

HERITAGE IMPACT ASSESSMENT

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

FOR THE PROPOSED CONSTRUCTION OF THE LIMBERG SUBSTATION/SWITCHING
ON THE FARM MIDDELLAAGTE 382-KQ, WITH AN ALTERNATIVE SITE ON FARM
ZWARTKOP 369-KQ PORTION 18, THABAZIMBI LOCAL MUNICIPALITY IN
WATERBERG DISTRICT MUNICIPALITY, LIMPOPO PROVINCE.

Type of development:

Substation and LILO Line

Client:

Setala Environmental

Applicant:

Eskom

Report Prepared by:



Beyond Heritage

Private Bag X 1049

Suite 34

Modimolle

0510

Tel: 082 373 8491

Fax: 086 691 6461

E-Mail: jaco@heritageconsultants.co.za

Report Author:

Mr. J. van der Walt

Project Reference:

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APPROVAL PAGE

Project Name	Limberg Substation and LILLO Lines
Report Title	Heritage Impact Assessment for the proposed Construction of the Limberg Substation/Switching on the Farm Middellaagte 382-KQ, with an Alternative Site on Farm Zwartkop 369-KQ Portion 18, Thabazimbi Local Municipality in Waterberg District Municipality, Limpopo Province.
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Applicant Name	Eskom

Responsibility	Name	Qualifications and Certifications	Date
Fieldwork and reporting	Jaco van der Walt - Archaeologist	MA Archaeology ASAPA #159 APHP #114	September 2023
Fieldwork	Ruan van der Merwe - Archaeologist	BA Hons Archaeology	September 2023
Report writing and archaeological support	Lara Kraljević - Archaeologist	MA Archaeology	September 2023

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REPORT OUTLINE

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

Table 1. Specialist Report Requirements.

Requirement from Appendix 6 of GN 326 EIA Regulation 2017	Chapter
(a) Details of - (i) the specialist who prepared the report; and (ii) the expertise of that specialist to compile a specialist report including a curriculum vitae.	Section a
(b) Declaration that the specialist is independent in a form as may be specified by the competent authority.	<i>Declaration of Independence</i>
(c) Indication of the scope of, and the purpose for which, the report was prepared.	Section 1
(cA) An indication of the quality and age of base data used for the specialist report.	Section 3.4.
(cB) A description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change.	Section 9
(d) Duration, Date and season of the site investigation and the relevance of the season to the outcome of the assessment.	Section 3.4
(e) Description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used.	Section 3
(f) Details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of site plan identifying site alternatives.	Section 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 including identified alternatives on the environment or activities.	Section 1.3
(k) Mitigation measures for inclusion in the EMPr.	Section 9.1 and 9.5
(l) Conditions for inclusion in the environmental authorisation.	Section 9.1 and 9.5
(m) Monitoring requirements for inclusion in the EMPr or environmental authorisation.	Section 9.5
(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 5
(p) A summary and copies of any comments received during any consultation process and where applicable all responses thereto.	Refer to the EIA report
(q) Any other information requested by the competent authority.	No other information requested at this time

Executive Summary

Eskom, is proposing the construction of the Limberg sub/switching station and 132kV loop-in-loop-out line. Eskom appointed Setala Environmental as the independent environmental assessment practitioner (EAP) to apply for Environmental Authorization for the Project. Setala Environmental, in turn, appointed Beyond Heritage to conduct a Heritage Impact Assessment (HIA) for the Project and the study area was assessed through a desktop assessment and by a non-intrusive pedestrian field survey that was conducted for the Limberg sub/switching station and LILO line project. Key findings of the assessment include:


- Multiple CRM surveys on record have identified archaeological sites near the Bierspruit, situated west and north of the Project area (e.g., Van Schalkwyk 1994, van der Walt 2009; 2014, 2016 and 2019, Pistorius 2020);
- Two of these surveys covered parts of the Project area in which identified multiple sites (van Schalkwyk 1994. Van der Walt 2019), none of which fall within the Project area;
- The Project area is highly disturbed through mining activities which would have impacted any heritage resources if any were present;
- The Project area is therefore considered to be of low heritage potential, this was confirmed during the field survey whereby no tangible heritage resources were identified within the impact area;
- According to the South African Heritage Resource Authority (SAHRA) Paleontological sensitivity map the study area is of insignificant sensitivity and no further studies are required for this aspect.

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

Recommendations:

- Monitoring of the Project area by the Environmental Control Officer (ECO) during pre-construction and construction phases for heritage chance finds, if chance finds are encountered to implement the Chance Find Procedure for the project.

Declaration of Independence

Specialist Name	Jaco van der Walt
Declaration of Independence	<p>I declare, as a specialist appointed in terms of the National Environmental Management Act (Act No 107 of 1998) and the associated 2014 Environmental Impact Assessment (EIA) Regulations (as amended), that I:</p> <ul style="list-style-type: none"> • I act as an independent specialist in this application; • I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant; • I declare that there are no circumstances that may compromise my objectivity in performing such work; • I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity; • I will comply with the Act, Regulations and all other applicable legislation; • I have no, and will not engage in, conflicting interests in the undertaking of the activity; • I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority; • All the particulars furnished by me in this form are true and correct; and • I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 49 A of the Act.
Signature	
Date	18/09/2023

a) Expertise of the specialist

Jaco van der Walt has been practising as a Cultural Resource Management (CRM) archaeologist for 15 years. Jaco is an accredited member of the Association of South African Professional Archaeologists (ASAPA) (#159) and APHP #114 and has conducted more than 500 impact assessments in Limpopo, Mpumalanga, North West, Free State, Gauteng, Kwa Zulu Natal (KZN) as well as the Northern and Eastern Cape Provinces in South Africa.

Jaco has worked on various international projects in Zimbabwe, Botswana, Mozambique, Lesotho, Democratic Republic of the Congo (DRC) Zambia, Guinea, Afghanistan, Nigeria and Tanzania. Through this, he has a sound understanding of the International Finance Corporations (IFC) Performance Standard requirements, with specific reference to Performance Standard 8 – Cultural Heritage

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ABBREVIATIONS

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

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

GLOSSARY

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

1 Introduction

Setala Environmental appointed Beyond Heritage to conduct a Heritage Impact Assessment (HIA) for the construction of The Limberg sub/switching station and loop-in-loop-out line. The project is situated on the Farm Middellagte 382-KQ, the Alternative site for the Limberg substation/switching station is on Zwartkop 369-KQ Portion 18. East of the R510 near Thaba Mine, Limpopo Province. The development area is situated within the Thabazimbi Local Municipality within the Waterberg District Municipality (Figures 1.1 to 1.3). The report forms part of the Environmental Impact Assessment (EIA) and Environmental Management Programme (EMPr) for the development.

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

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

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

During the survey, no heritage resources were recorded in the study area. General site conditions and features in the study area were recorded by means of photographs, GPS locations and descriptions. Possible impacts were identified, and mitigation measures are proposed in this report.

