

HERITAGE IMPACT ASSESSMENT

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

FOR THE PROPOSED BULK SITES DEMARCATION OF ERVEN IN SEVILLE (EXTENSION 2), MPUMALANGA PROVINCE

Type of development:

Township Development

Client:

Nkanivo Development Consultants

Applicant:

Bushbuckridge Local Municipality

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Responsibility	Name	Qualifications and Certifications	Date
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14 November 2022	22119	Lay out changes

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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 (“EA”) 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	Declaration of Independence
(c) Indication of the scope of, and the purpose for which, the report was prepared	Section 1
(cA) an indication of the quality and age of base data used for the specialist report	Section 3.4 and Section 6.1.
(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 8 and 9
(k) Mitigation measures for inclusion in the EMPr	Section 10.1 and 10.5
(l) Conditions for inclusion in the EA	Section 10. 1 and 10.5
(m) Monitoring requirements for inclusion in the EMPr or EA	Section 10. 4.
(n) Reasoned opinion - (i) as to whether the proposed activity, activities or portions thereof should be authorised; (iA) regarding the acceptability of the proposed activity or activities; and (ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	Section 10.3
(o) Description of any consultation process that was undertaken during the course of preparing the specialist report	Section 5
(p) A summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Refer to EIA report
(q) Any other information requested by the competent authority	No other information requested at this time

Executive Summary

Nkanivo Development Consultants have been appointed as the consultants to undertake the township application process for the demarcation of erven in the area of Seville, in Mpumalanga situated on the Remainder of Portions 1 & 2 of the Farm Seville 224 KU

The proposed demarcation of Sites/Erven will only utilise a portion of the above-listed properties (Farm Portions). The project forms part of several site demarcation projects currently implemented across the rural areas by the Municipality in conjunction with the Traditional Authority. The project plays a key role by providing the government with an opportunity to facilitate the provision of well-configured erven and the provision or installation of bulk infrastructure services in rural areas. Beyond Heritage was appointed to conduct a Heritage Impact Assessment (HIA) for the project, through a desktop assessment and a non-intrusive pedestrian field survey. Key findings of the assessment include:


- The study area is overgrown with dense vegetation limiting accessibility.
- During the survey no significant heritage resources were recorded apart from a single grave site (SX001). The site was shown to the authors by Solly Sibuyi (community representative) who was consulted on the location of known graves and potential heritage resources during the survey.
- The lay out of the development was revised to ensure a 50 m buffer will protect the identified grave site from any impact;
- During the survey a findspot consisting of an isolated MSA flake was identified
- Based on the SAHRA paleontological sensitivity map, the Project Area is indicated as of insignificant paleontological sensitivity and no further action is required for this aspect;

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

Recommendations:

- Implementation of Chance Find Procedure (CFP) for the Project;
- The lay out was changed to ensure that the grave site (SX001) is avoided with a 50 m buffer zone. The site should be demarcated with an access gate for the family;
- Development of a site management to protect the grave (SX001);
- Monitoring of construction activities by the ECO to pro-actively prevent accidental damage to the grave at SX001.

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) (NEMA) and the associated 2014 Environmental Impact Assessment (EIA) Regulations (as amended), that:</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 NEMA, EIA Regulations and any guidelines that have relevance to the proposed activity; • I will comply with the NEMA, EIA 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	31/08/2022

a) Expertise of the specialist

Jaco van der Walt has been practising as a Cultural Resource Management (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 the Association of South African Professional Archaeologists (ASAPA) (#159) and has conducted more than 500 impact assessments in Limpopo, Mpumalanga, North West, Free State, Gauteng, Kwa Zulu Natal (KZN); and 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
BA: Basic Assessment
CFPs: Chance Find Procedures
CRM: Cultural Resource Management
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
GIS Geographical Information System
GPS: Global Positioning System
HIA: Heritage Impact Assessment
LIA: Late Iron Age
LSA: Late Stone Age
MEC: Member of the Executive Council
MIA: Middle Iron Age
MSA: Middle Stone Age
NEMA: National Environmental Management Act, 1998 (Act No. 107 of 1998)
NHRA: National Heritage Resources Act, 1999 (Act No. 25 of 1999)
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 the historic period)

The Iron Age (~ AD 400 to 1840)

Historic (~ AD 1840 to 1950)

Historic building (over 60 years old)

1 Introduction and Terms of Reference:

Beyond Heritage was appointed to conduct a Heritage Impact Assessment (HIA) for the for Seville Extension 2 Township Development, Mpumalanga Province (Figure 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 is to survey the proposed development footprint to identify cultural heritage sites; and document and assess their importance within local, provincial, and national context. It serves to assess the impact of the proposed Project on non-renewable heritage resources; and 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) (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; and Phase 3, reporting the outcome of the study.

During the survey, a single grave and isolated MSA artefact were recorded. 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 this report. The South African Heritage Resources Agency (SAHRA), as a commenting authority under section 38(8) of NHRA, requires all environmental documents compiled in support of an EA application (as defined by NEMA EIA Regulations section 40 (1) and (2)), to be submitted to SAHRA for commenting. Upon submission to SAHRA, the Project will be automatically given a case number as reference. As such the EIA report, its appendices and EMPr must be submitted in the case, once 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; and c) determine the levels of significance of the various types of heritage resources affected by the proposed Project.

Reporting

Report on the identification of anticipated and cumulative impacts the proposed Project may have on the identified heritage resources for all of its phases; i.e., construction, operation and decommissioning. 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 NHRA.

1.2 Project Description

Project components and the location of the Project is outlined under Table 2 and 3.

Table 2: Project Description

Affected properties	Remainder of Portion 1 & 2 of the Farm Seville 224 KU
Central co-ordinate of the development	24°39'48.20"S 31°24'39.13"E
Topographic Map Number	2431 CB

Table 3: Infrastructure and project activities

Type of development	Township Development
Size of development	Approximately 52.02 hectares
Project Components include but are not limited to approximately four hundred and ninety eight (498) erven. This includes four hundred and eighty-three (483) residential erven, three (3) educational, three (3) institutional, three (3) business sites, three (3) erven for municipal purposes and three (3) erven for public open space.	

1.3 Alternatives

No alternatives were provided for assessment, but the extent of the area assessed allows for siting of the development within these areas to minimize impacts to heritage resources.

