li> <li>» Other operational support buildings</li> <li>» Maintenance workshops and storage facilities including electrical and instrument workshops and stores, and machine shop</li> <li>» Laboratory area for both routine testing and specialised analysis and investigation</li> <li>» Access roads</li> <li>» High voltage yard</li> </ul> <p><b>Associated infrastructure (footprint of approximately 30ha)</b></p> <ul style="list-style-type: none"> <li>» In-plant coal stock yard and storage</li> <li>» Lime storage area</li> <li>» ≤ 100-200meter high stack</li> <li>» Overland coal conveyors – from coal discard dumps in the area</li> <li>» Water supply pipeline</li> <li>» Amenities including potable water, sanitary and sewer utilities</li> <li>» Electrical utility interconnection and telephone utilities</li> <li>» Sewage treatment plant</li> <li>» Access road and internal roads</li> <li>» Ash dump</li> <li>» Ash dump run-off tanks</li> <li>» Water storage reservoir for raw water supply</li> <li>» Raw water treatment plant</li> <li>» Zero effluent storage tanks</li> <li>» Recycling tanks</li> </ul>

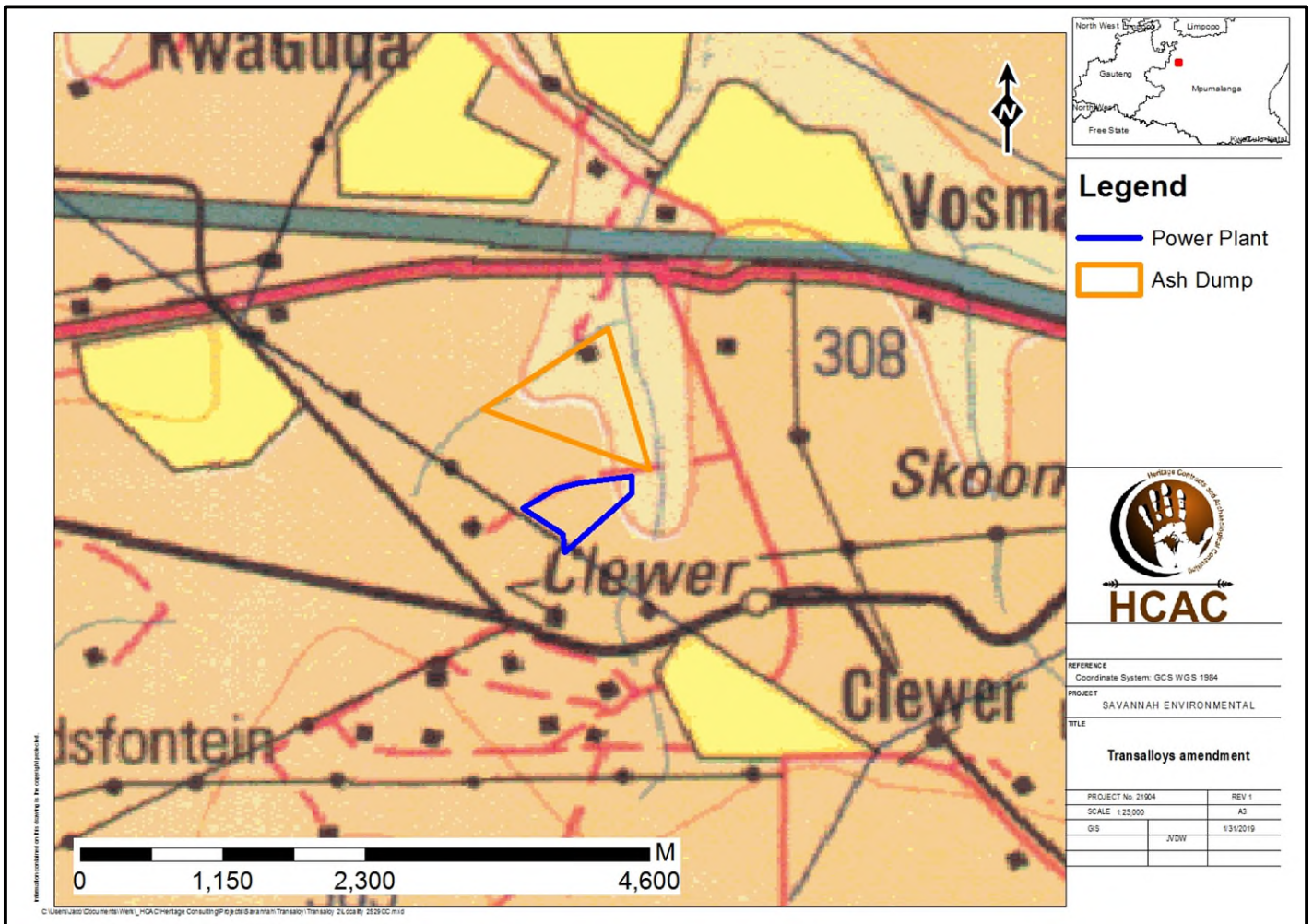


Figure 1. Provincial locality map (1: 250 000 topographical map).