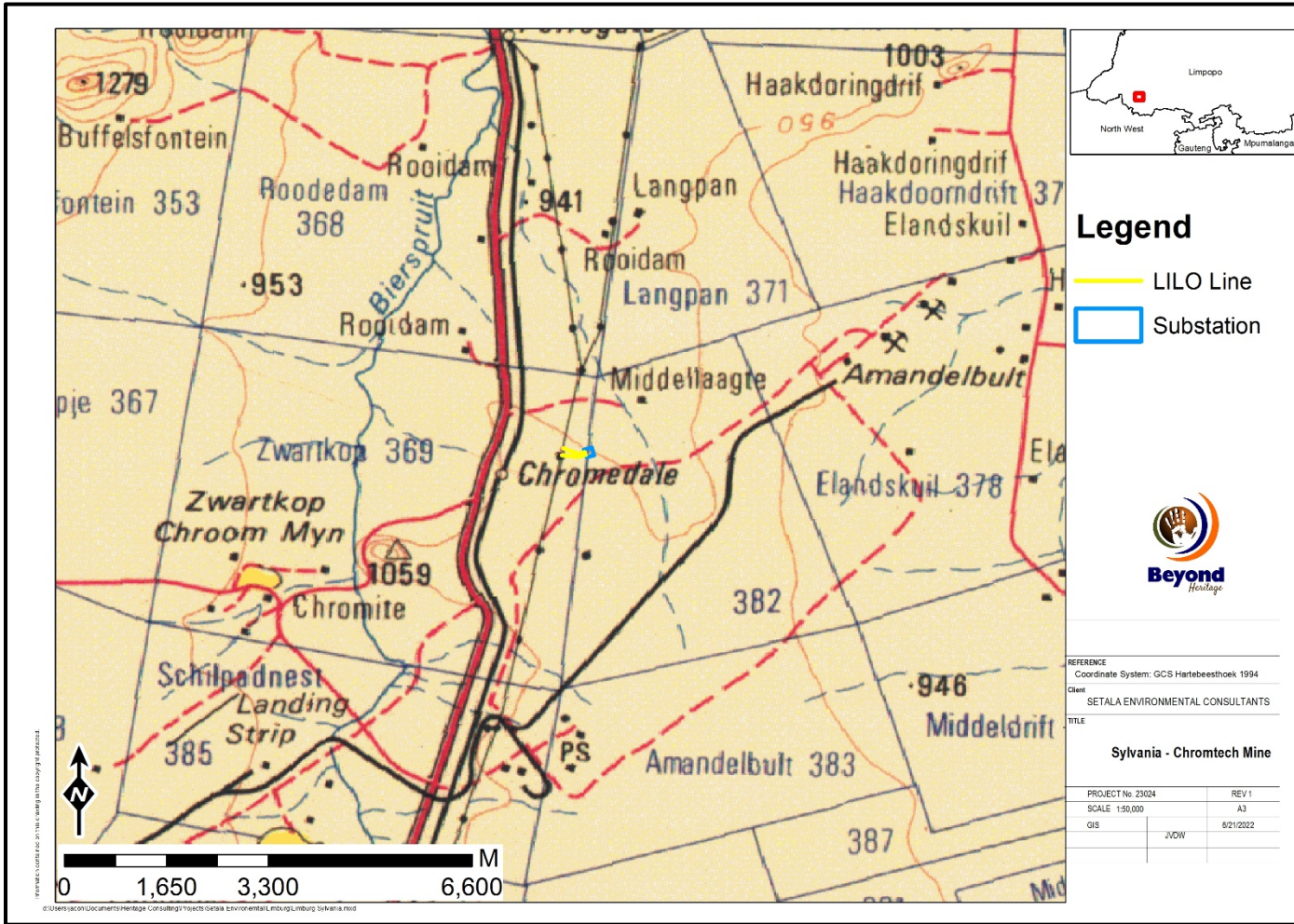


Figure 1.1. Regional setting of the Project (2427 1: 250 000 topographical map).

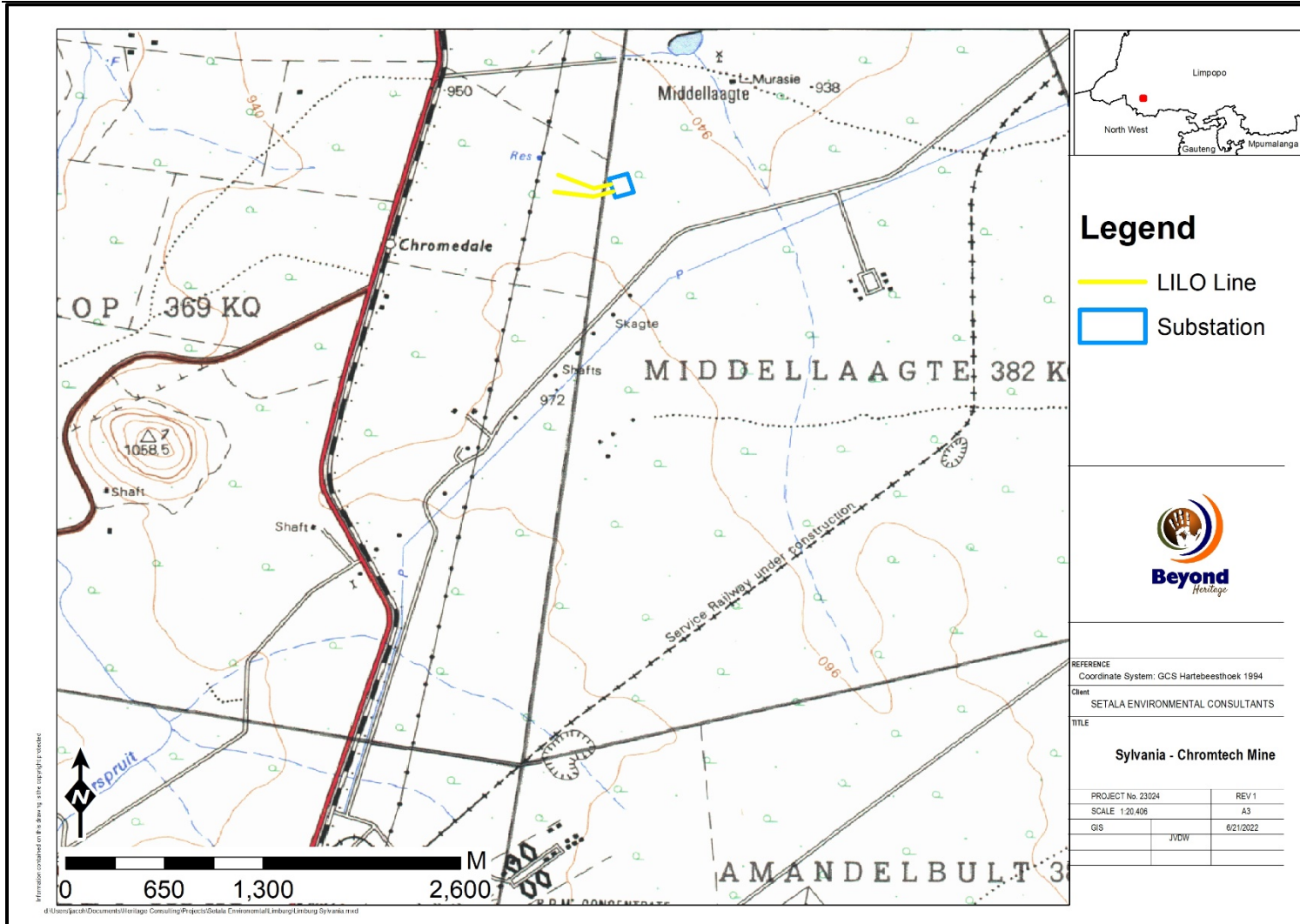


Figure 1.2. Local setting of the Project (2427 CD 1: 50 000 topographical map).