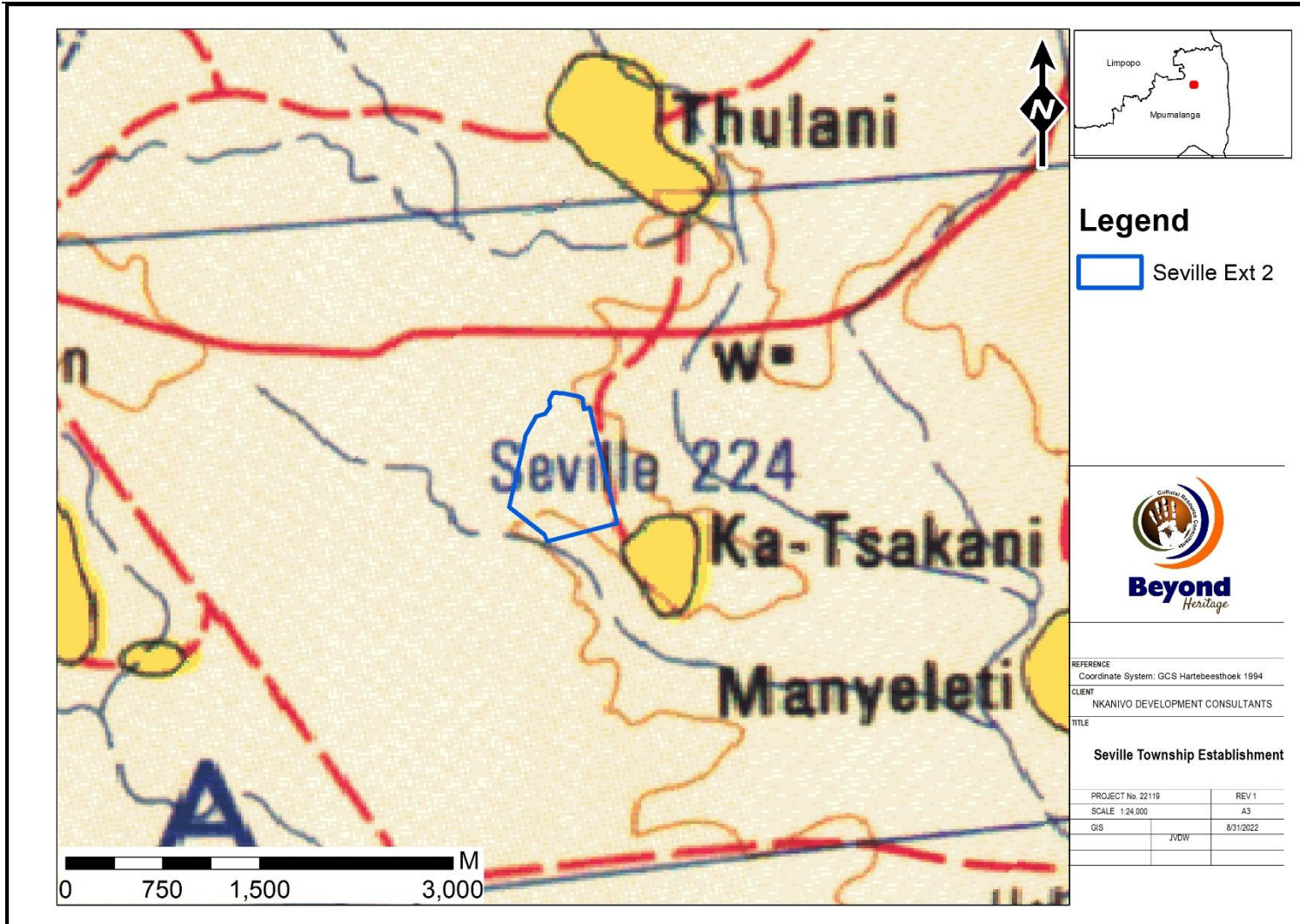


Figure 1.1. Regional setting of the Project (1: 250 000 topographical map).

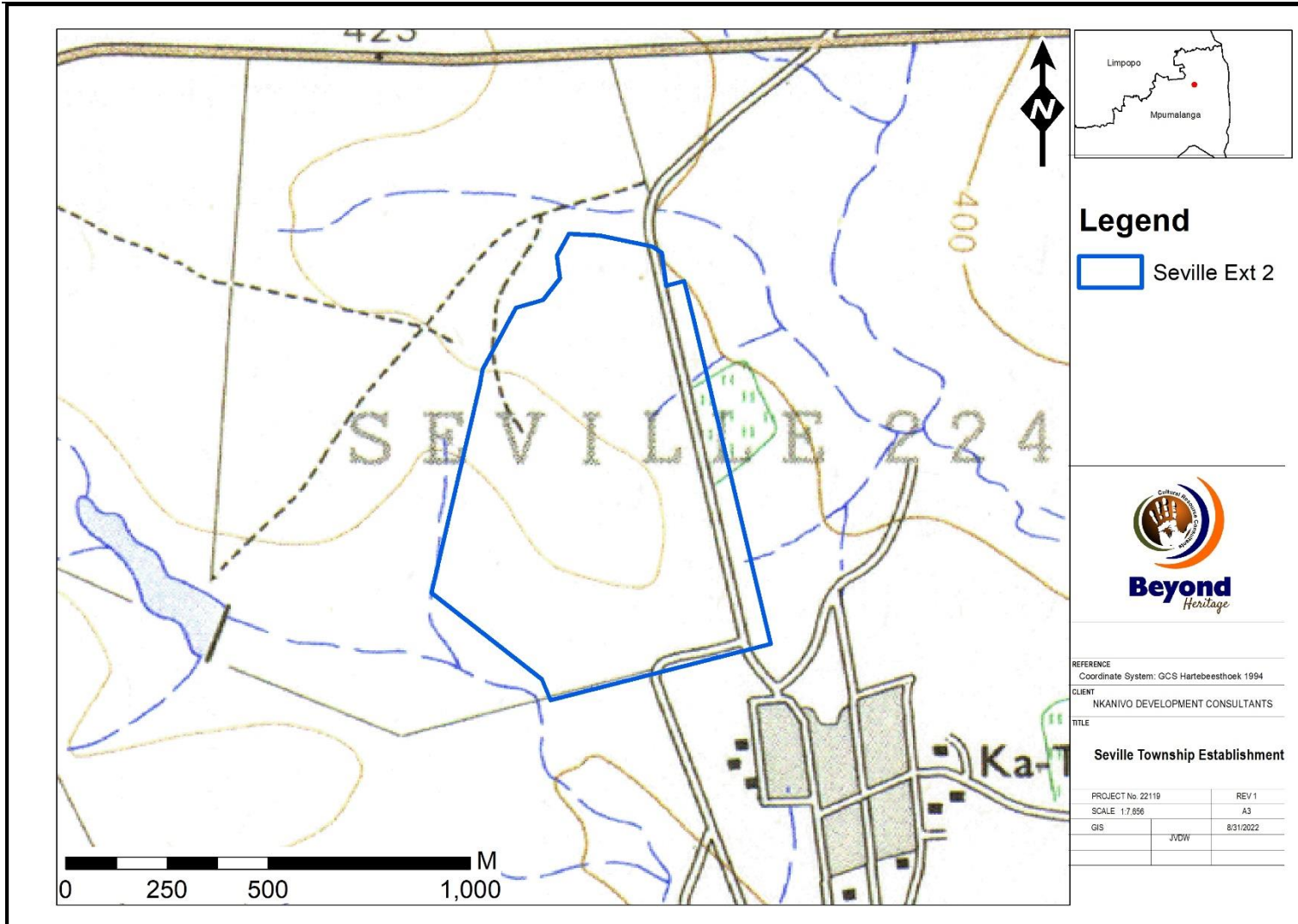


Figure 1.2. Local setting of the Project (1: 50 000 topographical map).



