

HERITAGE IMPACT ASSESSMENT

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

PROPOSED ESTABLISHMENT OF A BORROW PIT AND QUARRY WITHIN THE ELIAS
MOTSOLEDI LOCAL MUNICIPALITY OF THE SEKHUKHUNE DISTRICT MUNICIPALITY,
SITUATED WITHIN THE PROVINCE OF LIMPOPO PROVINCE.

Type of development:

Borrow Pit and Quarry

Client:

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Project Reference:

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APPROVAL PAGE

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Report Title	Heritage Impact Assessment for the proposed R573 Borrow Pit and Quarry, Limpopo Province
Authority Reference Number	TBC
Report Status	Draft Report
Applicant Name	SANRAL

	Name	Qualifications and Certifications	Date
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REPORT OUTLINE

Appendix 6 of the GNR 982 EIA Regulations, 2014 [as amended] 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 GNR 982 EIA Regulations, 2014 [as amended]	Chapter
(a) Details of - (i) the specialist who prepared the report; and (ii) the expertise of that specialist to compile a specialist report including a curriculum vitae	Section a Section 13
(b) Declaration that the specialist is independent in a form as may be specified by the competent authority	<i>Declaration of Independence</i>
(c) Indication of the scope of, and the purpose for which, the report was prepared	Section 1
(cA) an indication of the quality and age of base data used for the specialist report	Section 3.4 and 7.1.
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	9
(d) Duration, Date and season of the site investigation and the relevance of the season to the outcome of the assessment	Section 3.4
(e) Description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used	Section 3
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 8 and 9
(g) Identification of any areas to be avoided, including buffers	Section 9
(h) Map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers	Section 8
(I) Description of any assumptions made and any uncertainties or gaps in knowledge	Section 3.7
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity including identified alternatives on the environment or activities;	Section 9
(k) Mitigation measures for inclusion in the EMPr	Section 10 and 11
(l) Conditions for inclusion in the environmental authorisation	Section 10 and 11
(m) Monitoring requirements for inclusion in the EMPr or environmental authorisation	Section 10 and 11
(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 11.2
(o) Description of any consultation process that was undertaken during the course of preparing the specialist report	Section 6
(p) A summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Refer to BA report
(q) Any other information requested by the competent authority	Section 10

Executive Summary

Gondwana Environmental Solutions (Pty) Ltd has been appointed by AECOM (Pty) Ltd on behalf of South African National Road Agency SOC Ltd (SANRAL) to undertake an environmental assessment in the form of a Basic Assessment Process for the proposed establishment of a borrow pit and quarry in terms of the MPRDA and Environmental Impact Assessment Regulations (2014), as amended, of the National Environmental Management Act (Act 107 of 1998). Borrow pit 3 and Walkraal Quarry are situated within the Elias Motsoaledi Local Municipality of the Sekhukhune District Municipality and is located within the Province of Limpopo.

HCAC was appointed to conduct a Heritage Impact Assessment of the proposed project to determine the presence of cultural heritage sites and the impact of the proposed material sources on these non-renewable resources. Both the Walkraal Quarry and Borrow Pit 3 were assessed on desktop level and by a field survey. The field survey was conducted as a non-intrusive pedestrian survey to cover the extent of the study area as final development plans were not yet available at the time of the survey.

No archaeological sites or material was recorded during the survey and based on the SAHRIS Paleontological Sensitivity Map, the areas of impact are of insignificant paleontological sensitivity. Therefore, no further mitigation prior to construction is recommended in terms of Section 35 for the proposed material sources to proceed. In terms of the built environment, 2 ruins (Site 1 and 3) were recorded within the proposed Walkraal Quarry footprint. The exact age of the structures is unknown and sites like these are known to contain unmarked graves. The presence of graves in this area should be confirmed by the community liaison officer during the social consultation process for the project and Site 1 and 3 should be monitored during construction.

In terms of Section 36 of the Act a single grave (Site 2) was recorded located within the Walkraal Quarry. It is recommended that the grave should be retained *in situ* and demarcated with an access gate and a buffer zone of 50 m. If any additional graves are identified they should ideally be preserved *in-situ* or as a last option relocated according to existing legislation. No public monuments are located within or close to the study area. The greater area is characterised by township and road developments and the proposed development will not impact negatively on significant cultural landscapes or views. During the public participation process conducted for the project no heritage concerns were raised.


The impact of the proposed project on heritage resources is considered low to medium and impacts can be mitigated to an acceptable level. It is therefore recommended that the proposed project can commence on the condition that the following recommendations are implemented as part of the EMPr together with site specific recommendations in Table 2 and based on approval from SAHRA:

- Implementation of a chance find procedure;
- Graves should be retained *in situ* with a 50 m buffer zone. If this is not possible the graves can be relocated adhering to all legal requirements.
- The presence of unmarked graves should be confirmed by the community liaison officer during the social consultation process especially in the region of Sites 1 and 3.
- Ruins should be monitored during construction.

Table 2. Recorded sites and proposed mitigation measures.