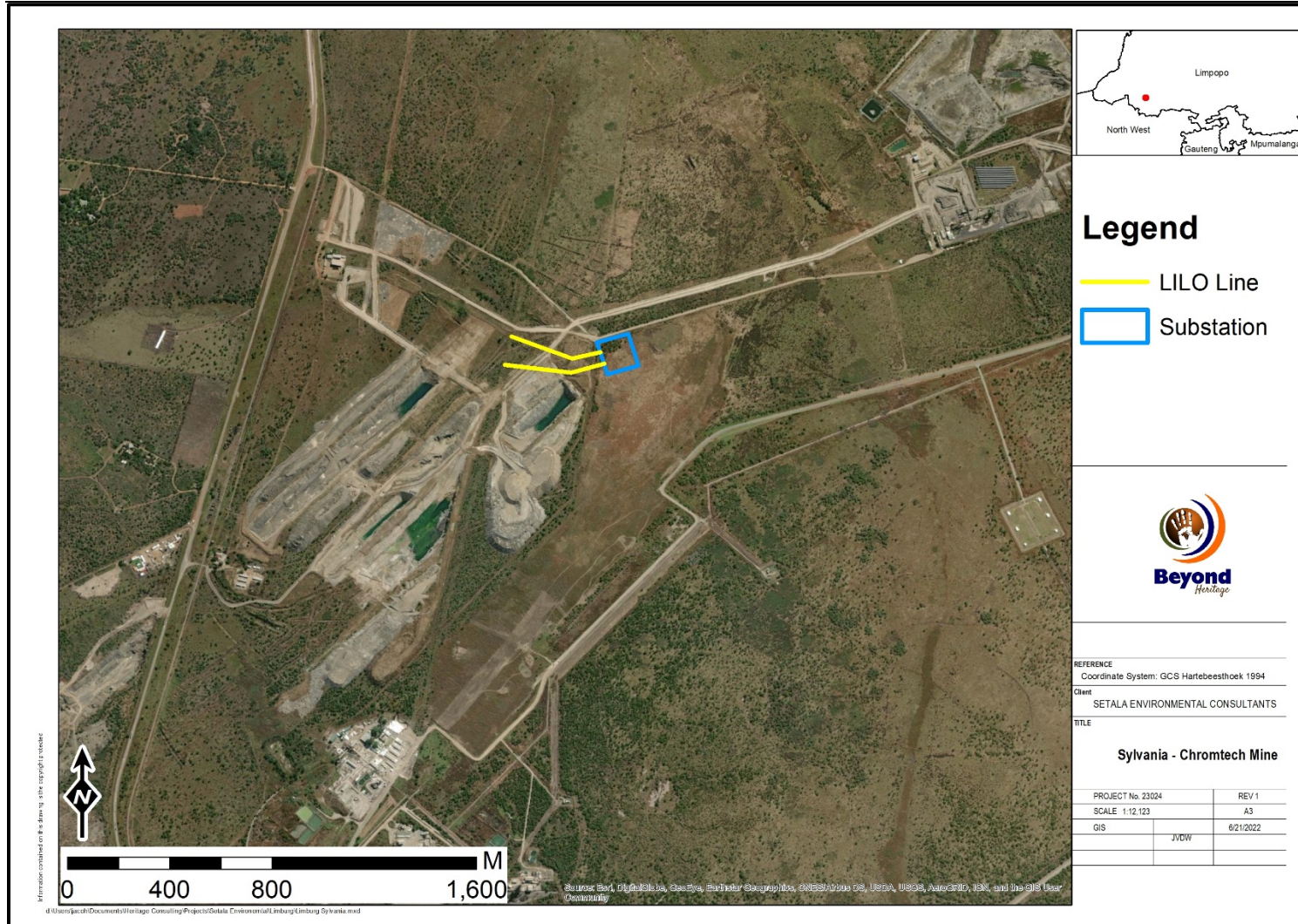


Figure 1.3. Aerial image of the Project area (Google Earth 2023)

1.1 Terms of Reference

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

Field study

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

Reporting

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

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

1.2 Project Description

Project components and the location of the Limberg Project are outlined in Tables 2 and 3.

Table 2: Project Description

Magisterial District	Thabazimbi Local Municipality within the Waterberg District Municipality
Central co-ordinate of the development	24°45'35.90"S; 27°20'19.64"E
1:50 000 Topographic Map Number	2427 CD

Table 3: Infrastructure and project activities

Type of development	Sub/switching station and loop-in-loop-out line
<p>Project Details:</p> <p>This scope of work is the design and construction of an Eskom 132 kV metering point and switching station, a 132kV loop-in-loop-out line from the existing Amandel Main – Thaba Tractional line, and customer-owned 132/11kV substation.</p> <p><u>The scope of the Eskom-owned portion is:</u></p> <p>The new 132kV Limberg Switching Station (SWS), fenced off and including access road and consisting of:</p> <ul style="list-style-type: none"> • 132 kV busbar(s) to cater for 2 x 132 kV fully equipped incoming 132 kV line bays, 3 x 132 kV line bays used for supplying customer and metering purposes. • A control room adequate to cater for all the secondary plant of the 132 kV SWS (including the Quality of Supply (QoS) meter). • Two ±360m loop in/out to Limberg Switching Station, of the existing Amandel - Thabazimbi Traction 132 kV Kingbird line, including ADSS according to Eskom specifications and standards. • Re-labelling of the lines. <p><u>The scope of the customer-owned works is:</u></p> <ul style="list-style-type: none"> • A complete 40 MVA 132/11 kV Limberg Substation, which the customer will own, operate, and maintain. • A control room. • Rerouting and closing span of existing 11kV Limberg line. • New AAP 33kV Middellaagte line. <p>The Application for Authorisation is for the construction of the following:</p>	

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- Construct two ± 360m overhead 132kV lines, from the existing Amandel - Thabazimbi Traction 132 kV Kingbird line, to the proposed Eskom Limberg switching station.
- Construct an Eskom Limberg 132kV switching station.
- Construct a Limberg 40 MVA 132/11 kV Substation.
- Construct a Middellaagte 2 x 40MVA 132/33 kV Substation.
- Clear an area of 3 hectares for the Switching station/ Substation site.
- Develop access roads wider than 4 metres to construct the power line. (Use existing roads as far as is possible)

1.3 Alternatives

Two alternatives were provided for the proposed project. Alternative 1 Sub/Switching Station Site is situated on the Farm Middellaagte 382-KQ with the 132kV LILO line is situated on the Farms Middellaagte 382-KQ and Zwartkop 369-KQ Portion 18. Alternative 2 Sub/Switching Station Site and 132kV LILO line are situated on the Farm Zwartkop 369-KQ Portion 18 (Refer to Figure 1.4 for Alternative 2).

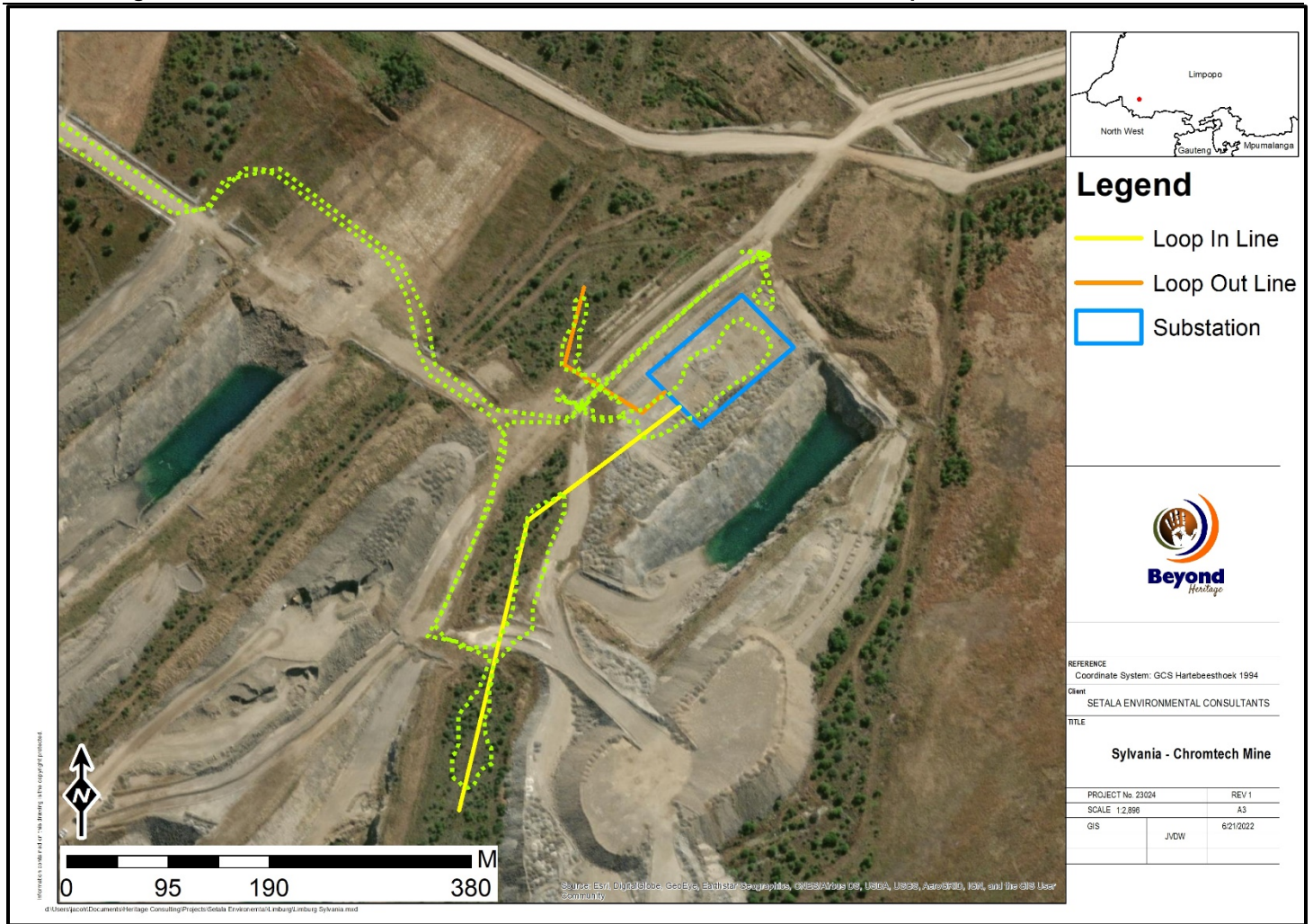


Figure 1.4. Alternative 2 Sub/Switching Station Site and 132kV LILO line are situated on the Farm Zwartkop 369-KQ Portion 18

2 Legislative Requirements

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

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

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

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

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

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

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

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

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

- Its importance in/to the community, or pattern of South Africa's history;

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

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

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

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

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

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

3 METHODOLOGY

3.1 Literature Review and background study

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

3.2 Genealogical Society and Google Earth Monuments

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

3.3 Public Consultation and Stakeholder Engagement:

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

3.4 Site Investigation

The aim of the site visit was to:

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

Table 4: Site Investigation Details

	Site Investigation
Date	11 September 2023
Season	Spring – The time of year and season had a limited effect on the results of the survey since the study area is highly disturbed through mining activities which limited archaeological visibility. The Project area was however sufficiently covered to understand the heritage character of the area (Figure 3.1).