Figure 1.3. Aerial image of the Project area.

2 Legislative Requirements

The HIA, as a specialist sub-section of the EIA, is required under the NHRA and NEMA (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;
- 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 (or avoidance) of these impacts.

The HIA should be submitted, as part of the impact assessment report or EMP, to the PHRA if established in the province or to 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 EMP, 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.

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 HIA'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 include (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 section 36 of the NHRA. Graves older than 60 years, but younger than 100 years fall under section 36 of the NHRA and 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 the NHRA 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; and 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 the Human Tissues Act (Act 65 of 1983).

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 undertaken by the EAP was to capture and address any issues raised by community members and other stakeholders.

3.4 Site Investigation

The aim of the site visit was to:

- a) survey the Project Area to understand its heritage character; 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	23 and 24 August 2022
Season	Winter– The time of year and season did influence the survey, as general archaeological visibility was low due to dense vegetation cover. The Project Area was however sufficiently covered to understand the heritage character of the area (Figure 3.1).

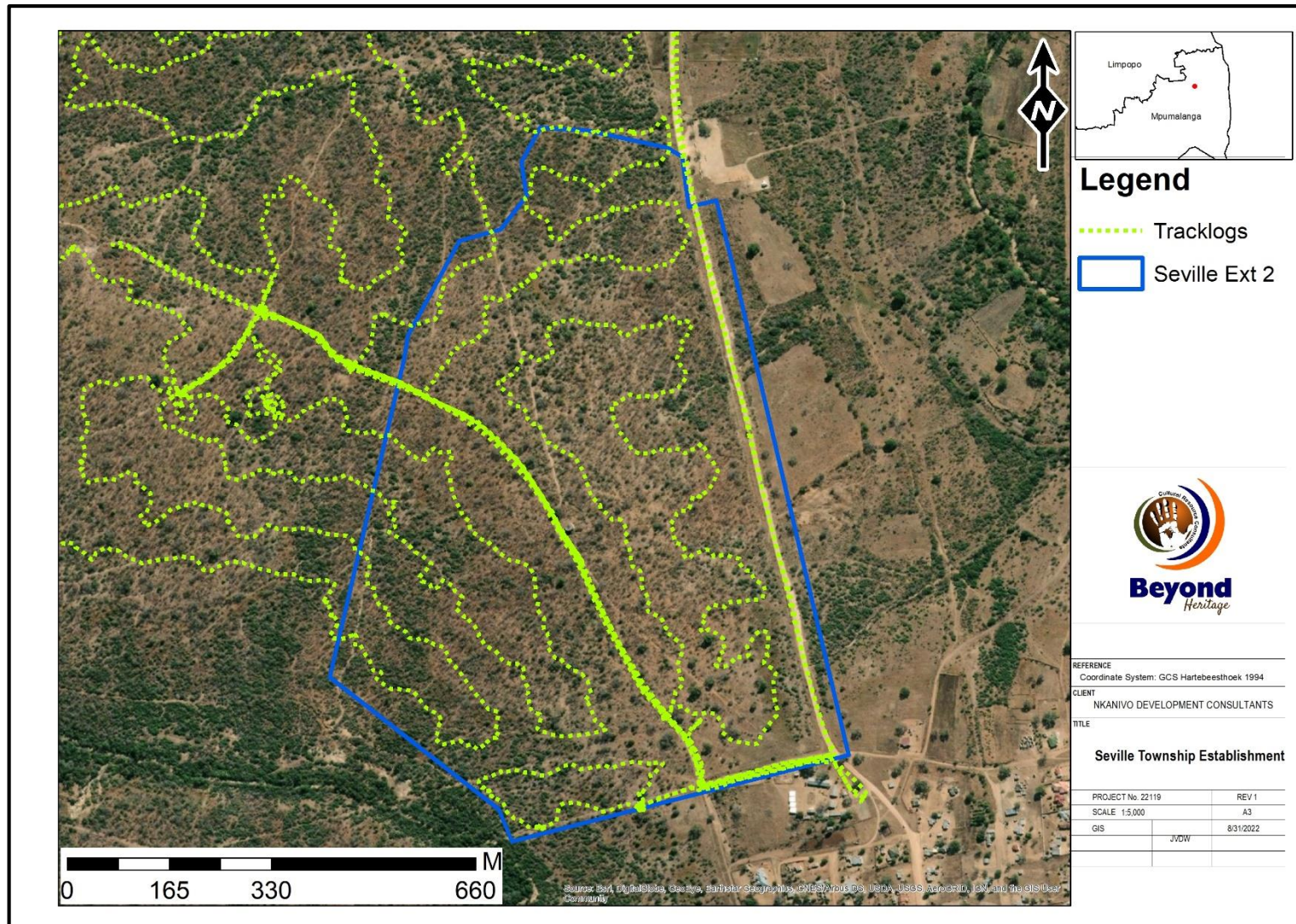


Figure 3.1. Tracklog of the survey path in green.

3.5 Site Significance and Field Rating

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; and
- 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 (2007), 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.

Table 5: Heritage significance and field ratings

FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION
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.
- 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 on 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 CFP and monitoring of the Project Area by the Environmental Control Officer (ECO). This report only deals with the footprint area of the proposed Project 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. 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 the 2019 – 2020 IDP for the Bushbuckridge Local Municipality the population of Bushbuckridge Local municipality was 545 811 according to the Statistics South Africa 1996 Census, then the 2001 census shows that there was decrease to 500 128 in population. There was an increase in population in the 2011 census as the number rose to 541 248. In the Bushbuckridge Local municipality's households' income is relatively low in the province as its ranked number 13 as per department of finance 2011 report. An income of R9601 – R19 600 has the most households surviving on it followed income from R19 601 – R38 200 with 29927. The average households' income is R36 569.

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 EIA process by the EAP. Site notices and advertisements notifying interested and affected parties were placed at strategic points and in local newspapers as part of the process. No heritage concerns have been raised thus far.

During the field survey the team was accompanied by Solly Sibuyi (a community representative) who advised on the location of known graves and possible heritage locations. He indicated a known grave within the Extension 2 proposed area.