LABEL	LAYER	LONGITUDE	LATITUDE	Mitigation
Wal 1	Ruin	29° 05' 12.2063" E	25° 10' 13.8072" S	Monitoring during construction
Wal 2	Cemetery	29° 05' 11.3460" E	25° 10' 04.2635" S	Demarcate and avoid (50 m buffer zone)
Wal 3	Ruin	29° 05' 04.8805" E	25° 10' 05.5704" S	Monitoring during construction

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 108 of 1998) and the associated 2014 Environmental Impact Assessment (EIA) Regulations, that I:</p> <ul style="list-style-type: none"> • I act as the 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 24F of the Act.
Signature	
Date	22/06/2018

a) Expertise of the specialist

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

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

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ABBREVIATIONS

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

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

GLOSSARY

Archaeological site (remains of human activity over 100 years old)

Early Stone Age (~ 2.6 million to 250 000 years ago)

Middle Stone Age (~ 250 000 to 40-25 000 years ago)

Later Stone Age (~ 40-25 000, to recently, 100 years ago)

The Iron Age (~ AD 400 to 1840)

Historic (~ AD 1840 to 1950)

Historic building (over 60 years old)

1 Introduction and Terms of Reference:

Heritage Contracts and Archaeological Consulting CC (HCAC) has been contracted to conduct a heritage impact assessment of the proposed borrow pit and quarry for the R573 road upgrade, Limpopo. The report forms part of the Basic Assessment (BA) Report and Environmental Management Programme Report (EMPR) for the development located within the Elias Motsoaledi Local Municipality of the Sekhukhune District Municipality and is located within the Province of Limpopo.

The aim of the study is to survey the proposed development footprint to identify cultural heritage sites, document, and assess their importance within local, provincial and national context. It serves to assess the impact of the proposed project on non-renewable heritage resources, and to submit appropriate recommendations with regard to the responsible cultural resources management measures that might be required to assist the developer in managing the discovered heritage resources in a responsible manner. It is also conducted to protect, preserve, and develop such resources within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999). The report outlines the approach and methodology utilized before and during the survey, which includes: Phase 1, review of relevant literature; Phase 2, the physical surveying of the area on foot and by vehicle; Phase 3, reporting the outcome of the study.

During the survey, 2 ruins and a grave site 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 the following report. SAHRA as a commenting authority under section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) require all environmental documents, compiled in support of an Environmental Authorisation application as defined by NEMA EIA Regulations section 40 (1) and (2), to be submitted to SAHRA. As such the Environmental Impact Report and its appendices must be submitted to the case officer as well as the EMPR, once it's completed by the Environmental Assessment Practitioner (EAP).

1.1 Terms of Reference

Field study

Conduct a field study to: (a) locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest; b) record GPS points of sites/areas identified as significant areas; c) determine the levels of significance of the various types of heritage resources affected by the proposed development.

Reporting

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

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

Table 3: Project Description

Size of farm and portions	Witfontein Borrow Pit 3 Farm name TBC 11.30 hectares Walkraal Quarry Farm Walkraal, 35, 7 18.38 hectares Elias Motsoaledi Local Municipality
Magisterial District	Elias Motsoaledi Local Municipality and Sekhukhune District Municipality
1: 50 000 map sheet number	2529AA
Central co-ordinate of the development	Witfontein Borrow Pit 3 25°13'52.17"S, 29° 3'28.46"E Walkraal Quarry 25°10'12.37"S, 29° 5'4.62"E

Infrastructure and project activities

Type of development	Development of a borrow pit and Quarry
----------------------------	--

Witfontein Borrow Pit 3

PHASE	ACTIVITIES
Planning and design phase	<ul style="list-style-type: none"> • Compliance with relevant environmental legislation and policy. • Designing the borrow pit taking into consideration the location of sites of ecological, archaeological and cultural significance. • Identifying location for stockpile and storage areas on the site. • Compilation of storm water management plan, dust management plan and a rehabilitation and alien vegetation management plan for the borrow pit. • Protected plant and tree relocation permits completed and submitted by appropriately qualified, registered and experienced botanist to Competent Authority. • Agreements between traditional authority and SANRAL to permit extraction of material from the borrow pit for road building purposes and returning the sites to the community for commercial mining purposes.
Site establishment / construction phase	<ul style="list-style-type: none"> • Erection of a temporary perimeter fence and installation of signage; • Upgrade of existing access road and ramp(s) to borrow pit sites; • Erection of security hut, parking areas, ablution facilities, generator, stormwater management infrastructure, loading area; • Construction of temporary refuelling and oil storage (bunded); • Clearing of vegetation; and • Stripping and stockpiling of topsoil.
Quarrying or Operational Phase	<ul style="list-style-type: none"> • Extraction of natural gravel (G5 and G7) material using TLBs/excavators; • Temporary stockpiling of mined gravel suitable for road upgrades/construction; • Temporary stockpiling of material quarried, but unsuitable for road upgrades/construction; • Loading of gravel material suitable for road upgrades/construction onto haul trucks; and • Hauling of material to construction/work areas along Section 3 of the National Road R573.
Decommissioning Phase	<ul style="list-style-type: none"> • The removal of temporary structures and facilities; • Removal and appropriate disposal of waste materials (certificates of disposal required); • Removal of bunded areas; and • Removal of the temporary fence and signage.
Site rehabilitation and reinstatement	<ul style="list-style-type: none"> • Reshaping of the open void space; • Re-grading and resurfacing of the site; • Re-planting the site with locally indigenous plant species; • Post rehabilitation monitoring.