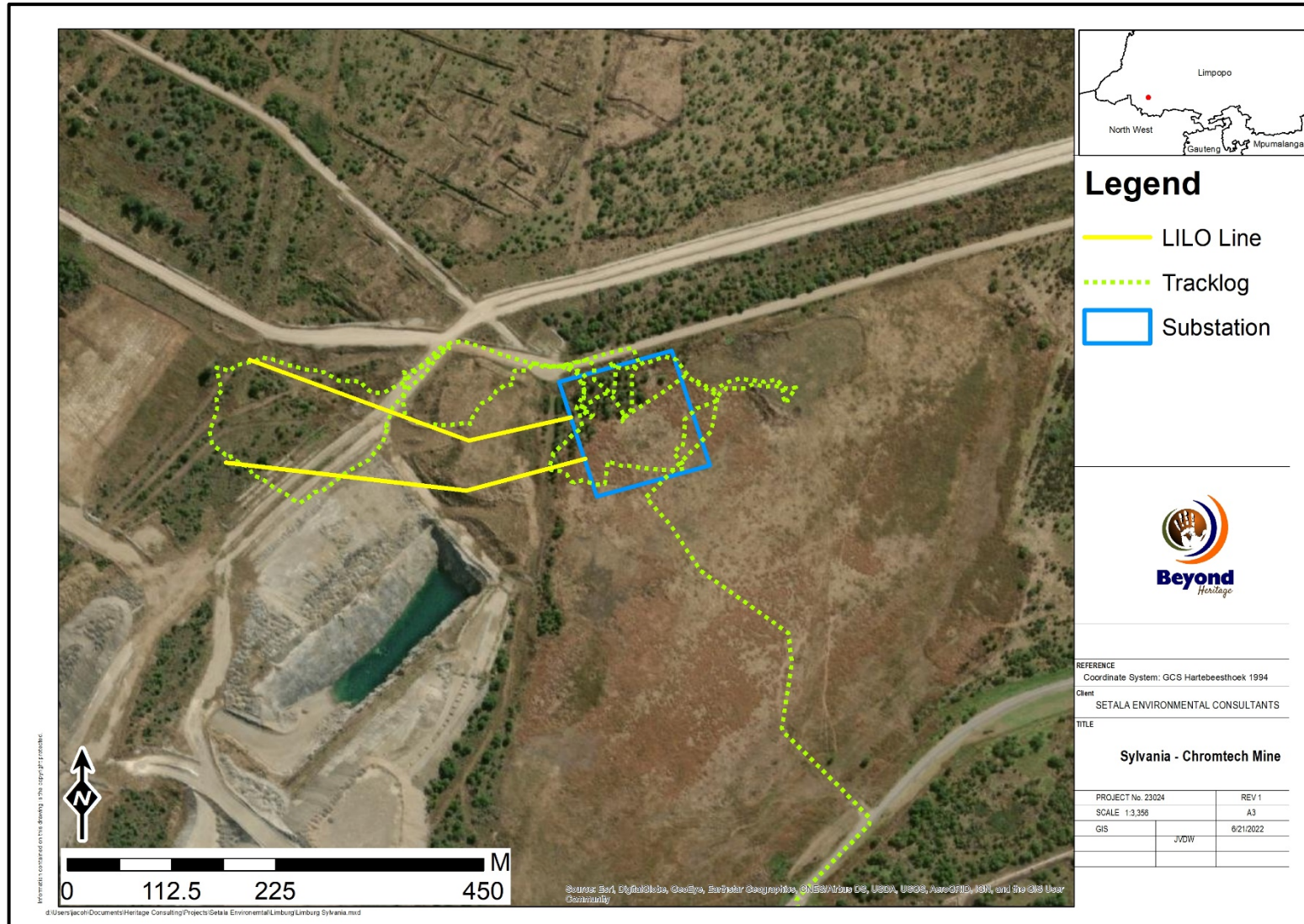


Figure 3.1. Tracklog of the survey path in green.

3.5 Site Significance and Field Rating

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

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

In addition to this criteria, Field Ratings to Heritage Resources is assigned based on the guidelines provided by the SAHRA Minimum Standards for Heritage Specialist Studies in terms of Section 38 of the National Heritage Resources Act (No. 25 of 1999) (2016). The Field-Rating of a feature is a product of the Cultural Significance and Integrity of the feature. Where Cultural Significance is based on the rating from criteria in section 3 of the NHRA and the integrity of the resource is discussed in terms of preservation issues, weathering, erosion etc.

Field Ratings for the resources(s) are included to comply with section 7(2) and 38(3)b of the NHRA, as detailed and described below and in Table 5:

a. **Proposed Field Rating I National Resource:** This resource is considered to be of Field Rating I (mention must be made of any relevant international ranking), a protected buffer zone must be proposed/noted (if not in place already), these resources must be maintained *in situ* and a CMP must be recommended for the *in-situ* conservation of the site;

b. **Proposed Field Rating II:** This resource is considered to be of Field Rating II, a protected buffer zone must be considered, these resources must be maintained *in situ* and a CMP must be recommended for the *in-situ* conservation of the resource;

Proposed Field Rating IIIA Local Resource: The resource must be retained as part of the heritage register (High significance) and so mitigation as part of the development process is not advised, a protected buffer zone must be considered, these resources must be maintained *in situ* and a CMP must be recommended for the *in-situ* conservation of the resource;

d. **Proposed Field Rating IIIB Local Resource:** This resource could be mitigated and (partly) retained as part of the heritage register (High/Medium significance), Mitigation of these resources must be subject to a formal permit application process lodged with the relevant heritage resources authority;

e. **Proposed Field Rating IIIC Local Resource:** These are resources that have been assigned a Low-Medium/Low field rating which, once adequately described, may be granted authorisation for destruction outside of the formal permitting process at the discretion of the relevant heritage authority, (*with regard to section 38(8) cases, this will be subject to the granting of the Environmental Authorisation*).

Table 5. Field Rating and Cultural Significance

Field Rating		Integrity of resource				
		No information yield, completely degraded	- Degraded to the extent that little meaning can be derived	Preserved to some extent.	Well preserved	Excellent preservation
Cultural Significance	Negligible	IIIC Local Resource	IIIC Local Resource	IIIC Local Resource	IIIC Local Resource	IIIC Local Resource
	Low	IIIC Local Resource	IIIC Local Resource	IIIC Local Resource	IIIC Local Resource	IIIC Local Resource
	Low – Medium	IIIC Local Resource	IIIC Local Resource	IIIC Local Resource	IIIC Local Resource	IIIC Local Resource
	Medium	Rating IIIB Local Resource	Rating IIIB Local Resource	Rating IIIB Local Resource	Rating IIIB Local Resource	Rating IIIB Local Resource
	Medium High	Rating IIIB Local Resource	Rating IIIB Local Resource	Rating IIIB Local Resource	Rating IIIB Local Resource	Rating IIIB Local Resource
	High	Rating IIIB Local Resource	Rating IIIB Local Resource	IIIA Local Resource	IIIA Local Resource	IIIA Local Resource

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 Assumptions and limitations of the study

- The authors acknowledge that the brief literature review is not exhaustive of the literature of the area.
- Due to the nature of heritage resources and pedestrian surveys, the possibility exists that some features or artefacts may not have been discovered/recorded and the possible occurrence of graves and other cultural material cannot be excluded. This limitation is successfully mitigated with the implementation of a Chance Find Procedure (CFP) and monitoring of the study area by the Environmental Control Officer (ECO).
- This report only deals with the footprint area of the proposed development and consisted of non-intrusive surface surveys.
- This study did not assess the impact on medicinal plants and intangible heritage as it is assumed that these components will be highlighted through the public consultation process if relevant. This process is facilitated by the EAP and if not done this can be considered a significant limitation and as a potential Project risk. It is possible that new information could come to light in future, which might change the results of this Impact Assessment.