6 Literature / Background Study:

6.1 Literature Review (SAHRIS)

Several previous CRM surveys are on record for the larger study area. Including the following:

- An archaeological impact study (Celliers, 2012) near Acornhoek recorded no sites of archaeological or heritage significance. Site monitoring during earthworks at Elephant Point near the Kruger Gate of the Kruger National Park conducted by Celliers in September 2012 also revealed no archaeologically significant feature or material.
- Van Schalkwyk, (2001) also recorded no sites or features of archaeological significance were located during his visit to the farms Greenvalley 213 KU and Islington 219 KU.
- Van Schalkwyk, (2006) recorded a similar investigation in respect of the upgrading work to be done to the Acornhoek dam. No heritage resources were identified within the proposed upgrade area.
- An archaeological impact survey near Hoedspruit on various portions of the farm Guernsey 81 KU recorded no sites or features of heritage significance (Küsel, 2005).
- An archaeological impact assessment in October 2005 in respect of a road development near Acornhoek on the farms Craigieburn 462 KT and Authurseat 214 KU recorded two Early Iron Age sites where pottery fragments and the remains of a hut floor were visible. Two historic graves were also recorded (Roodt, 2005).
- Lastly an archaeological impact assessment in respect of a proposed service station in Acornhoek (van der Walt 2003) recorded no sites or features of archaeological or heritage significance.

Table 6. Closer to the study area the following studies were conducted:

Author	Year	Project	Findings
Roodt, F.	2003	Upgrading of road 4392 Heritage Statement	No resources.
Van Deventer Radford, A.	2019	Heritage impact assessment report for the installation of a fibre optic cable, development of ablution facilities, the activation of a borehole with associated electrical and water reticulation, construction of an evaporation pond and various renovations and additions, Ravencourt Ranch, Sabi Sands Game Reserve (Mpumalanga Province)	Stone Age and an Early Iron Age site.
Van Deventer Radford, A.	2019	Heritage impact assessment report for the development of 13 new roads with a cumulative distance of 5.39km, the upgrading and broadening of two existing roads with a cumulative distance of 7.05km and the development of a rural abattoir on Sparta Farms 259KU, Londolosi Game Reserve, (Mpumalanga Province)	Stone Age and historical sites were recorded.
Van der Walt, J.	2022	Heritage Impact Assessment for the Dumphries Township, Mpumalanga Province	Iron Age sites

6.1.1 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 Project Area.

6.2 Archaeological Background

The archaeology of the area can be divided in three main periods namely the Stone Age, Iron Age and Historical period.

6.2.1 Stone Age

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

The three main phases can be divided as follows;

- » Later Stone Age (LSA); associated with Khoi and San societies and their immediate predecessors. - Recently to ~30 thousand years ago.
- » Middle Stone Age (MSA); associated with Homo sapiens and archaic modern human - . 30-300 thousand years ago.
- » Earlier Stone Age (ESA); associated with early Homo groups such as Homo habilis and Homo erectus. - 400 000-> 2 million years ago.

Very few Early Stone Age (ESA) sites are on record for Mpumalanga. An example where ESA tools have been discovered located outside of the study area is at Maleoskop (Bergh 1999) on the farm Rietkloof, which is one of only a handful of such sites in Mpumalanga. Another example also outside of the study area is at Bushman Rock Shelter (Mason 1969, Wadley 1987), a well-known site 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 frequented over a long period. Lower layers have been dated to over 40 000 Before Present (BP), while the top layers date to approximately 27 000 BP (Esterhuysen and Smith in Delius, 2007). MSA material is found widely across South Africa and some MSA manifestations can be expected in the study area.

Sites dating to the LSA are found in numerous rock shelters throughout Eastern Mpumalanga, where some of their rock art is still visible. A number of these shelters have been documented throughout the Province (Schoonraad in Barnard, 1975; Bornman, 1995 and Delius, 2007). These include areas such as Witbank, Ermelo, Barberton, Nelspruit, White River, Lydenburg and Ohrigstad. At Honingklip near Badplaas in the Carolina District, two LSA rock shelters with four panels of rock art was excavated. The site was used between 4870 BP and as recently as 200 BP. Stone walls at both sites date to the last 250 years of hunter-gatherer occupation and they may have served as protection against intruders and predators. Pieces of clay ceramic and iron beads found at the site indicates that there was early social interaction between the hunter-gatherer (San) communities and the first farmers who moved into this area at around 500 AD.

6.2.2 Iron Age and historical period

Bantu-speaking people moved into Eastern and Southern Africa about 2,000 years ago (Mitchell, 2002). These people cultivated sorghum and millets, herded cattle and small stock and manufactured iron tools and copper ornaments. Because metalworking represents a new technology, archaeologists call this period the Iron Age. Characteristic ceramic styles help archaeologists to separate the sites into different groups and time periods. 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.

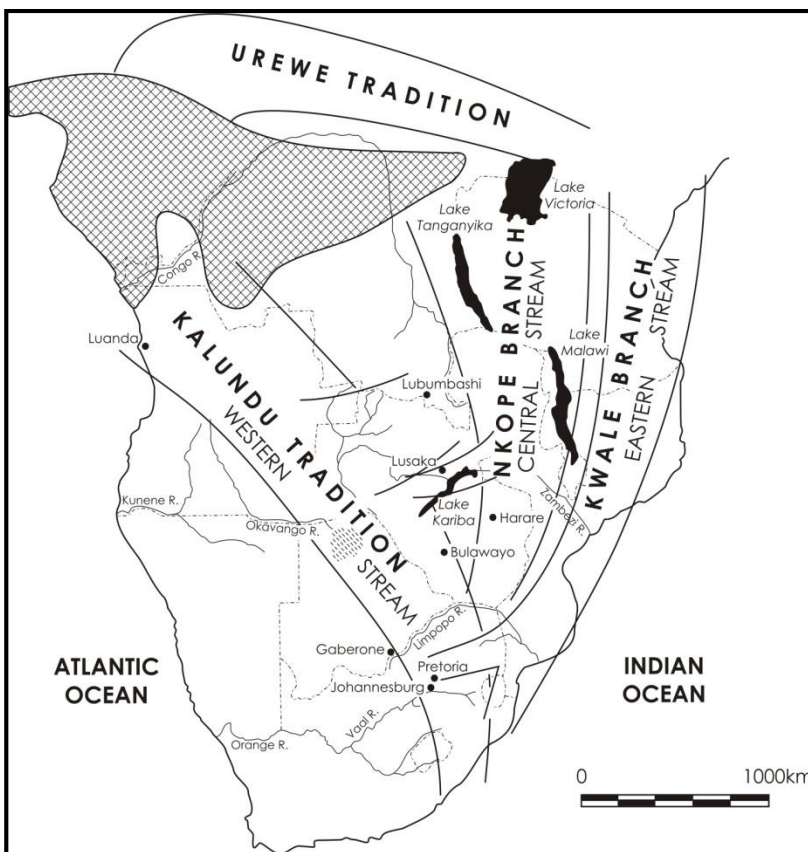


Figure 6.1: Movement of Bantu speaking farmers (Huffman 2007).