Walkraal Quarry

PHASE	ACTIVITIES
Planning and design phase	<ul style="list-style-type: none"> • Compliance with relevant environmental legislation and policy • Designing the quarry taking into consideration the location of sites of ecological, archaeological and cultural significance. • Identifying location for stockpile and storage areas on the site. • Compilation of storm water management plan, dust management plan and a rehabilitation and alien vegetation management plan for the quarry site. • Protected plant and tree relocation permits completed and submitted by appropriately qualified, registered and experienced botanist to Competent Authority. • Agreements between traditional authority and SANRAL to permit extraction of material from the quarry for road building purposes and returning the sites to the community for commercial mining purposes.
Site establishment / construction phase	<ul style="list-style-type: none"> • Erection of a temporary perimeter fence and installation of signage; • Construction of access road and ramp(s) to borrow pit sites; • Erection of security hut, parking areas, ablution facilities, generator, stormwater management infrastructure, loading area; • Construction of temporary refuelling and oil storage (bunded); • Clearing of vegetation; and • Stripping and stockpiling of topsoil.
Quarrying or operation phase	<ul style="list-style-type: none"> • Drill and blast according to the Rock Engineers report and Geotechnical studies and as per mining sequence and schedule; • Load run of mine (RoM) onto ADT's using suitably sized Hydraulic Excavators; • Crush and screen RoM to suitable sizes using a power crusher and Screen; • Stockpile crushed and screened material onto selected stockpiles by means of Payloaders and ADT's; • Surveying of quarry on a bi-weekly basis to determine volumes; • Load graded material onto haul trucks using payloaders; and • Hauling of material to construction/work areas along Section 3 of the National Road R573.
Decommissioning and closure phase	<ul style="list-style-type: none"> • The removal of temporary structures and facilities; • Removal and appropriate disposal of waste materials (certificates of disposal required); • Removal of bunded areas; and • Removal of the temporary fence and signage.
Site rehabilitation and reinstatement	<ul style="list-style-type: none"> • Reshaping of the open void space; • Re-grading and resurfacing of the site; • Re-planting the site with locally indigenous plant species; • Post rehabilitation monitoring.