4 Description of Socio-Economic Environment

According to StatsSA “There are 85 234 people residing in the Thabazimbi Local Municipality, of which 84,3% are black African, 14,4% are white, with other population groups making up the remaining 1,3%. Amongst those aged 20 years and above, 26,1% have completed matric, 8,2% have some form of higher education, and 8,8% have no form of schooling.

The unemployment rate (20,6%) and the youth unemployment rate (26,9%) is the lowest in the district. The mining industry is a major source of employment. Agricultural activities include Cattle, Poultry and Game while mining activities include Iron and Platinum.”

5 Results of Public Consultation and Stakeholder Engagement:

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

6 Contextualising the study area

6.1 Archaeological Background

6.1.1 Stone Age

The Stone Age of southern Africa starts when hominins (ancestral to modern-day humans) first started to produce crude tools made with stone. The Earlier Stone Age (2 million - 200 000 years ago) is associated with hominins such as *Homo habilis* and *Homo erectus* (Dusseldorp et al. 2013). Early Stone Age sites have been identified near the Rooiberg Hill as well as the Blaauwberg Stone Age Terrain which shows evidence of early hominid occupation within the wider region of the study area (Bergh 1999). ESA associated stone tools near Rooiberg have been identified as Acheulean hand axes which date back to around 1.5 million years ago (Wadley et al 2016). The area was also occupied during the Middle Stone Age with lithics associated with that time period being found there, showing a series of early human occupations within the region.

Middle Stone Age artefacts represents archaic and modern humans that occupied the landscape between 300 000 to 40 000 before present. A series of Middle Stone Age sites have been discovered in the area between Rustenburg and Thabazimbi (Van Schalkwyk 1994). MSA lithics mark the beginning of the flake and blade industries being made and utilised. Areas associated with MSA sites have been seen to show an occupation hiatus of a few thousand years before the occupation of Later Stone Age hunter-gatherers in the 11th and 12 centuries (van der Ryst 1998).

Later Stone Age occupational sequences reflect San and Khoisan communities from 40 000 years ago until recently (Dusseldorp et al. 2013). Hunter gatherer rock art sites have been found within the greater region of the landscape, such as a nearby cave which was found to have LSA associated rock art (Huffman 2004). Late Stone Age sites in the region have been identified to be situated around large rocky outcrops (van Schalkwyk et al 1994). Further north of the region, many LSA rock art sites have been found in the Waterberg region (Van der Ryst 1998). The occupation of hunter gatherers of the Later Stone Age was contemporaneous with the influx of Early Iron Age communities settling into the region.

6.1.2 Iron Age

The archaeology of farming communities of southern Africa encompasses three phases. The Early Iron Age (200-900 CE) represents the arrival of Bantu-speaking farmers in southern Africa. Living in sedentary settlements often located next to rivers, these farmers cultivated sorghum, beans, cowpeas, and kept livestock. The Middle Iron Age (900-1300 CE) is mostly confined to the Limpopo Valley in southern Africa with Mapungubwe Hill probably representing the earliest 'state' in this region (Huffman 2007). In areas north of Northam, *Happy Rest* and *Mzonjani* facies of the EIA have been identified. *Mzonjani* facies ceramics of the Urewe tradition is dated to around AD 450 to AD 750 (Huffman 2007: 127). *Happy Rest* facies ceramics of the Kalundu tradition is dated to around AD 500 to 750 (Huffman 2007: 219). Although both *Happy Rest* and *Mzonjani* ceramics are more prominently found in northern Limpopo, the presence thereof in the lower region of the Limpopo province could indicate movement of the associated communities across the landscape or interaction and information exchange of stylistic features.

The Late Iron Age (1300-1840s CE) marks the arrival and spread of ancestral Eastern Bantu-speaking Nguni and Sotho-Tswana communities into southern Africa. The location of Late Iron Age settlements is usually on or near hilltops for defensive purposes. The Late Iron Age as an archaeological period ended by 1840 CE, when the Mfecane caused major socio-political disruptions in southern Africa (Huffman 2007). The fertile soil of the area as well as deposits of iron ores and red ochre allowed for a landscape which was suitable for occupation by the Sotho Tswana of the Late Iron Age. Further north, the area shows signs of ancient mine workings for iron and ochre (Huffman 2006a). LIA sites associated with *Madikwe* and *Olifanspoort* facies have been found in the area and date to between AD 1500 and 1700. According to Huffman (2007), the *Rooiberg* ceramic facies of the Urewe tradition is localised to the immediate region and has been dated to around AD 1650 to 1750. LIA sites which have been found in the region are found with stone walling and ceramic scatters. In and around the town of Northam, early Tswana ancestors who occupied the area from the beginning of the 19th century include the Kwena, Po, and the Kgatla.

Between 1827 and 1832, the Khumalo Ndebele of Mzilikazi established his settlement in the Magaliesberg Mountains before moving to Marico River around 1832 and established a new capital at Motsenyateng (Bergh 1999). This unsettled many Sotho and Tswana groups of the area who then fled during the Difaquane to the east and to the south (Bergh 1999). The groups who fled would later return to their previously occupied lands. Around 1870, the Kwena baPhalane settled back on the farm Schilpadnest 385 KQ which they had ownership of (Breutz 1953).

6.1.3 Historical Period

The Historical period of the area can be traced back to the 1830s to 1840s when Voortrekkers crossed over the Vaal River and began establishing farms within the region (Bergh 1999). Remains of historical farmhouses can still be seen within the region. This marked the first interaction with the Agropastoralists already settled in the region. Voortrekkers allocated land for the Bafokeng people near current Rustenburg but later evicted them of their allocated farms (Bergh 2005). This along with enforced labour by the Voortrekkers caused tensions to rise.

In 1919, prospector J.H Williams noticed the iron rich mountains of the area, thereafter he obtained the rights to large sections of the iron ore deposits. In 1930, Iscor then obtained rights to the iron ores and began mining iron in the area the following year. Mining activities led to the establishment of the present-day town of Thabazimbi to support infrastructural needs of the growing mining community. As Northam was the nearest town with a train station, ox-wagon were used to transport ore to the station to then get transported elsewhere. The need for a safe way to cross the Crocodile River resulted in the development of a concrete slab in the river to allow for the safe passage for ox-wagons. The crossing, called the Helpmekaar Drift can still be seen today. In 1934, a railway line was established from Northam to Thabazimbi which further enhanced mining activities (Bergh 1999).

In 1924, Andries Lombard showed a platinum ore sample to geologist Hans Merensky which had been found near Lydenburg (Machens 2009). It was then discovered that the area was rich in platinum ores with a large platinum reef found in the area which resulted in the subsequent development of platinum mines.

6.2 Literature Review (SAHRIS)

Several Cultural Resource Management (CRM) surveys are on record for the area e.g., van Schalkwyk (1994; 2007), Lavin (2021), van der Walt (2016; 2018; 2019; 2021), Pistorius (2020), van Vollenhoven (2016), Gaigher (2016), Kruger (2014), Hutten (2010), Huffman (2006). The relevant results of these studies are briefly discussed below and outlined in Table 6.

A survey for the Amandelbult Mining Lease area was conducted in 1994 which also covered parts of the Project area (van Schalkwyk 1994). The survey covered a large area and many archaeological sites were identified. This includes multiple MSA scatters, sites potentially dating to the Early Iron Age, multiple LIA sites, settlements dating to the Historical period, and graves. Many of the identified LIA sites comprised of stone walling and associated artefact scatters such as pottery and grinding stones. Majority of the sites identified fall within the Madeleine Robinson Nature Reserve and the sites will therefore be preserved from mining activities. None of the sites identified by van Schalkwyk (1994), are present within the current Project area.

Another survey also covered the Project area for underground and opencast mining (van der Walt 2016). Heritage resources identified includes an LIA sites, a stone cairn, mine adits, a multi component MSA and LIA site, ruins of a farm house and the remains of the Chromedale station. The LIA stone walled complex shows implication of the Central Cattle Pattern (CCP) settlement type. The site has however been negatively impacted on by mining activities which destroyed a large part of the complex. None of the identified sites fall within the Project area. The farm house ruins and stone cairn are situated north of the Project area, but will not be impacted by the current Project.

Sites in this area are found predominantly near the Bierspruit west and north of the Project area. No sites previously identified fall within the Project area.

Table 6. Selected studies consulted for this project.