The later phases of the Iron Age (AD 1600-1800's) are represented by various tribes including Ndebele, Swazi, BaKoni, and Pedi, marked by extensive stonewalled settlements found throughout the escarpment and particularly around Machadodorp, Lydenburg, Badfontein, Sekhukuneland, Roosenekal and Steelpoort. The BaKoni were the architects of a unique archaeological stone building complex who by the 19th century spoke seKoni which was similar to Sepedi. The core elements of this tradition are stone-walled enclosures, roads, and terraces. These settlement complexes may be divided into three basic features: homesteads, terraces, and cattle tracks.

Researchers such as Mike Evers (1975) and David Collett (1982) identified three basic settlement layouts in this area. These sites can be divided into simple and complex ruins. Simple ruins are normally small in relation to more complex sites and have smaller central cattle byres and fewer huts. Complex ruins consist of a central cattle byre, which has two opposing entrances and several semi-circular enclosures surrounding it. The perimeter wall of these sites is sometimes poorly visible. Huts are built between the central enclosure and the perimeter wall. These are all connected by trackways referred to as cattle tracks. These tracks are made by building stone walls, which forms a walkway for cattle to the centrally located cattle byres.

Individual sites range from simple enclosures, which consist of single or two concentric stonewalled circles found in small, isolated settlements, to complex sites with large central enclosures which have smaller enclosures attached to their outer walls. The walls are built with undressed, locally occurring, stone. Walls on average are 0.5 to approximately 1 meter high, although often only the foundation stones are left. The Early Iron Age site Plaston is located close to Witrivier.

6.2.3 Anglo-Boer War

The Anglo-Boer War, which took place between 1899 and 1902 in South Africa, was one of the most turbulent times in South Africa's history. Even before the outbreak of war in October 1899 British politicians, including Sir Alfred Milner and 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 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 based on the status quo ante bellum. Salisbury's reply was, however, a clear statement of British war aims (Du Preez 1977).

General Louis Botha, with his Boer forces, marched through Nelspruit on 11 September 1900. A week later, on 18 September 1900, the British battalion of Lieutenant General F. Roberts arrived in Nelspruit. No major skirmishes in the war took place near Nelspruit, but a black concentration camp was established a small distance to the north of the town. The reason for this is possibly that there was a railway station at Nelspruit. Another event of import in the area was the arrival of the President of the Transvaal, Paul Kruger, in Nelspruit on 29 May 1900, where he received a message saying Lord Roberts had annexed the Transvaal. Kruger declared the annexation illegitimate on 3 September 1900, the same day that Nelspruit was proclaimed the administrative capital of the Transvaal Republic. Kruger left Nelspruit in June of that year and travelled to board a ship to Swaziland (Bergh, 1999: 51; 54).

7 Description of the Physical Environment

The Proposed project area is situated in the Bushbuckridge Local Municipality on the north-western edge of the Seville township. The proposed project area forms part of three proposed township extensions situated in an unutilised area between the Seville, Hluvukani and Thorndale townships. The access road towards Seville is located along the eastern boundary of the Project area and the southern boundary by a local primary school. A small gravel road traverses the extension 2 area and was used as a main access road into the larger Project area towards a large reservoir close to the central part of the Extension 2 area. Vegetation cover in the southern section of the study area is lower, possibly as a result of grazing.

The vegetation is classed as Legogote Sour Bushveld comprising gently to moderately sloping upper pediment with dense woodland including many medium to large shrubs. Short thicket occurs on less rocky sites with low vegetation cover on exposed granite outcrops. Access to the study area was very difficult due to the overgrown vegetation. The larger environment consists of extremely wooded vegetation growing on a flat landscape with sandy soils. General site conditions are illustrated in Figure 7.1 to 7.4.

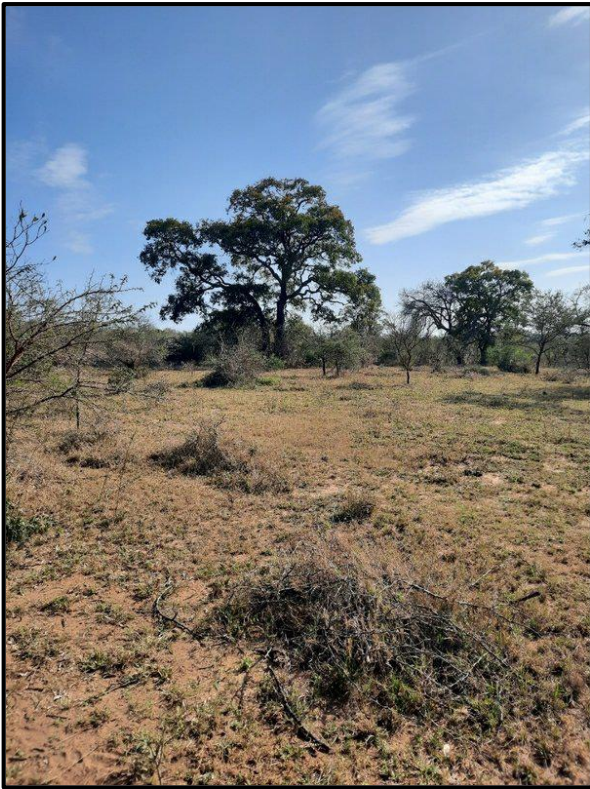


Figure 7.1. General site conditions of the southern portion of the project area where vegetation is less dense.



Figure 7.2. General site conditions – dense vegetation throughout the rest of the study area.

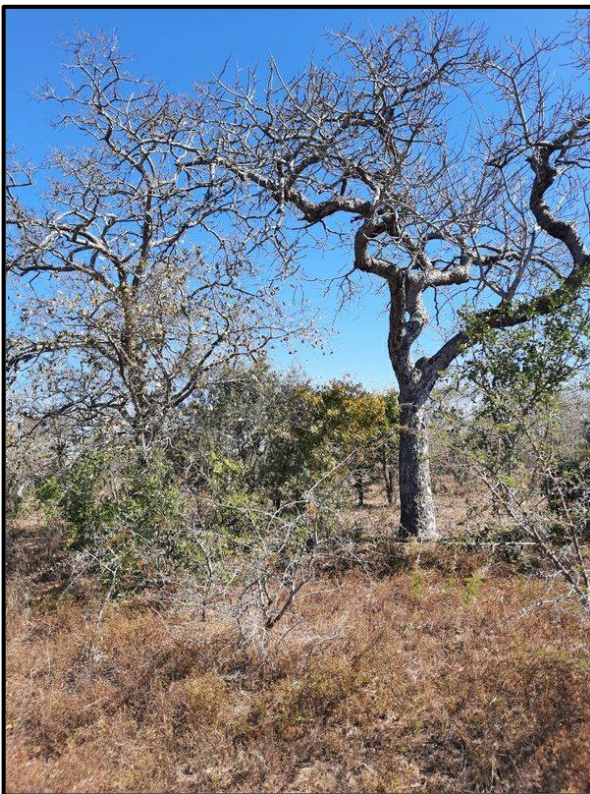


Figure 7.3. Large marula trees are scattered across the Project area. These trees may be of cultural significance to the local community.