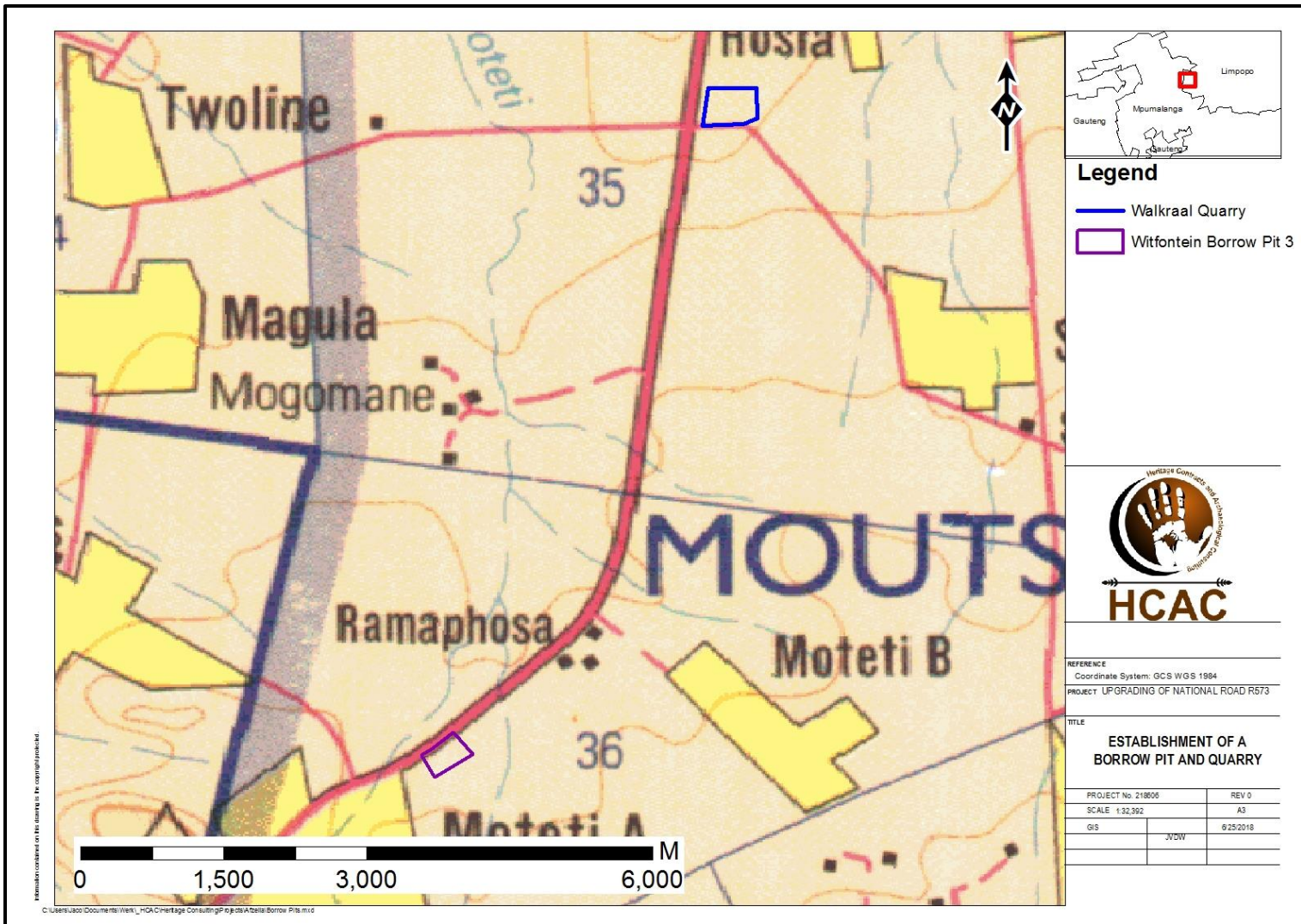


Figure 1. Provincial locality map (1: 250 000 topographical map)

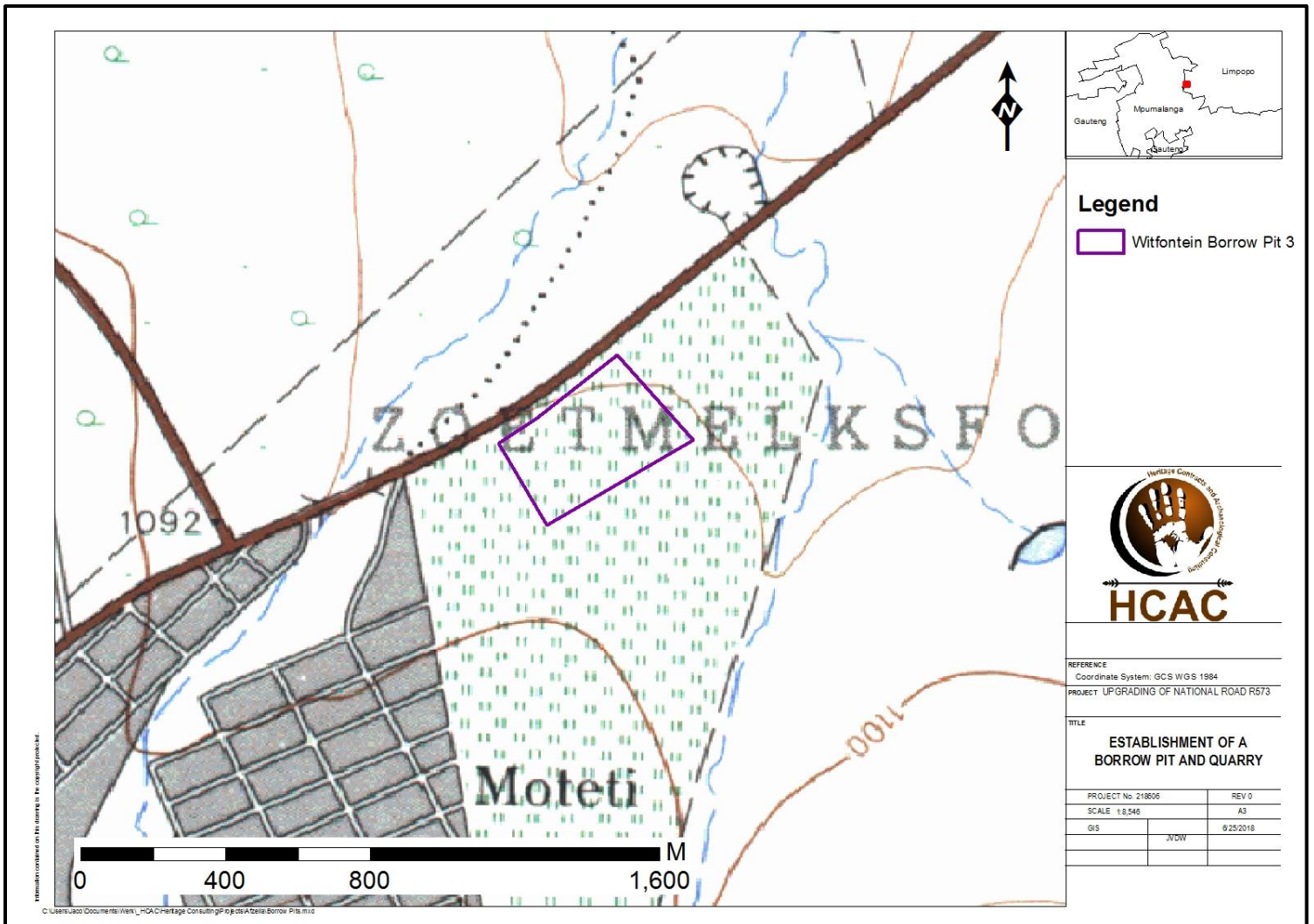


Figure 2: Regional locality map (1:50 000 topographical map) – Witfontein Borrow Pit 3