Author	Year	Project	Findings
Lavin, J.	2021	Proposed development of the Northam PV facility near Thabazimbi, North West Province	No sites, although the author notes the proximity of an LIA complex.
Van der Walt, J.	2021	Archaeological mitigation report Northam Zondereinde Shaft 3, Limpopo Province	Iron Age sites
Pistorius, J.	2020	A Phase I Heritage Impact Assessment (HIA) Study For Northam Platinum: Zondereinde Division (Northam's) Proposed New 11 Kv Power Line Between The Smelter Complex And The Shaft 3 Complex North Of Northam, Limpopo Province	Two stonewalled complexes.
Van der Walt, J.	2019	Heritage Impact Assessment Northam Shaft 3, Limpopo Province	Iron Age sites
Van der Walt, J.	2018	Heritage Impact Assessment Northam Ext 20	No sites were identified
Van der Walt, J.	2016	Archaeological Impact Assessment for the proposed additional underground and opencast mining, associated infrastructure and processing facilities at Thaba Cronimet Chrome Mine, Limpopo Province.	Stone Age and Iron Age sites were identified.
Van Vollenhoven, A. J.	2016	Heritage Impact Assessment Input for Environmental Impact Assessment report undertaken in terms of the National Environmental Management Act 107 of 1998. for the Bakgatla VTM Mine Farm Nooitgedacht No. 11 JQ, Northam, Limpopo Province.	Historical structures and graves.
Gaigher, S.	2016	Heritage Impact Assessment (HIA) Report for the Proposed Re-alignment of the Railway Line at the proposed 37 open pits, Amandelbult Mine, Limpopo Province	No sites were identified.
Kruger, N.	2014	Platinum EIA report for the Photovoltaic Power Plant Development, Thabazimbi Local Municipality, Limpopo Province	Structures
Hutten, M.	2010	HIA for the proposed residential township development, South of Northam.	No sites were identified
Van Schalkwyk, J	2007	Survey Of Heritage Resources In The Location Of The Proposed Merensky Mining Project, Amandelbult Section, Rustenburg Platinum Mine, Limpopo Province.	No sites were identified
Huffman, T. N.	2006	Archaeological Assessment for the Rhino Andalusite Mine.	Iron age Sites
Van Schalkwyk, J.	1994	A survey of archaeological and cultural historical resources in the Amandelbult mining lease area.	Iron Age Sites

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

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where archaeological and historical sites might be located. The database of the Genealogical Society of South Africa indicated no known grave sites within the study area.

7 Heritage Baseline

7.1 Description of the Physical Environment

The vegetation type and landscape features of the area form part of the Dwaalboom Thornveld. It is described as plains with layer of scattered, low to medium high, deciduous microphyllous trees and shrubs with a few broad-leaved tree species, and an almost continuous herbaceous layer dominated by grass species. *Acacia tortilis* and *A. nilotica* dominate on the medium clays (at least 21% clay in the upper soil horizon but high in the lower horizons). On particularly heavy clays (>55% clay in all horizons) most other woody plants are excluded and the diminutive *A. tenuispina* dominates at a height of less than 1 m above ground. On the sandy clay loam soils (with not more than 35% clay in the upper horizon but high in the lower horizons) *A. erubescens* is the most prominent tree. The alternation of these substrate types creates a mosaic of patches typically 1–5 km across, for example in the unit west of Thabazimbi (Mucina & Rutherford, 2006).

The Project area is situated 6km north of Thabazimbi on the eastern side of the R510 near Thaba mine. The Project area consists of a small substation area as well as two proposed tie in lines towards a large existing powerline, the Amandel - Thabazimbi Traction 132 kV line. The project area is situated on a large landscape dominated by past and current mining activities. The proposed substation area is partially on an open grassy field that seems to form part of a past mining area that has been rehabilitated. The area consists of a thick growth of tall grasses and a general lack of trees. The northern half of the substation area is within a small thicket of trees. This area resembles the natural vegetation of the surrounding landscape. The area consists of various trees and shrubs along an existing gravel haul road. The two proposed alternative lines running towards the existing powerline run over an area that shows high levels of surface disturbances. These include an existing open pit, various disused haul roads and small mine dumps or topsoil storage areas. General site conditions are indicated in (Figure 7.1 to 7.12).



Figure 7.1. General view of the thicket of trees within the proposed substation area.



Figure 7.2. General view of the thicket of trees within the proposed substation area. - Image also showing the small existing surface stockpile on the western boundary of the substation area.



Figure 7.3. General view along the eastern edge of the substation area showing signs of surface disturbances.



Figure 7.4. Newly made gravel roads run across the project area.



Figure 7.5. General view of the thick grass cover along the southern half of the project area.



Figure 7.6. General view of the thick grass cover along the southern half of the project area.



Figure 7.7. Large, excavated rocks situated along the western boundary of the substation area.



Figure 7.8. Image facing west along the proposed lines running from the substation towards the existing powerline. Image taken from the top of the small surface stockpile.



Figure 7.9. General view of the existing pit situated just south of the project area.



Figure 7.10. Existing smaller powerlines running across the project area.



Figure 7.11. Open pit south of the project area. Southern alternative line runs across this area.



Figure 7.12. Disused existing haul roads running across the project area.

7.2 Heritage Resources

Although the larger region has well documented LIA sites, the Project area is generally flat and does not have any hills or topographical focal points that would have attracted human settlement in antiquity. The Project area is also highly disturbed through mining activities which would have impacted any heritage resources if there were any, and no heritage resources were recorded within the Project area. Areas that are more favourable for Iron Age settlements are found to the north along hills and along the rivers like the Bierspruit west of the Project area (van Schalkwyk 1994, van der Walt 2009; 2014, 2016 and 2019, Pistorius 2020). Stones sourced from the hills and rocky outcrops provide building material for the stonewalled settlements as well as lookouts and defensive positions on the elevated areas. In terms of the Stone Age the Project area also lacks raw material for manufacturing stone tools and shelters that would have been inhabited or water sources that would have been focal points during the Stone Age.

7.3 Cultural Landscape

The study area is in a rural setting and characterised by mining activities and an extensive archaeological layering dating from the Stone Age to Iron Age. These archaeological sites are focussed on and around elevated areas and along rivers that provide focal points in the landscape. (Figure 7.13 to 7.15).