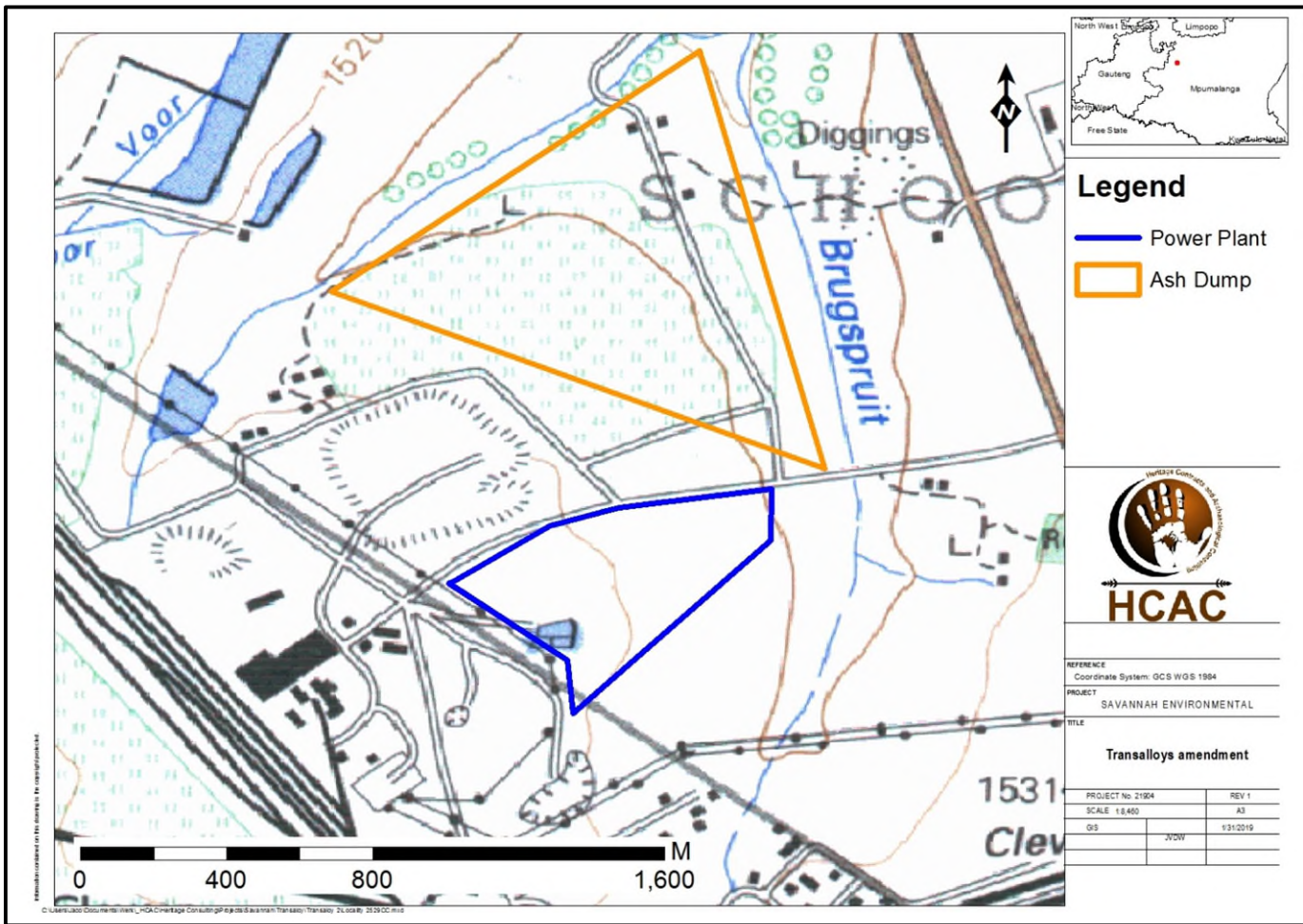


Figure 2: Regional locality map (1:50 000 topographical map).



Figure 3. Satellite image of the study area (ash dump) marked by a yellow polygon (Google Earth 2018).



Figure 4. Satellite image of the study area (power plant) marked by a blue polygon (Google Earth 2018).

## 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 fieldwork 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);
- Motivational report.

#### **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, as compared to the initially approved heritage studies submitted as part of the 2015 EIA package.

**Table 4: Site Investigation Details**

	<b>Site Investigation</b>
Date	21 January 2019
Season	Summer. The impact area was sufficiently covered (Figure 5) to record the presence of heritage resources.

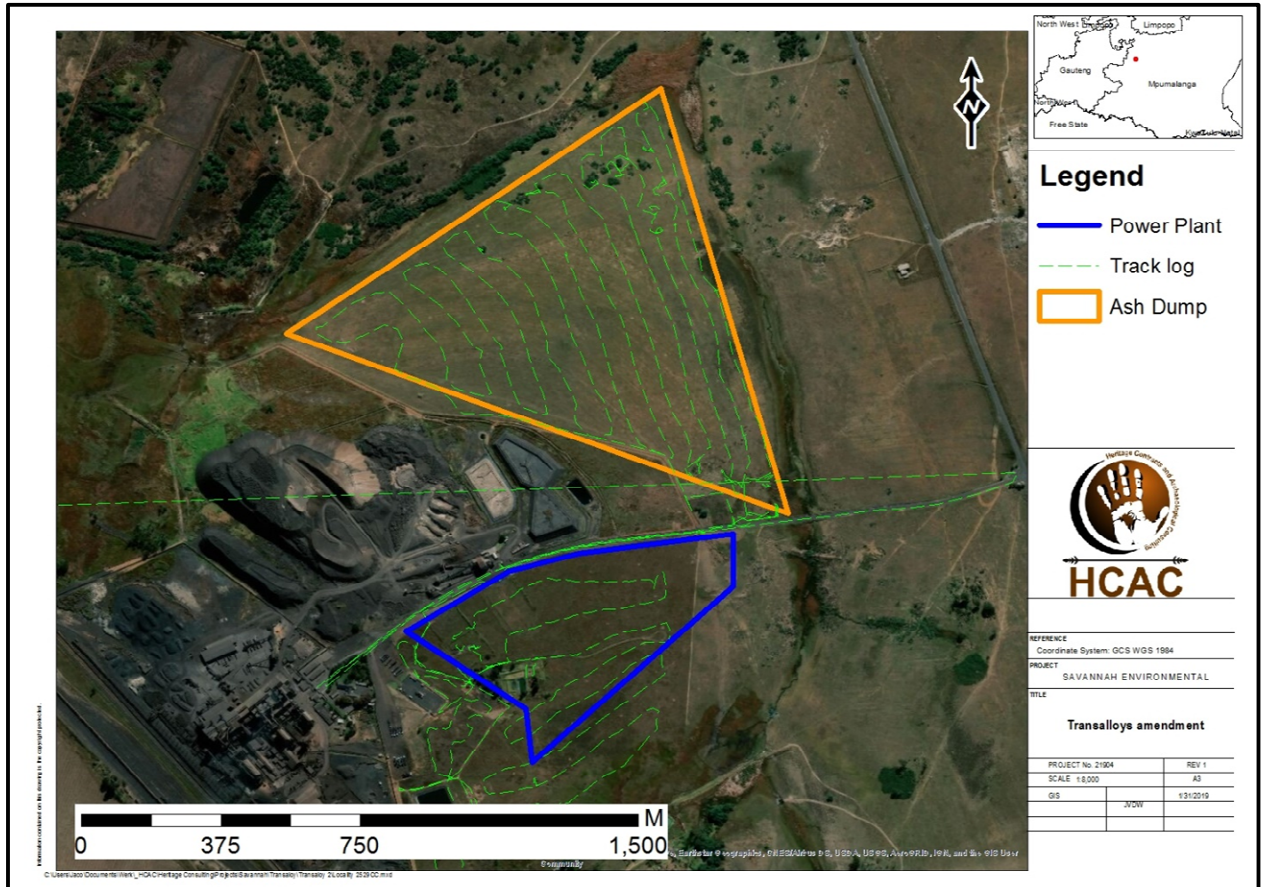


Figure 5: Tracklogs of the survey (in green).

### 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 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. The proposed layout option was covered in the first study conducted Van der Walt (2014).