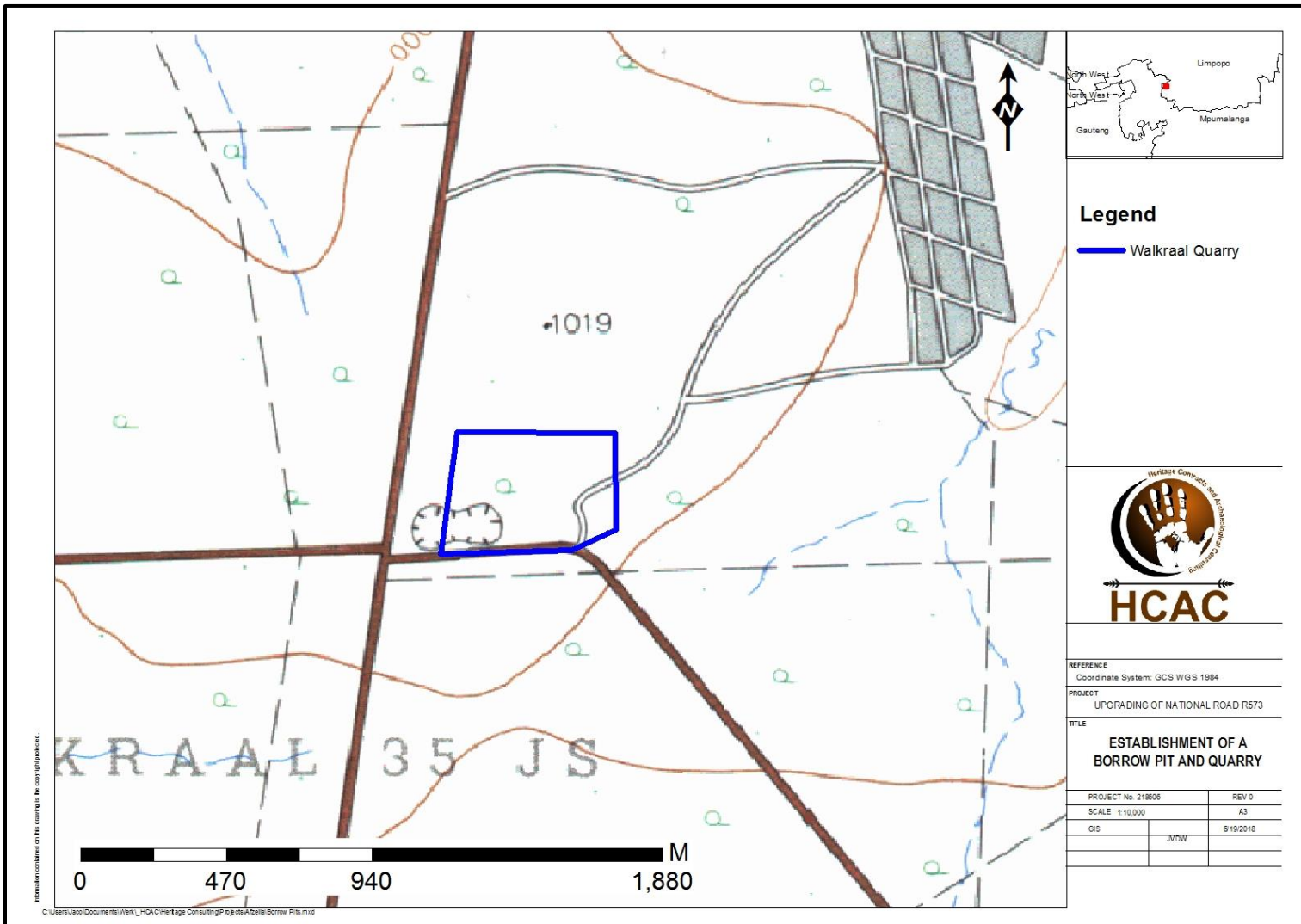


Figure 3. Regional locality map (1:50 000 topographical map) – Walkraal Quarry

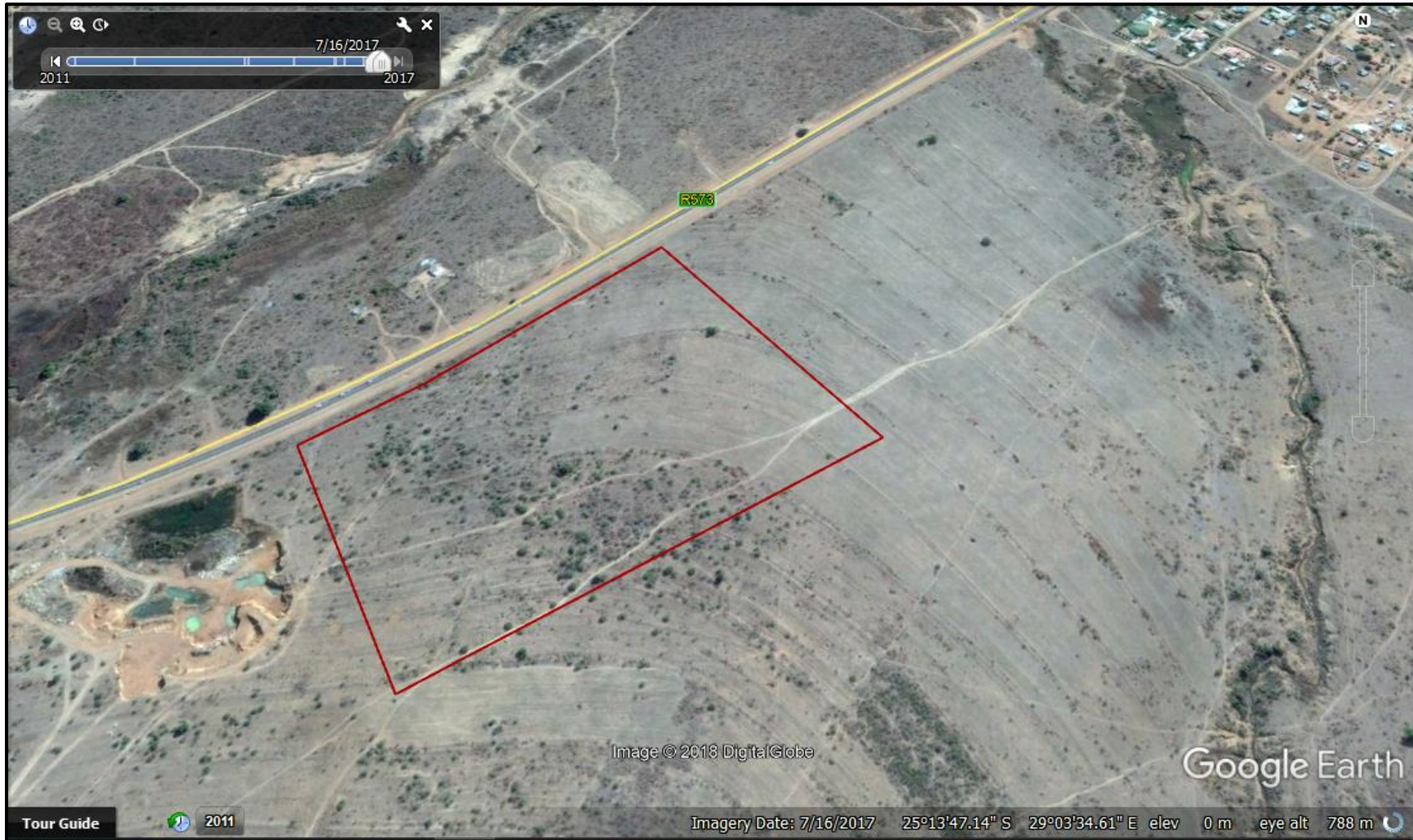


Figure 4. Satellite image indicating the study area in red (Google Earth 2018) –Witfontein Borrow Pit 3.



Figure 5. Satellite image indicating the study area in black (Google Earth 2018) – Walkraal Quarry.

2 Legislative Requirements

The HIA, as a specialist sub-section of the EIA, is required under the following legislation:

- National Heritage Resources Act (NHRA), Act No. 25 of 1999)
- National Environmental Management Act (NEMA), Act No. 107 of 1998 - Section 23(2)(b)
- Mineral and Petroleum Resources Development Act (MPRDA), Act No. 28 of 2002 - Section 39(3)(b)(iii)

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

- Identify any heritage resources, which may be affected;
- Assess the nature and degree of significance of such resources;
- Establish heritage informants/constraints to guide the development process through establishing thresholds of impact significance;
- Assess the negative and positive impact of the development on these resources; and
- Make recommendations for the appropriate heritage management of these impacts.

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

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

Phase 1 AIA's are primarily concerned with the location and identification of heritage sites situated within a proposed development area. Identified sites should be assessed according to their significance. Relevant conservation or Phase 2 mitigation recommendations should be made. Recommendations are subject to evaluation by SAHRA.

Conservation or Phase 2 mitigation recommendations, as approved by SAHRA, are to be used as guidelines in the developer's decision-making process.

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