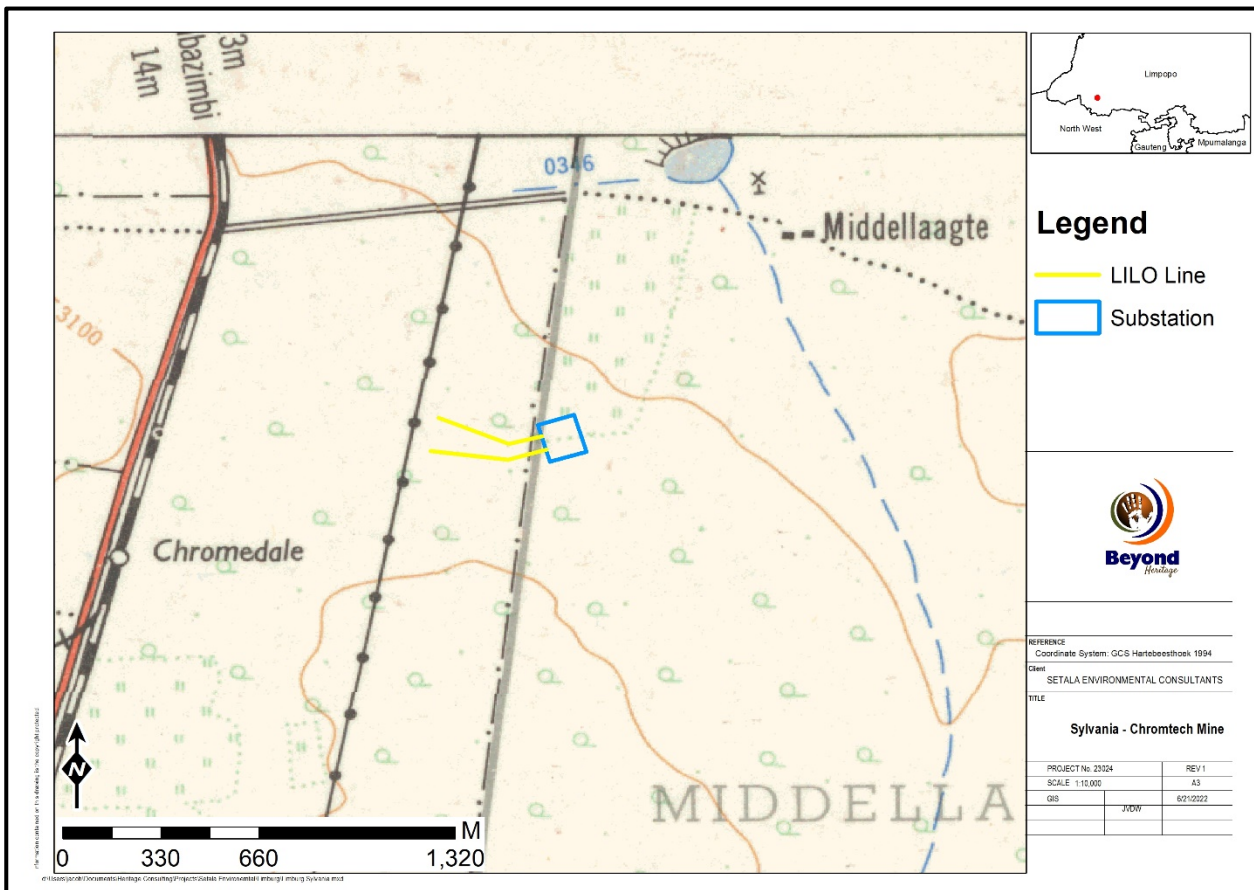


Figure 7.13. Extract of the 1963 Topographic map (1: 50 000) indicating a powerline close to the development area.

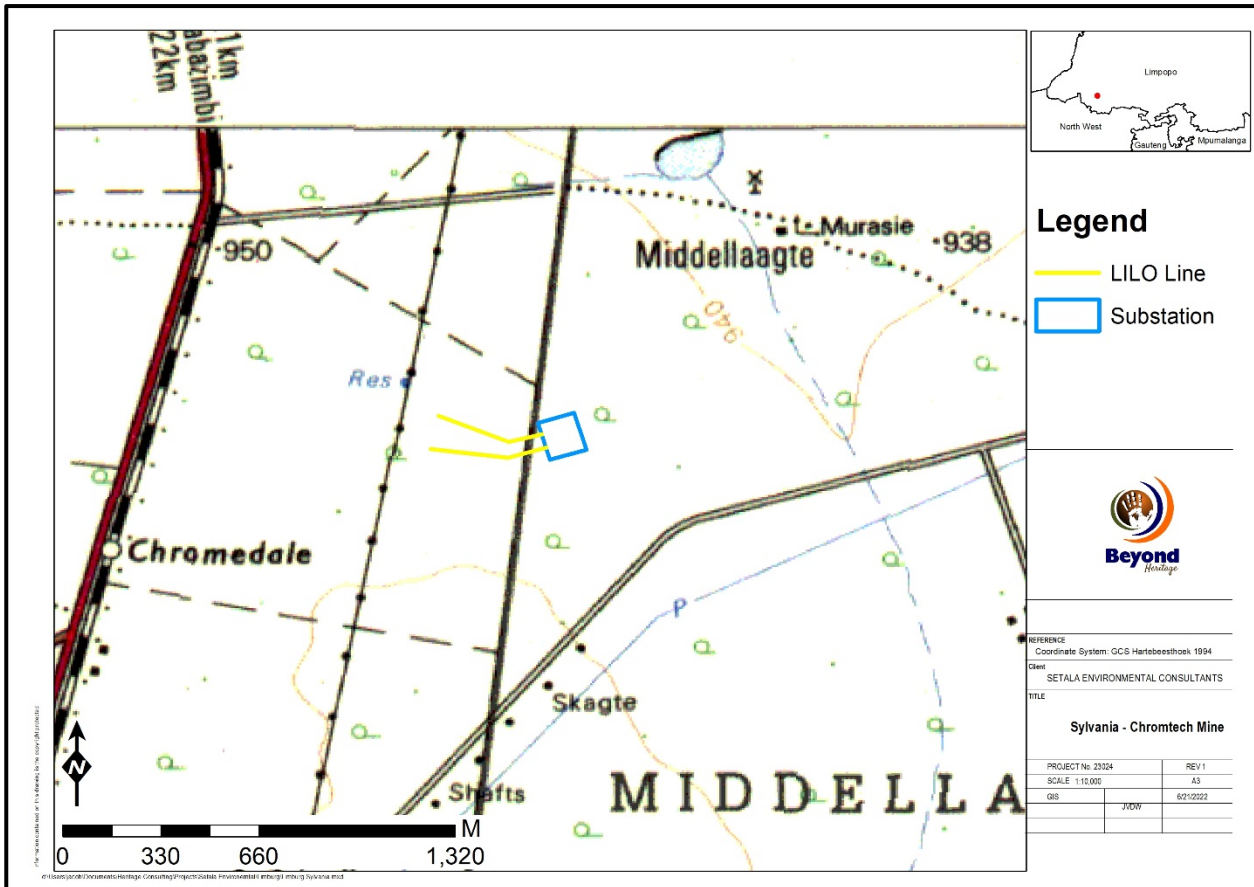


Figure 7.14. Extract of the 1980 Topographic map (1: 50 000) indicating no new developments in the Project area.