## **4 Description of Socio Economic Environmental**

The following information was obtained from Stats SA - According to Census 2011, Emalahleni Local Municipality has a total population of 395 466, of whom 81,3% are black African, 15,7% are white, with the other population groups making up the remaining 3,0%. Of those aged 20 years and older, 4,0% have completed primary school, 35,7% have some secondary education, 31,5% have completed matric, 14,0% have some form of higher education, while 5, 8% have no form of schooling. 190 662 people are economically active (employed or unemployed but looking for work), and of these 27,3% are unemployed. Of the 101 062 economically active youth (15 – 34 years) in the area, 36,0% are unemployed.

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

### **5.1.1 Stakeholder Identification**

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

## **6 Description of the Physical Environment:**

The topography of the area is relatively flat (Figure 6) and extensively altered by large scale industrial, mining development (Figure 7 and 9) and agricultural activities that would have impacted on surface indicators of heritage sites. The "Brugspruit" traverses the study area in a north south direction (Figure 8).

The study area falls within the Mesic Highveld Grassland Bioregion as described by Mucina et al (2006) with the vegetation described as Rand Highveld Grassland. Land use in the general area is characterized by extensive mining. The study area is characterised by sandy to loamy soils.



Figure 6. General site conditions



Figure 7. Adjacent mining developments



Figure 8. General site conditions



Figure 9. General site conditions

## 7 Literature / Background Study:

### 7.1 Literature Review (SAHRIS)

Several studies were conducted in the general area (Huffman 1999, Murimbika 2008, van Vollenhoven 2013 & 2014 and van der Walt 2013). Two previously recorded sites are on record with the Archaeological databases at Wits University (referenced 2009) for the 2529 CC Topographical map. None of these sites are in close proximity to the study area and consists of Stone Age flakes dating to the MSA on the farm Blesboklaagte and Naupoort. Van der Walt (2014) also conducted the initial Transalloy Power Station AIA and the demolished remains of several structures were identified. Two initiation sites were also recorded on the banks of the "Brugspruit" as well as a large informal cemetery outside of the impact area.

#### 7.1.1 Genealogical Society and Google Earth Monuments

No known grave sites are indicated in the study area.

### 7.2 Background to the general area

#### 7.2.1 Archaeology of the greater study area

The Stone Age is divided in Early; Middle and Late Stone Age and refers to the earliest people of South Africa who mainly relied on stone for their tools.

Very few Early Stone Age sites are on record for Mpumalanga and no *in situ* sites dating to this period are expected for the study area. An example in Mpumalanga is Maleoskop on the farm Rietkloof where ESA tools have been found. This is one of only a handful of such sites in Mpumalanga.

The MSA has not been extensively studied in Mpumalanga but evidence of this period has been excavated at Bushman Rock Shelter, a well-known site on the farm Klipfonteinhoek in the Ohrigstad district. This cave was excavated twice in the 1960s by Louw and later by Eloff. The MSA layers show that the cave was repeatedly visited over a long period. Lower layers have been dated to over 40 000 BP (Before Present) while the top layers date to approximately 27 000 BP (Esterhuizen & Smith in Delius, 2007; Bergh, 1998). Some isolated finds were recorded by Van Vollenhoven (1992) and Huffman (1999) in the larger study area.

The Later phases of the Stone Age began at around 20 000 years BP. This period was marked by numerous technological innovations and social transformations within these early hunter-gatherer societies. 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.

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. The same goes for the Later Iron Age period where the study area is situated outside the western periphery of distribution of Late Iron Age settlements in Mpumalanga. This phase of the Iron Age (AD 1600-1800's) is represented by various tribes including Ndebele, Swazi, BaKoni, Pedi marked by extensive stonewalled settlements found throughout the Mpumalanga escarpment. Late Iron Age sites that have been identified in the larger geographical area is to the west of Bronkhorstspuit and in the vicinity of Bethal (Bergh 1999). No major black tribes seem to have settled very close to the area where Witbank is located today by the start of the nineteenth century, but the Phuthing Tribe was prominent in the area to the north thereof. (Bergh 1999).

Since the mid 1800's up until the present, South Africa had been subdivided into various different districts. Since 1945, the area where the modern-day Witbank area is located formed part of the Lydenburg district. As of 1872, the farm area was located within the Middelburg district. The Witbank district was however proclaimed in 1925, and the farms were located in this area. As of 1977 the farm fell under the jurisdiction of the Witbank Magisterial Area. This was still the case by 1994 (Bergh: 17, 20-27).

When writing about the Mpumalanga Province, it is perhaps best to briefly glance back to prehistoric times, when coals formed in vast swamps from rotting forests between 200 and 300 million years ago. Massive seams of vast coal fields have been discovered and extracted in the southern areas in the province. The areas surrounding the towns of Witbank, Middelburg, Bethal, Hendrina, Ermelo and Carolina had long provided South Africa with an abundant source of cheap energy. This discovery has also had unfortunate effects on these

areas, since the toxic by-products of burning coal in such quantities had severely polluted the ground and atmosphere in this area. (*Mpumalanga* 2007: 36-37)

In a few decades, the sociographic nature of the then Transvaal province would change forever. The Difaqane (Sotho), or Mfekane ("the crushing" in Nguni) was a time of bloody upheavals in Natal and on the Highveld, which occurred around the early 1820's until the late 1830's. (*Geskiedenisatlas van Suid-Afrika* 1999: 109-115) It came about in response to heightened competition for land and trade, and caused population groups like gun-carrying Griquas and Shaka's Zulus to attack other tribes. (Bergh 1999: 14; 116-119) Mzilikazi and his raiders had moved from the Northern Nguni area to the area north of the Vaal River by 1821. It has been recorded that the Ndebeles first attacked the Phuthing tribe, which in turn migrated to the south of the Vaal River and joined groups of Southern Sotho speakers. The Phuthing and Southern Sotho tribes moved westward and northward and started raiding Tswana communities in the surrounding area. The Phuthing were commanded first by Chief Tshane, and later Ratsebe. As the Phuthing under Ratsebe moved eastwards along the Vaal River, they collided with Mzilikazi's Ndebele once more. The Phuthing and other raiding groups were finally taken captive in 1823 by Mzilikazi's men. (Bergh 1999: 110-111) It is unlikely that these events would have had a great influence on the area where the farms under investigation are located today, but it is still important to understand the social dynamics of the larger area.