In the event of a site conservation option being preferred by the developer, a site management plan, prepared by a professional archaeologist and approved by SAHRA, will suffice as minimum requirement.

After mitigation of a site, a destruction permit must be applied for with SAHRA by the applicant before development may proceed.

Human remains older than 60 years are protected by the National Heritage Resources Act, with reference to Section 36. Graves older than 60 years, but younger than 100 years fall under Section 36 of Act 25 of 1999 (National Heritage Resources Act), as well as the Human Tissues Act (Act 65 of 1983) and are the jurisdiction of SAHRA. The procedure for Consultation Regarding Burial Grounds and Graves (Section 36[5]) of Act 25 of 1999) is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in this age category, located inside a formal cemetery administrated by a local authority, require the same authorisation as set out for graves younger than 60 years, in addition to SAHRA authorisation. If the grave is not situated inside a formal cemetery, but is to be relocated to one, permission from the local authority is required and all regulations, laws and by-laws, set by the cemetery authority, must be adhered to.

Human remains that are less than 60 years old are protected under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance No. 7 of 1925), as well as the Human Tissues Act (Act 65 of 1983) and are the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the office of the relevant Provincial Premier. This function is usually delegated to the Provincial MEC for Local Government and Planning; or in some cases, the MEC for Housing and Welfare. Authorisation for exhumation and reinternment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. To handle and transport human remains, the institution conducting the relocation should be authorised under Section 24 of Act 65 of 1983 (Human Tissues Act).