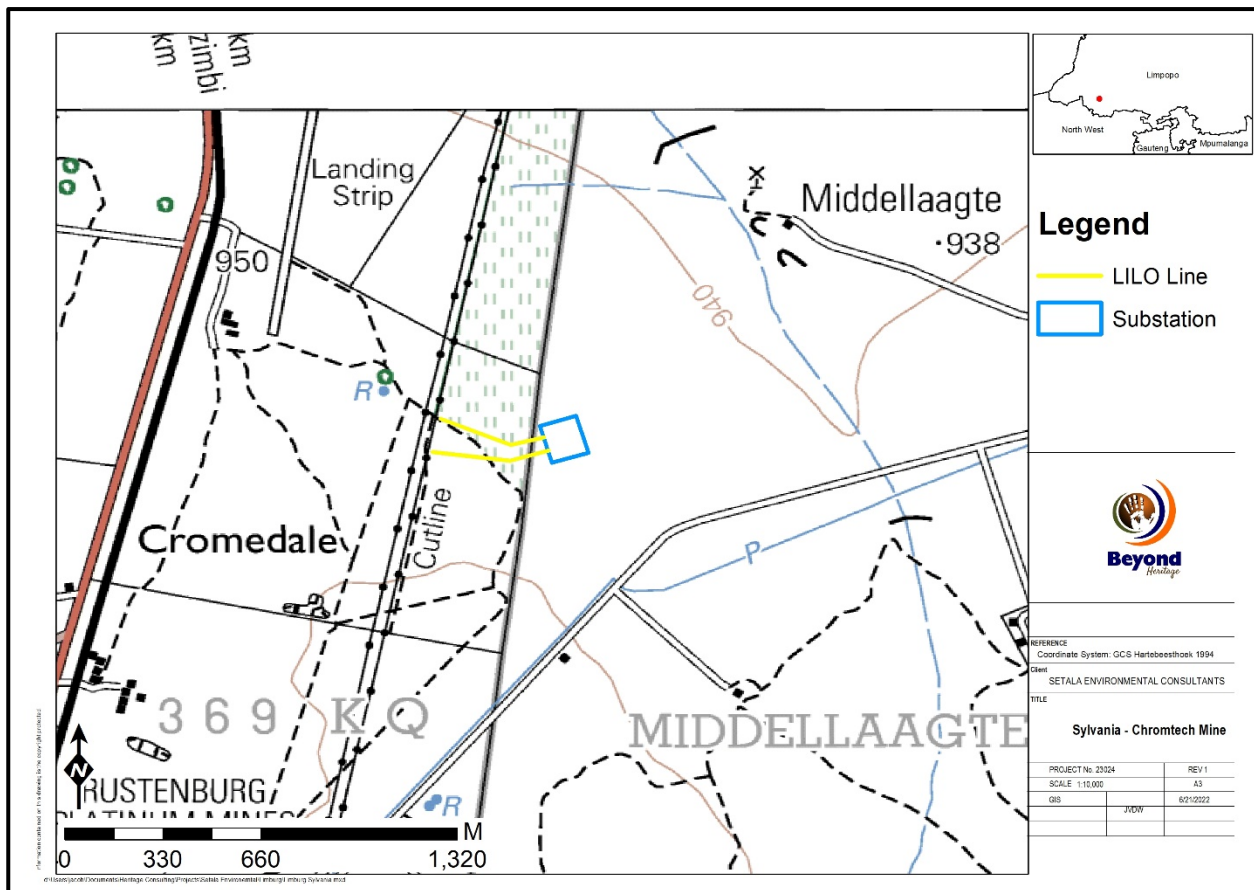
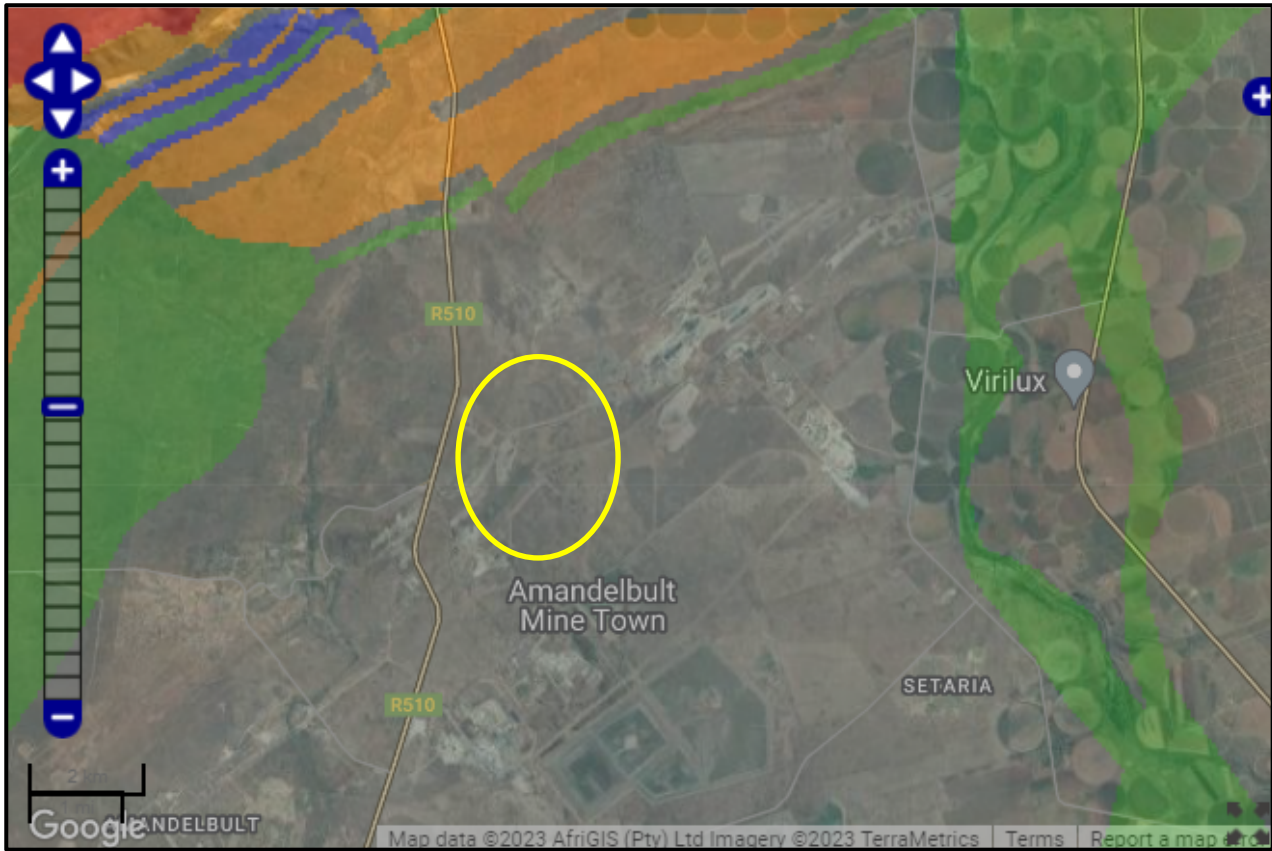


Figure 7.15. Extract of the 2022 Topographic map (1: 50 000) indicating cultivation in the surrounding area.

7.4 Paleontological Heritage

According to the SAHRA palaeontological sensitivity map, the study area is indicated as insignificant/zero palaeontological sensitivity and no further studies are required (Figure 7.16).



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

Figure 7.16. Paleontological sensitivity of the approximate study area (yellow polygon) as indicated on the SAHRA Palaeontological sensitivity map.

8 Assessment of impacts

8.1 Impacts on tangible heritage resources.

The main cause of impacts to heritage resources is physical disturbance of the cultural material itself and its context during removal of topsoil and vegetation as well as the excavations associated with the establishment of infrastructure. In terms of this Project the main source of impacts will happen during the clearing, levelling, and excavation activities attributed to the pre-construction and construction phase as well as additional human presence in the area. These activities are not expected to manifest in impacts on heritage resources as no heritage resources were recorded in the Project area.

8.1.1 Cumulative impacts

The proposed Project will have a low cumulative impact as no known significant heritage resources will be adversely affected.

8.2 Impact Assessment Tables

Table 7. Impact assessment for the Project area.

Nature: 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.		
	Without mitigation	With mitigation (Preservation/ excavation of site)
Extent	Local (2)	Local (2)
Duration	Permanent (5)	Permanent (5)
Magnitude	Minor (2)	Minor (2)
Probability	Improbable (2)	Improbable (2)
Significance	18 (Low)	18 (Low)
Status (positive or negative)	Negative	Negative
Reversibility	Not reversible	Not reversible
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	NA	NA
Mitigation:		
<ul style="list-style-type: none"> • Implementation of a chance find procedure for the project. 		
Cumulative impacts:		
The proposed project will have a low cumulative impact as no known heritage resources will be adversely affected.		
Residual Impacts:		
Although surface sites can be avoided or mitigated, there is a chance that completely buried sites would still be impacted on, but this cannot be quantified.		

9 Conclusion and recommendations

The Project is in a landscape characterised by extensive mining related activities which has disturbed the surface of the Project area. Several CRM surveys were conducted in anticipation of mining activities in the area (e.g., Van Schalkwyk 1994, van der Walt 2009; 2014, 2016 and 2019, Pistorius 2020) and known archaeological sites are clustered along focal points on the landscape like the Bierspruit to the west of the Project and hills to the south-west. Two previous surveys in which heritage resources were identified covered parts of the Project area (van Schalkwyk 1994, van der Walt 2019), but none of these sites fall within the current Project area.

No major landscape features occur in the areas affected by the Project and the plains marking the study area are of low archaeological potential but would have been utilised by the nearby Iron Age communities for grazing and possibly cultivation. The low heritage potential of the study area was confirmed during the survey and no heritage resources of significance were recorded. According to the SAHRA Paleontological sensitivity map the study area is of insignificant/zero paleontological significance and no further studies are required for this aspect.

The impact to heritage resources is low provided that the recommendations in this report are adhered to, based on the South African Heritage Resource Authority (SAHRA) 's approval.

9.1 Recommendations for condition of authorisation

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

- Monitoring of the Project area by the ECO during pre-construction and construction phases for heritage chance finds, if chance finds are encountered to implement the Chance Find Procedure for the Project as outlined in Section 9.2.

9.2 Heritage Resources

The possibility of the occurrence of subsurface finds cannot be excluded. Therefore, if during construction any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped, and a qualified archaeologist must be contacted for an assessment of the find and therefore chance find procedures should be put in place as part of the EMP. A short summary of chance find procedures is discussed below and monitoring guidelines applicable to the Chance Find procedure is discussed below and monitoring guidelines for this procedure are provided in Section 10.5.

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

- If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
- It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area.

- The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA.

9.3 Reasoned Opinion

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

9.4 Potential risk

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

9.5 Monitoring Requirements

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

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

Table 8. Monitoring requirements for the Project

Heritage Monitoring					
Aspect	Area	Responsible for monitoring and measuring	Frequency	Proactive or reactive measurement	Method
Cultural Heritage Resource Chance Find	Entire Project area	ECO	Weekly (Pre construction and construction phase)	Proactively	<ul style="list-style-type: none"> • Refer to Section 9.2.

9.6 Management Measures for inclusion in the EMPr

Table 9. Heritage Management Plan for EMPr implementation

Area	Mitigation measures	Phase	Timeframe	Responsible party for implementation	Target	Performance indicators (Monitoring tool)
General Project area	Monitoring of the Project area by the ECO during pre-construction and construction phases for chance finds, if chance finds are encountered to implement the Chance Find Procedure for the project	Pre-Construction & Construction	Weekly	Applicant Construction Contractor	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35, 36 and 38 of NHRA	ECO Checklist/Report

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