During the time of the Difaqane, a northwards migration of white settlers from the Cape was also taking place. Some travellers, missionaries and adventurers had gone on expeditions to the northern areas in South Africa – some as early as in the 1720's. One such an adventurer was Robert Scoon, who formed part of a group of Scottish travellers and traders who had travelled the northern provinces of South Africa in the late 1820s and early 1830s. Scoon had gone on two long expeditions in the late 1820s and once again ventured eastward and northward of Pretoria in 1836. During the latter journey, he passed by the area where Witbank is located today. (Bergh 1999: 13, 116-121)

By the late 1820's, 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 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) As can be expected, the movement of whites into the northern provinces would have a significant impact on the black people who populated the land. 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: 170)

Black and white relations were however at times also interdependent in nature. After the Great Trek, when white farmers had settled at various areas in the northern provinces, wealthier farmers were often willing to lodge needy white families on their property in exchange for odd jobs and commando service. This bywoner often arrived with a family and a few cows. He would till the soil and pay a minimal rent to the farmer from the crops he grew. The farmer did not consider him a laborer, but mostly kept black workers for hard labour on the farm. After the Anglo-Boer War, many families were left destitute. Post war years of severe droughts and locust plagues did not ameliorate this state of affairs. All of these factors resulted in what became known as the 'poor white problem'. On the advent of commercial farming in South Africa, white landowners soon found bywoners to be a financial burden, and many were evicted from farms. In many cases, wealthier landlords found it far more profitable to rent their land to blacks than to bywoners. This enabled them to create reservoirs of black labour (for which mine recruiting agencies were prepared to pay handsome commissions), while it was also possible to draw more rent from their black tenants. This practice was outlawed by the 1913 Natives Land Act, which forbade more than five black families from living on white farms as peasant squatters. (*Readers Digest* 1992: 329-332)

### **7.2.2 Anglo-Boer War**

The discovery of diamonds and gold in the northern provinces had very important consequences for South Africa. After the discovery of these resources, the British, who at the time had colonized the Cape and Natal, had intentions of expanding their territory into the northern Boer republics. This eventually led to the Anglo-Boer War, which took place between 1899 and 1902 in South Africa, and which 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 Mr. Chamberlain, had declared that should Britain's differences with the Z.A.R. result in violence, it would mean the end of republican independence. This decision was not immediately publicized, and republican leaders subsequently 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)

During the British march into the Transvaal between February and September 1900, several troops passed by the area where Witbank is situated today. The battalions of Lieutenant Generals J. French, R. Pole-Carew and F. Roberts all travelled close by the Witbank area and through Middelburg. A railway line ran along this route at the time. (Bergh 1999: 51)

During the Anglo-Boer War, two railway stations were located in the vicinity of the Witbank area, and close to each a black concentration camp had been established. At Middelburg, about 20 kilometres to the east of Witbank, one white and one black concentration camp was also set up. No skirmishes took place in the direct vicinity of the farm area. (Bergh 1999: 54).

An Anglo Boer war battle took place on the farm Donkerhoek, only a few kilometres to the west of where the development is to take place. The battle lasted between 11 and 12 June 1900. Other skirmishes also took place here during this war (Bergh 1999: 52-53). Blockhouses were also erected in the vicinity by the British (Van Vollenhoven & Van den Bos 1997: 42-46).

### **7.2.3 Cultural Landscape**

The sites under investigation are located just to the north west of Clewer, south of the N4, about eight kilometres to the west of eMalahleni in Mpumalanga Province.

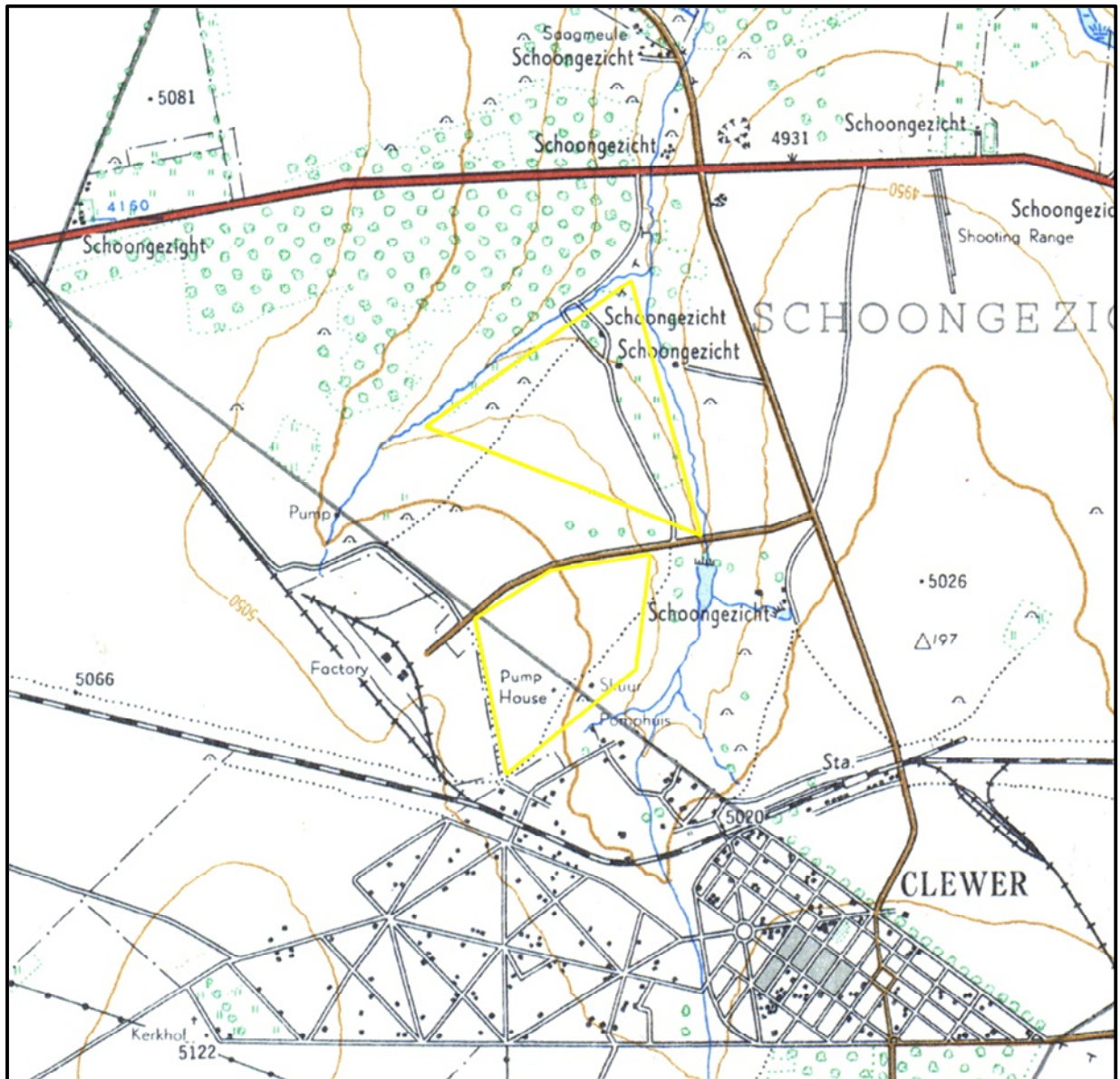


Figure 10. 1960 Topographical map of the sites under investigation. The approximate study area is indicated with yellow borders. Two minor roads and a track / footpath went through the northern site, and the eastern part of the property was used as cultivated lands. Two huts and two buildings can be seen on this site. A secondary road ran between the northern and southern sites. A track / footpath went through the southern site, and buildings on the property included one hut, a pump house and a shed. (Topographical Map 1960)