3 METHODOLOGY

3.1 Literature Review

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

3.2 Genealogical Society and Google Earth Monuments

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

3.3 Public Consultation and Stakeholder Engagement:

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

- Placement of advertisements and site notices;
- Stakeholder notification (through the dissemination of information and meeting invitations);
- Stakeholder meetings undertaken with I&APs;
- Authority Consultation;
- The compilation of a Scoping report and Environmental Impact Report and opportunity for I&APs to comment on the draft reports.
- The compilation of a Comments and Response Report (CRR).

3.4 Site Investigation

Conduct a field study to: a) systematically survey the proposed project area to locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest; b) record GPS points of sites/areas identified as significant areas; c) determine the levels of significance of the various types of heritage resources recorded in the project area.

The recorded heritage resources were named using an abbreviation for the Site name (Wal) and the site number, for example Wal 1.

Table 4: Site Investigation Details

	Site Investigation
Date	7 and 8 June 2018
Season	Winter - vegetation in the study area is low and archaeological visibility is good. The impact area was however sufficiently covered (Figure 6 and 7) to adequately record the presence of heritage resources.

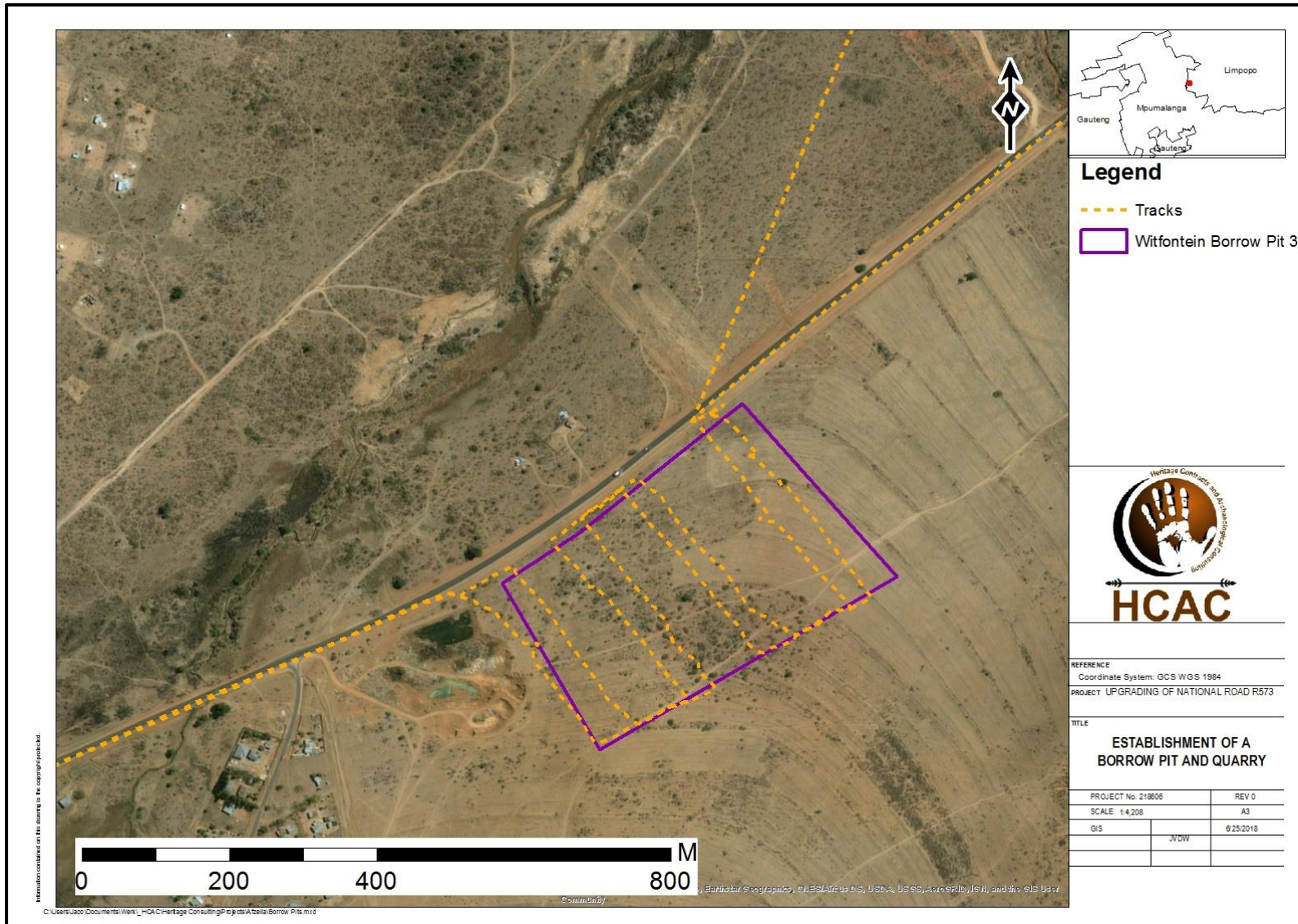


Figure 6: Track logs of the survey in yellow – Witfontein Borrow Pit 3.