Figure 7.4. Primary school in the southern portion of the study area.

8 Findings of the Survey

8.1 Heritage Resources

The area is characterised by dense vegetation and the local community is utilizing the small trees for firewood. Overgrazing of the area further causes an influx of pioneer species. Erosion causes small dongas to form in some areas that reveals a subsurface gravel layer on top of bedrock that could have been utilised during Stone Age times. A community member accompanied the survey team and indicated one known grave site. Additionally, isolated MSA lithics was recorded at SX004. The findspot is isolated and out of context and of no significance.

The grave location was recorded as SX001 and consist of a single grave located almost on the southern boundary Project area (Figure 8.1). The grave dressing is built from cement that was recently erected by the community (Figure 8.2 and 8.3). The community is unsure as to the exact location of the grave and the general area was pointed out by a member of the community and the physical grave dressing does not mark the exact location and therefore a larger buffer is recommended to protect the grave. The grave was indicated during the field survey by Solly Sibuyi at 31° 24' 42.1199" E; 24° 39' 55.2456" S and is of high social significance. The locations of the observations in relation to the study area is indicated in Figure 8.1 and the observation described in Table 7. General site conditions are indicated in Figure 8.2 – 8.5.

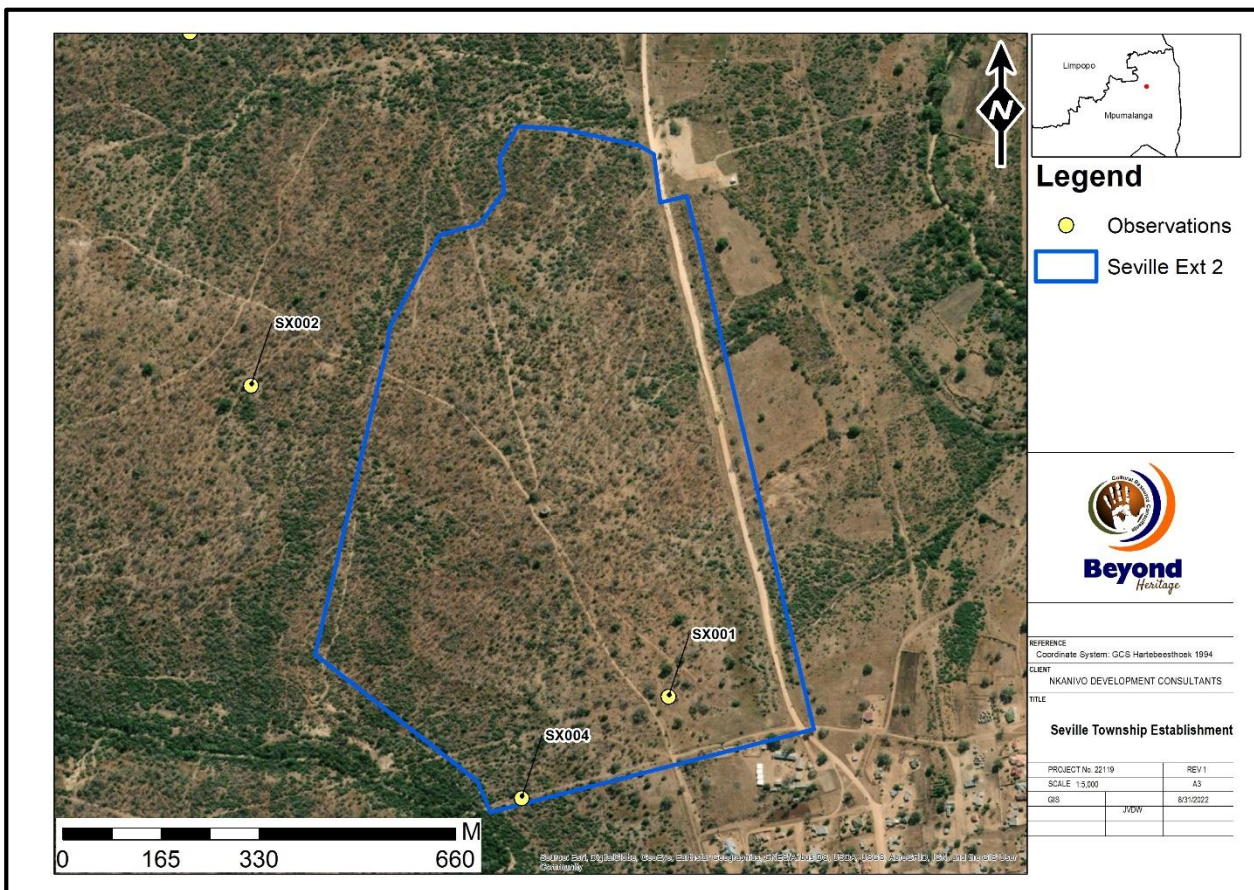


Figure 8.1. SX001 and SX004 in relation to the project area.

Table 7. Observations in the study area.

Label	Longitude	Latitude	Description	Significance
SX001	31° 24' 42.1199" E	24° 39' 55.2456" S	Grave pointed out by community member.	High Significance Field Rating GP A
SX004	31° 24' 34.1064" E	24° 40' 00.7609" S	Isolated MSA stone tool identified along the side of a small donga. The artefact seems to be washing out of the donga. No other artefacts were identified within the immediate area.	Low Significance Field Rating GP C



Figure 8.2. Cement grave at SX001.



Figure 8.3. General site conditions at SX001.



Figure 8.4. Dorsal view of isolated MSA artefact at SX004.



Figure 8.5. General site conditions - Small donga running through the project area at SX004.

8.2 Cultural Landscape

Historical maps dating from the 1970's is available for the study area. The study area is part of a rural landscape with sparse informal settlement in the greater area during this time (Figure 8.6).