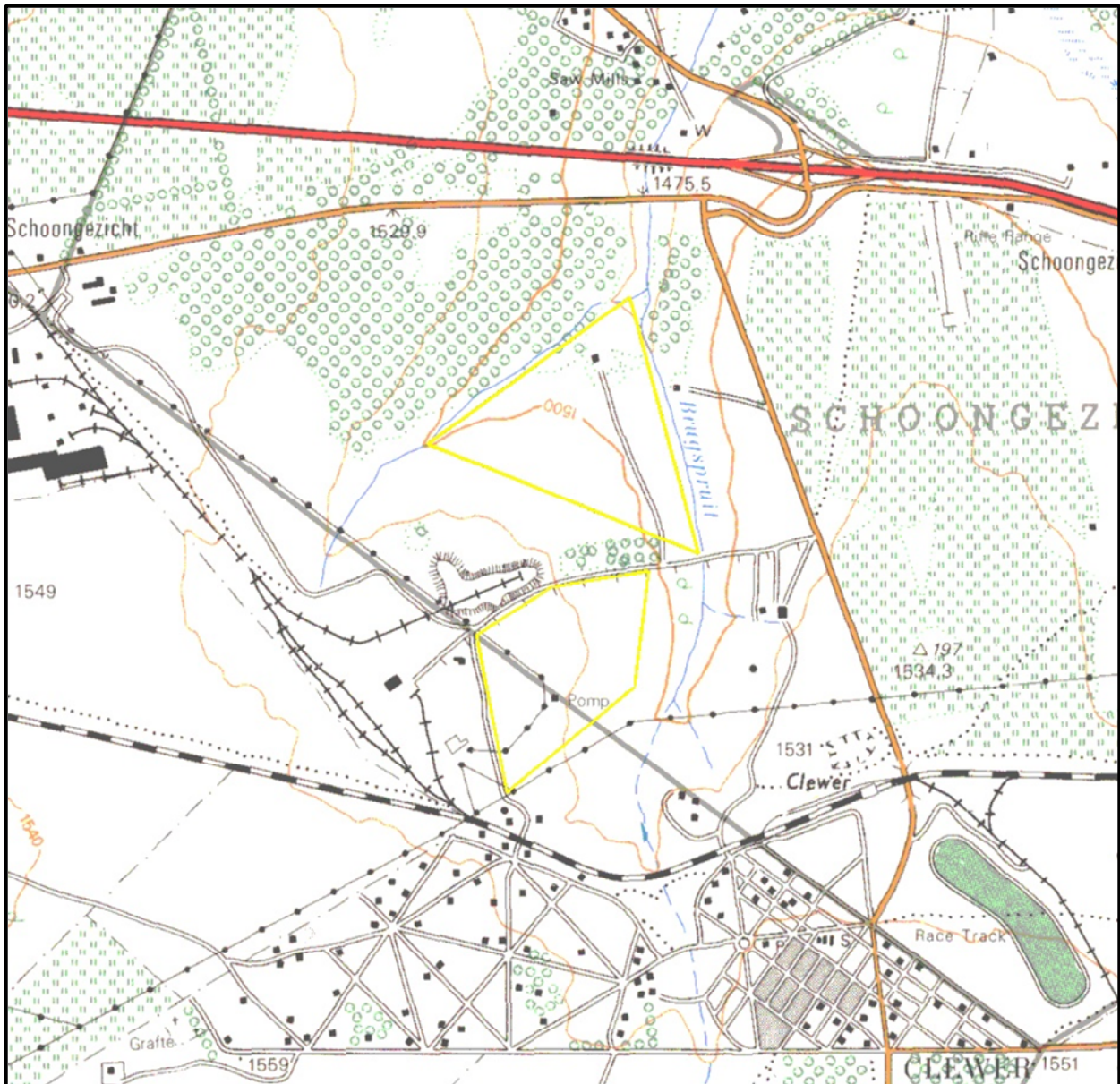


Figure 11. 1974 Topographical map of the sites under investigation. The approximate study area is indicated with yellow borders. A minor road went through the northern property, and one building is visible. A minor road ran between the northern and southern sites. A power line went through the southern site, and buildings on the property included a pump house. (Topographical Map 1960)



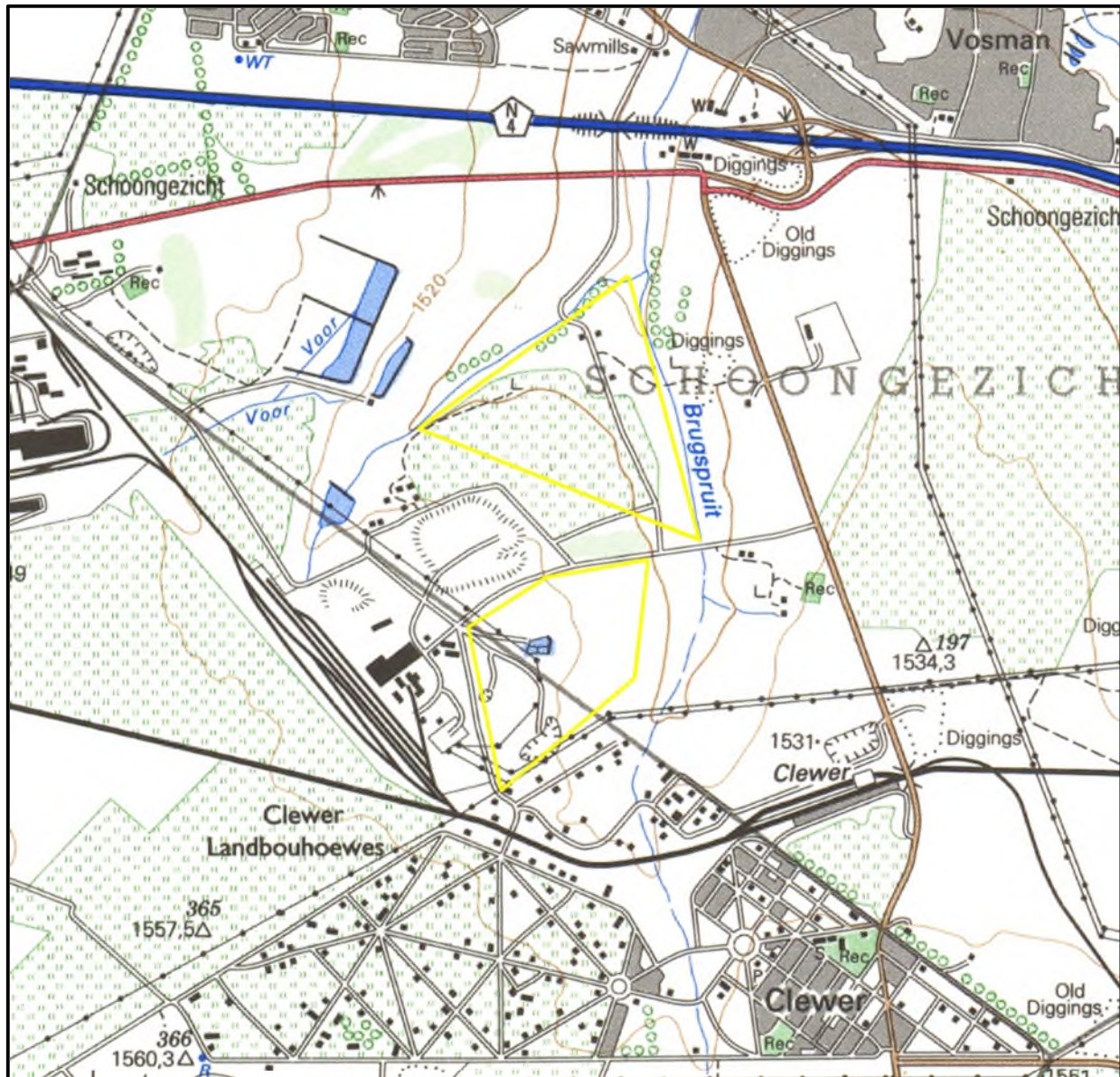


Figure 12. 1996 Topographical map of the sites under investigation. The approximate study area is indicated with yellow borders. A minor road and two tracks / footpaths went through the northern property, and more than half of the terrain was used as cultivated lands. Other developments included three buildings and a ruin. Three minor roads and three power lines went through the southern site, and one can also see two excavation sites and a small dam. (Topographical Map 1996)

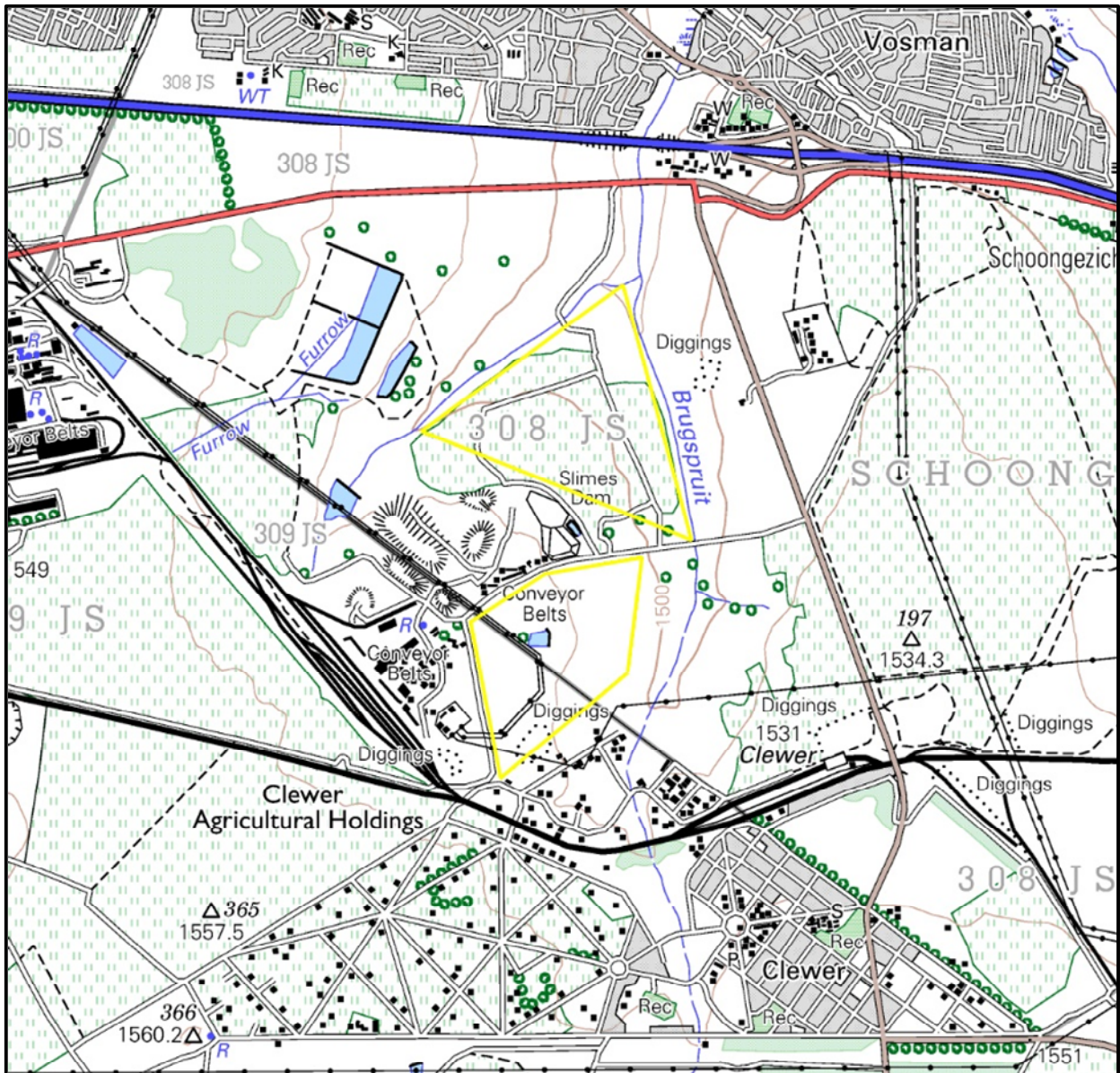


Figure 13. 2003 Topographical map of the sites under investigation. The approximate study area is indicated with yellow borders. A number of minor roads went through the northern property, and the largest part of the site was used as cultivated lands. No buildings are visible. Three power lines went through the southern site, and one can also see diggings and a small dam. (Topographical Map 2003)



Figure 14. 2018 Google Earth image showing the study area in relation to Clewer, the N4, Kwa-Guqa, Emalahleni and other sites. (Google Earth 2018)

## 8 Findings of the Survey

The proposed Ash dump is located between two watercourses, North and East, and the mine on its SW border. A Graveyard exists just **outside** the survey area right next to the main entrance road on the SE corner of the survey area that was recorded during the 2014 assessment (van der Walt 2014). This graveyard is separately fenced off. The area was extensively cultivated in the past. A large number of manholes are also present indicating underground pipelines. Some of these manholes are overflowing making some areas difficult to access however low vegetation cover results in high archaeological visibility across the entire survey area.