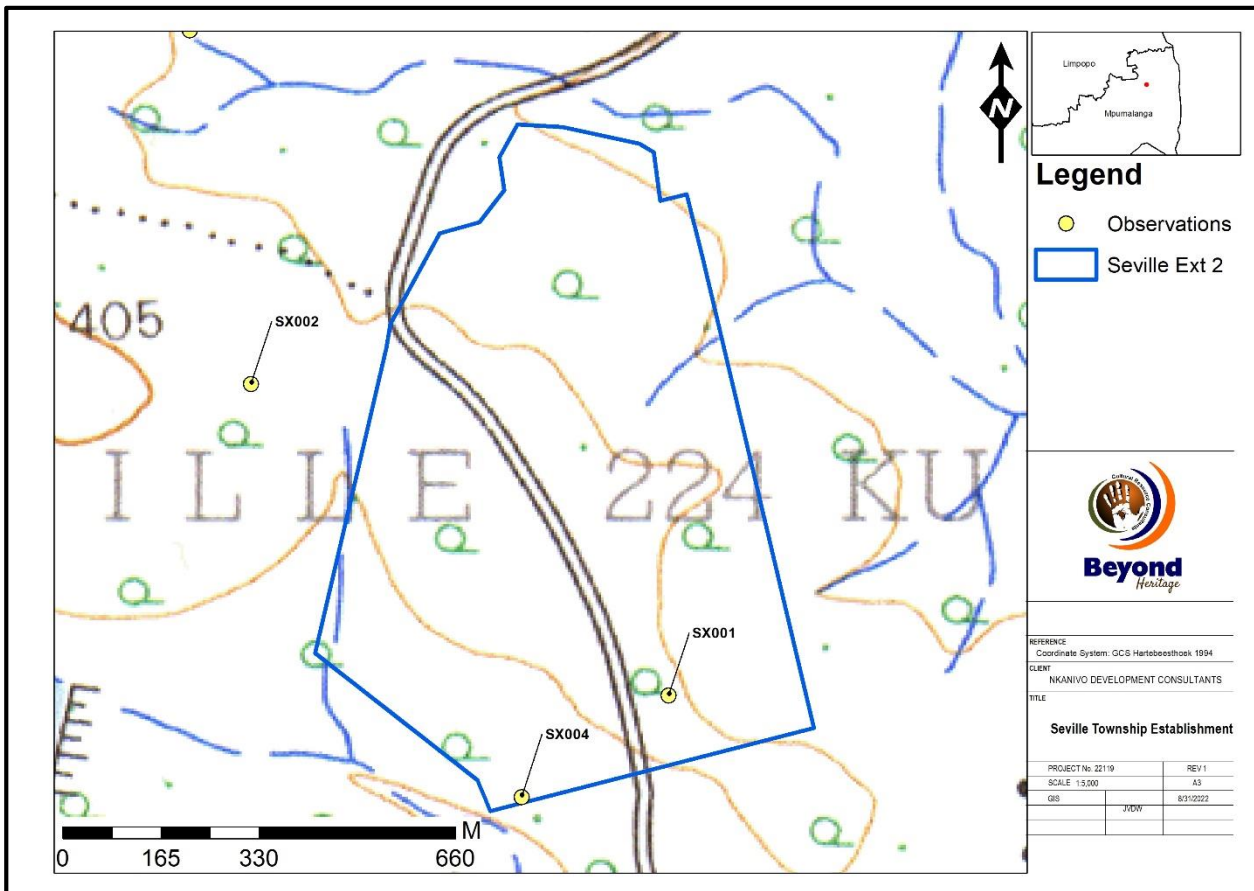


Figure 8.6. 1970 Topographic map indicating no development aside from a road in the study area.

8.3 Paleontological Heritage

According to the SAHRA Paleontological map, the Project Area is of insignificant palaeontological significance (Figure 8.7) and no further action is necessary.



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 8.7. Paleontological sensitivity of the approximate Project Area (yellow polygon), as indicated on the SAHRA Palaeontological sensitivity map.

9 Potential Impact

Impacts to heritage resources without mitigation within the project footprint will be permanent and negative and occur during the pre-construction and construction activities. The study area is flat without any focal points like rocky outcrops or pans and is considered to be of low heritage significance. The observation at SX004 is out of context and does not constitute an archaeological site. The findspot is isolated and of no significance apart from mentioning it in this report. A single grave was recorded in the study area and the lay out was revised to ensure a 50 m buffer zone and the site will not be directly impacted on by the development (Figure 9.1). Graves are of high social significance.

Any additional effects to subsurface heritage resources can be successfully mitigated by implementing a chance find procedure. With the implementation of the recommended mitigation measures impacts of the project on heritage resources is acceptable (Table 7).

Cumulative impacts considered as an effect caused by the proposed action that results from the incremental impact of an action when added to other past, present, or reasonably foreseeable future actions. (Cornell Law School Information Institute, 2020). 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 this project, impacts can be mitigated to an acceptable level. However, this and other projects in the area can have a negative impact on heritage sites in the area where these sites have been destroyed unknowingly. Additional impacts can be successfully mitigated with the implementation of a chance find procedure (Table 8).