The proposed Power Plant is situated South of the main entrance road. This area is highly disturbed due to water reservoirs, largescale movement of soil and a wetland on the southern edge of the area. Sections of this area falls within the facility that is actively being used. A section of the survey area that is situated on the Western edge of the area is being used as a parking lot where the topsoil has been stripped. Further along the western border is a large waterbody.

The entire Southern edge of this area is marked by largescale earthworks that holds waters because of the drainage from the waterbody along the western edge of the survey area. These areas are difficult to access. A large electrical line also runs through this area towards the western edge. Towards the centre of the area exists a thicket of large trees along with multiple waterbodies. The ground around this area and the area north of the thicket up to the main entrance road has also been extensively altered.

During the survey the demolished remains of structures were recorded together with multiple stone cairns from clearing of the agricultural fields. These features are recorded numerically with the prefix TA for Transalloys. Identified features are indicated in Figure 15 and described below.

**Table 5. Features recorded during the survey.**

Label	Longitude	Latitude	Description
TA1	29° 07' 35.0761" E	25° 52' 59.1023" S	Remains of a homestead multiple piles of cleared stones.
TA2	29° 07' 22.4147" E	25° 52' 59.1853" S	Separate part of homestead with a small broken-down fence that is reminiscent of a graveyard enclosure. No graves located.
TA3	29° 07' 19.6860" E	25° 53' 37.4567" S	Remains of a brick structure and foundation
TA4	29° 07' 30.8459" E	25° 53' 15.5941" S	Stone cairns (most likely cleared from agricultural fields)

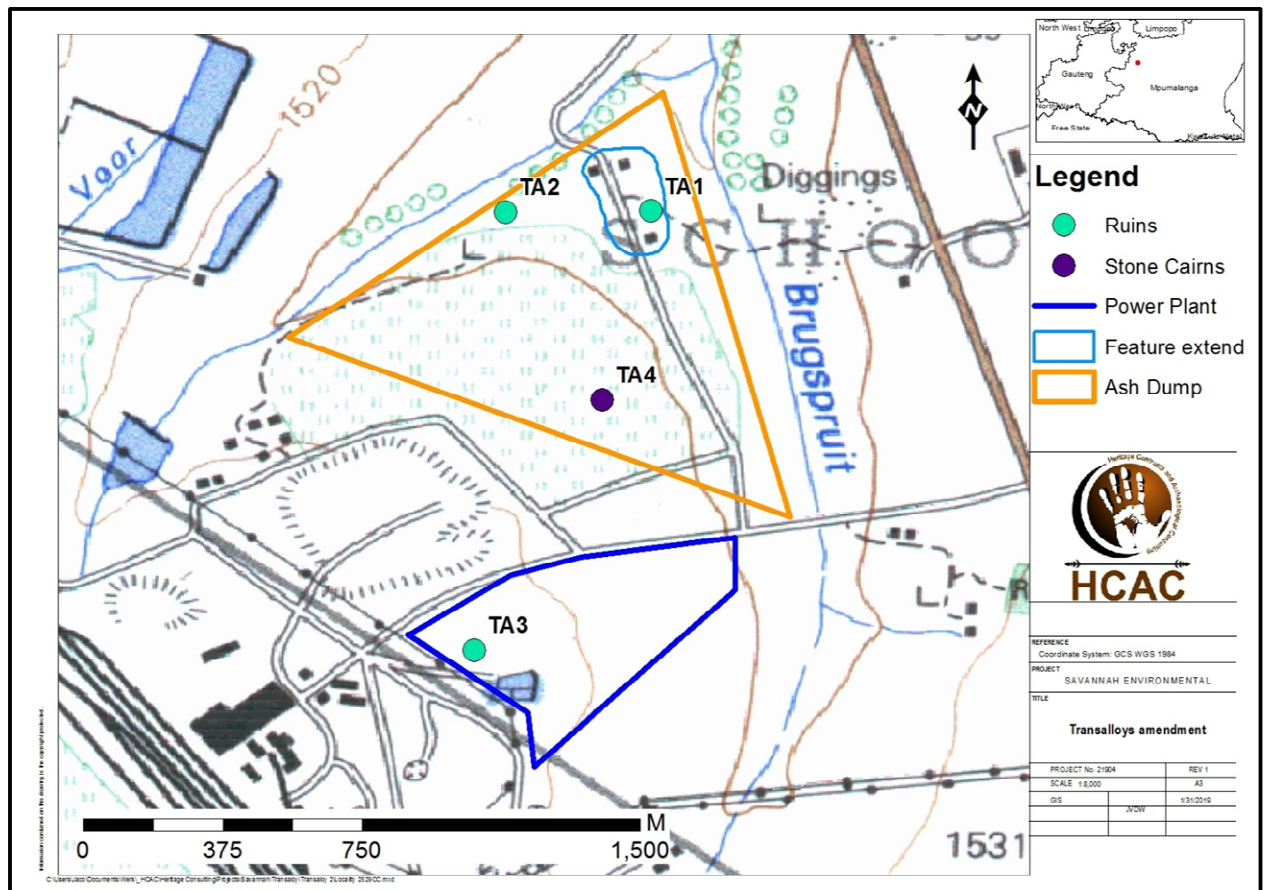


Figure 15. Identified features in relation to the development.

### 8.1 Built Environment (Section 34 of the NHRA)

Multiple foundations (TA 1 and 2) are situated close to the Northern border of the Ash Dump survey area (Figure 16 – 20). These seem to have been homesteads build between 1960 (Figure 10) and demolished by 1996 (Figure 12). These demolished structures are surrounded by small thickets of young trees and seem to have been deliberately destroyed. In the area for the proposed Power Plant a cement foundation (TA 4) is located just north of the thicket in the area that seems heavily altered.

The ruins' potential to contribute to aesthetic, historic, scientific and social aspects is negligible and it is therefore of no heritage significance. No further actions are recommended based on approval from SAHRA.



Figure 16. Remains of structure at TA1



Figure 17. Remains of structure at TA1



Figure 18. Remains of structure at TA 2



Figure 19. Remains of structure at TA 2



Figure 20. Remains of structure at TA4.



Figure 21. Remains of structure at TA4

Heritage Significance: None

Field Rating: Generally Protected C

### 8.1.1 Stone Cairns

Several stone cairns (TA 3) were identified within the ash dump study area (Figure 22 and 23). These stone packed features are attributed to clearing activities related to cultivation activities and are of no heritage significance.



Figure 22. Stone Cairn at TA 3



Figure 23. Stone Cairn at TA 3.

Heritage Significance: None

Field Rating: Generally Protected C

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

### 8.2.1 Archaeological Resources

No archaeological sites or material was recorded during the survey. Therefore, no further mitigation prior to construction is recommended in terms of the archaeological component of Section 35 of the NHRA for the proposed development to proceed.

### 8.2.2 Paleontological resources

The study area was independently assessed by Barry Milstead (2013). He concluded that there is no palaeontological reason to prejudice the progression of this project, subject to adequate mitigation programs being put in place. Mitigation measures are included in his report (Milsteed 2013).

## 8.3 Burial Grounds and Graves (Section 36 of the NHRA)

In terms of Section 36 of the Act no burial sites were recorded in the study area, although an existing graveyard occurs just outside of the ash dump area (van der Walt 2014). **The project is not expected to impact on the graveyard, but it should be indicated on development plans and avoided.** Graves can be expected anywhere on the landscape and although the area was surveyed thoroughly the possibility of discovering more graves cannot be excluded.

## 8.4 Battlefields and Concentration Camps

There are no battlefields or concentration camp sites in the study area.

## 8.5 Potential Impact

The chances of impacting unknown archaeological sites in the study area are considered to be negligible. Any direct impacts that did occur would be during the construction phase only and would be of low 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. In the case of the development, it will, with the recommended mitigation measures and management actions, not impact any heritage resources directly. However, this and other projects in the area could have an indirect impact on the larger heritage landscape. TA 1, 2, and 3 will be altered by the development (Figure 15) but the features are demolished and considered to be of no heritage significance and therefore the impact is considered to be low.

### 8.5.1 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.

### 8.5.2 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.

### 8.5.3 Operation Phase

No impact is envisaged for during this phase.

**Table 6. Impact Assessment table.**

<b>Nature:</b> During the construction and operation of the project a secondary impact is expected for the site.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (2)	Local (1)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Magnitude</b>	Low (4)	Low (4)
<b>Probability</b>	Not Probable (1)	Not Probable (1)
<b>Significance</b>	<b>15 (Low)</b>	<b>14 (Low)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Not reversible	Not reversible
<b>Irreplaceable loss of resources?</b>	Yes	Yes
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b> The structures are of no heritage significance as they have been completely destroyed. The graveyard outside of the study area is not expected to be impacted on. However, to protect the site from accidental damage it should be fenced off during construction with an access gate for family members		
<b>Cumulative impacts:</b> As the project area has been previously impacted on by agricultural and mining activities cumulative impacts of this development is considered to be negligible.		
<b>Residual Impacts:</b> Archaeological and cultural sites are non-renewable and impact on any archaeological context or material will be permanent and destructive.		

Due to the lack of significant heritage resources in the study area the impact of the proposed project on heritage resources is considered low and the project is viable from a heritage perspective. In terms of the original assessment compared to the amendment there are no changes in impacts, novel impacts, or reduction in impacts anticipated as compared to the previous layout and activities.

## 9 Conclusion and recommendations

Savannah Environmental (Pty) Ltd is conducting an Environmental Impact Assessment for the proposed Transalloys Power Plant Part II Amendment, Mpumalanga Province. The proposed power station and ash dump is located adjacent to the existing Transalloys Smelter Complex which is located within 1km south-east of Evraz Highveld Steel. HCAC was appointed to conduct the initial AIA (2014) for the project and the subsequent Heritage Impact Assessment for the Amendment to determine the presence of cultural heritage sites and the impact of the proposed development on these non-renewable resources. Most of the study area is impacted on by agricultural activities and recent mining operations that would have impacted on surface indicators of heritage sites.

This was confirmed during the survey and stone cairns (TA 4) from the clearing of fields were recorded. These cairns are of no heritage significance and warrant no further mitigation. In terms of the built environment (Section 34) of the area the demolished remains of three structures (TA 1 – 3) were identified scattered over the study area. Due to the extent of the destruction of these structures they are of no heritage significance and not conservation worthy.

Regarding the archaeological component of Section 35 no Stone Age or Iron Age material were recorded. Therefore, no further mitigation prior to construction is recommended in terms the archaeological component of Section 35 for the proposed development to proceed. In terms of the palaeontological component of Section 35 an independent desktop assessment was conducted for the project (Millstead 2013).

In terms of Section 36 of the Act no burial sites were recorded, however unmarked graves can be associated with the structures recorded and the implementation of a chance find procedure is recommended. No public monuments are located within or close to the study area. The proposed development will not impact negatively on significant cultural landscapes or viewsapes due to the existing mining in the area. During the public participation process conducted for the project no heritage concerns was raised.

The impact of the proposed project on heritage resources is considered low and it is recommended that the proposed project can commence on the condition that the following recommendations are implemented as part of the EMPr and based on approval from SAHRA:

- Implementation of a chance find procedure as outlined below.



### **9.1. 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 updated EMPr for the project. 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.

### **9.2 Reasoned Opinion**

The impact of the proposed project on heritage resources is considered low and no further pre-construction mitigation in terms of archaeological resources is required based on approval from SAHRA. Furthermore, the socio-economic benefits also outweigh the possible impacts of the development if the correct mitigation measures (i.e. chance find procedure) are implemented for the project.

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- Van Vollenhoven, A.C. 2013. A Report On A Cultural Heritage Impact Assessment For A Proposed Prospecting Rights Application On The Farm Elandsfontein 309 Js, Close To Emalaheni, Mpumalanga Province. Unpublished report.
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## MAPS

Topographical map. 1960. *South Africa. 1:50 000 Sheet. 2529CC Witbank. First edition.* Pretoria: Government Printer.

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**11. Appendices:****Curriculum Vitae of Specialist**

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**Education:**


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**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

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**EMPLOYMENT HISTORY:**


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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 Booyendal Platinum Mine, Steelpoort, 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.

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**MEMBERSHIP OF PROFESSIONAL ASSOCIATIONS:**


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- 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)

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**PUBLICATIONS AND PRESENTATIONS**


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- 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

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#### REFERENCES:

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