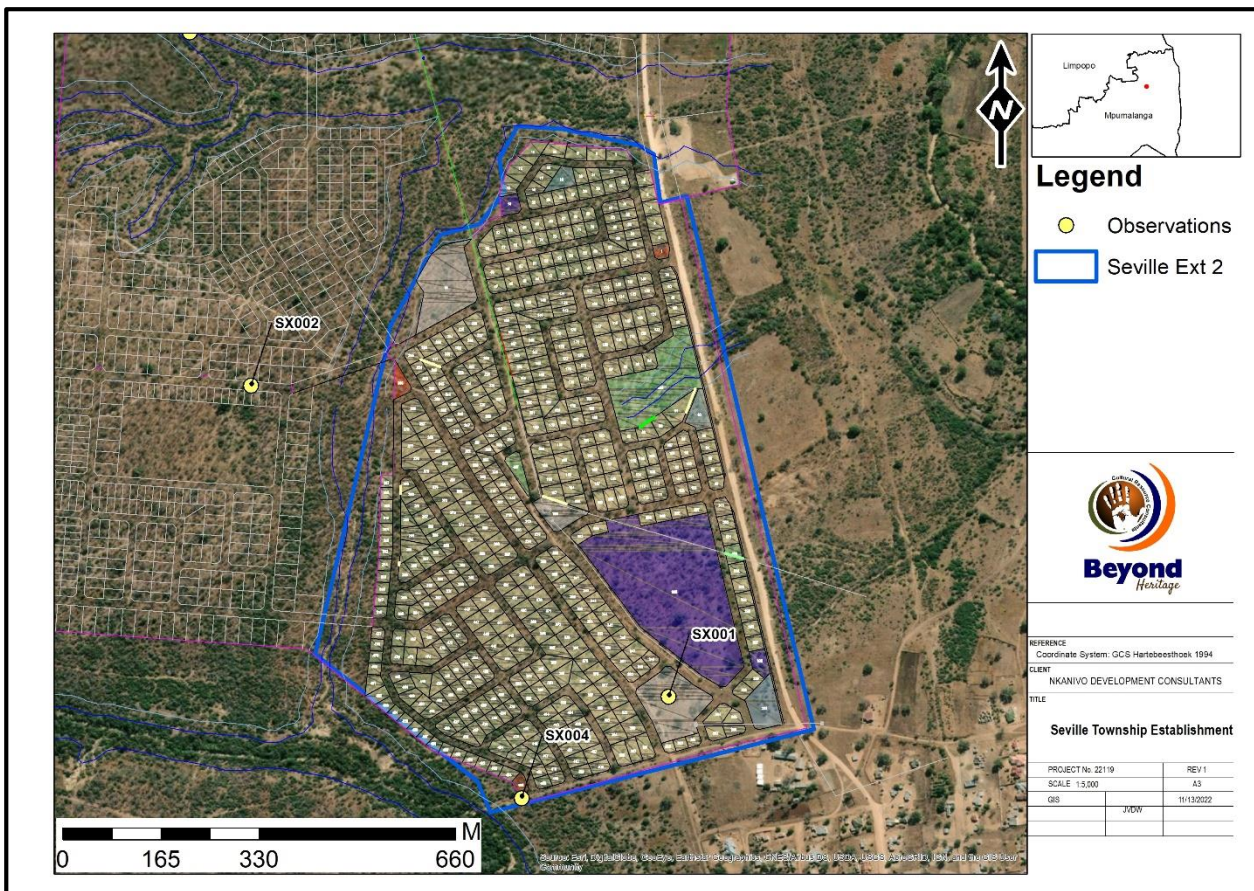


Figure 9.1. Site SX001 and X004 in relation to the proposed lay out of the development. SX001 is indicated in a buffer zone.

9.1.1 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. These activities can have a negative and irreversible impact on heritage features if any occur. Impacts include destruction or partial destruction of non-renewable heritage resources.

9.1.2 Construction Phase

During this phase, the impacts and effects are similar in nature but more extensive than the pre-construction phase. Potential impacts include destruction or partial destruction of non-renewable heritage resources.

9.1.3 Operation Phase

No impacts are expected during the operation phase.

9.1.4 Impact Assessment for the Project

Table 8. Impact assessment for the project on SX001.

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	Moderate to high (7)	Moderate to high (7)
Probability	Improbable (2)	Improbable (2)
Significance	28 (Low)	28 (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 Chance Find Procedure (CFP) for the Project; ○ The lay out was changed to ensure that the grave site (SX001) is avoided with a 50 m buffer zone. The site should be demarcated with an access gate for the family. ○ Development of a site management to protect the grave (SX001); ○ Monitoring of construction activities by the ECO to pro-actively prevent accidental damage to the grave at SX001. 		
Cumulative impacts:		
Other authorised projects (e.g., township developments) in the area could have a cumulative impact on the heritage landscape. The impact on physical heritage is low as no sites of significance will be impacted on by the new development.		
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.		

Table 9. Impact assessment of the project on SX004.

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	Probable (3)	Probable (3)
Significance	27 (Low)	27 (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. • The study area should be monitored during construction by the ECO. 		
Cumulative impacts:		
Other authorised projects (e.g., township developments) in the area could have a cumulative impact on the heritage landscape. The impact on physical heritage is low as no sites of significance will be impacted on by the new development.		
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.		

10 Conclusion and recommendations

Much of the study area is characterised by high vegetation, limiting archaeological visibility. The study area is flat without any focal points like rocky outcrops or pans and is considered to be of low heritage significance and heritage finds were limited to a single grave. The grave location was recorded as SX001 and consist of a single grave located almost on the southern boundary Project area. The grave dressing is built from cement that was recently erected by the community. The community is unsure as to the exact location of the grave and the general area was pointed out by a member of the community and the physical grave dressing does not mark the exact location and therefore a larger buffer is required to protect the grave and this was incorporated into the final lay out. The observation at SX004 is out of context and does not constitute an archaeological site. The findspot is isolated and of no significance apart from mentioning it in this report. Based on the SAHRA paleontological sensitivity map the Project area is indicated as of insignificant paleontological sensitivity and no further action is required for this aspect.

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

10.1 Recommendations for condition of authorisation

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

Recommendations:

- Implementation of Chance Find Procedure (CFP) for the Project;
- The lay out was changed to ensure that the grave site (SX001) is avoided with a 50 m buffer zone. The site should be demarcated with an access gate for the family.
- Development of a site management to protect the grave (SX001);
- Monitoring of construction activities by the ECO to pro-actively prevent accidental damage to the grave at SX001.

10.2 Chance Find Procedures

10.2.1 Heritage Resources

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

This CFP applies to the developer's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. The aim of this CFP 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 CFP, as discussed below.

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

10.3 Reasoned Opinion

The overall impact of the Project can be mitigated to an acceptable level. The socio-economic benefits also outweigh the possible impacts of the development, if the correct mitigation measures are implemented for the Project.

10.4 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; and additional costs involved in mitigation and possible layout changes.

10.5 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.
- *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 CFP must be followed as outlined above.

Table 10. Monitoring requirements for the project

Heritage Monitoring					
Aspect	Area	Responsible for monitoring and measuring	Frequency	Proactive or reactive measurement	Method
Cultural Heritage Resources chance finds	Entire project area	EO & ECO	Weekly (Pre construction and construction phase)	Proactively	<ul style="list-style-type: none"> • If risks are manifested (accidental discovery of heritage resources), the CFP should be implemented: <ol style="list-style-type: none"> 1. Cease all works immediately; 2. Report incident to Site Manager 3. EPC (Engineering Procurement and Construction) Contractor to contact an archaeologist/ palaeontologist to inspect the site; 4. Report incident to SAHRA, as advised by specialist; and 5. Employ site specific mitigation measures recommended by the specialist after assessment, in accordance with the requirements of the relevant authorities. • Only recommence operations once impacts have been mitigated.
General project area	Monitoring of construction activities by the ECO to pro-actively prevent accidental damage to the grave at SX001.	ECO	Weekly (Pre construction and construction phase)	Proactively	<ul style="list-style-type: none"> • Measure levels of subsidence and compare with recorded baseline conditions; • Status quo will be recorded through photographs; • Results will be maintained; and • Results will be reported in the progress reporting.

10.6 Management Measures for inclusion in the EMPr

Table 11. Heritage Management Plan for EMPr implementation

Area	Mitigation measures	Phase	Timeframe	Responsible party for implementation	Target	Performance indicators (Monitoring tool)
General project area	Implement CFP in case possible heritage finds are uncovered.	Construction	Throughout the project	Applicant EPC Contractor	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35, 36 and 38 of NHRA	ECO Checklist/Report
General project area	Monitoring of construction activities by the ECO to pro-actively prevent accidental damage to the grave at SX001.	Construction	Throughout the project	Applicant EPC Contractor	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35, 36 and 38 of NHRA	ECO Checklist/Report
SX001	Development of a site management to protect the grave (SX001);	Construction	Throughout the project	Applicant EPC Contractor	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 36 and 38 of NHRA	ECO Checklist/Report
SX001	The lay out was changed to ensure that the grave site (SX001) is avoided with a 50 m buffer zone. The site should be demarcated with an access gate for the family.	Construction	Throughout the project	Applicant EPC Contractor	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 36 and 38 of NHRA	ECO Checklist/Report

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