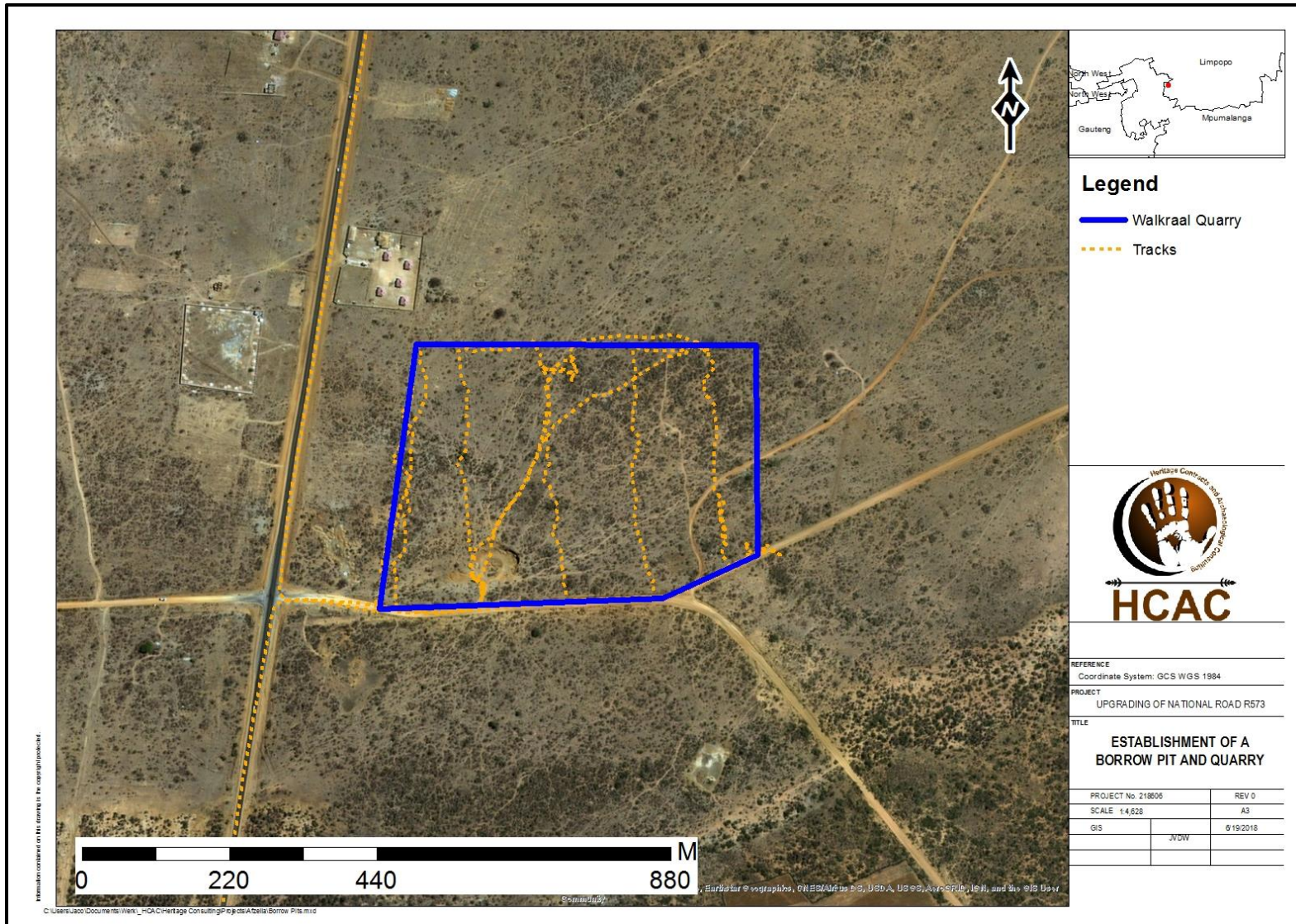


Figure 7. Track logs of the survey in yellow – Walkraal quarry

3.5 Site Significance and Field Rating

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

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

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

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

In addition to this criteria field ratings prescribed by SAHRA (2006), and acknowledged by ASAPA for the SADC region, were used for the purpose of this report. The recommendations for each site should be read in conjunction with section 10 of this report.

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; and
 - the **status**, which will be described as either positive, negative or neutral.
 - the degree to which the impact can be reversed.
 - the degree to which the impact may cause irreplaceable loss of resources.
 - the *degree* to which the impact can be mitigated.

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

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

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

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

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

3.7 Limitations and Constraints of the study

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

4 Description of Socio Economic Environment

According to StatsSA the Elias Motsoaledi Local Municipality population size is 249 363. 97,9% of the population is African black, with the other population groups making up the remaining 2,1%. Of those aged 20 years and older, 1 in 5 (20,1%) have completed matric, 6,2% have some form of higher education and 24,2% have no form of schooling. Of the 53 678 economically active (employed or unemployed but looking for work) people in the municipality, 42,9% are unemployed. Of the 29 629 economically active youth (14 – 35 years) in the municipality, 52,7% are unemployed.

5 Description of the Physical Environment:

Witfontein Borrow Pit 3 falls within an area described as abandoned agricultural lands, whilst the Walkraal Quarry is located within an area described as bushveld. The area is rural by nature, with both sites used for grazing.

Approximately 0.5 hectares of Walkraal Quarry has been mined by the local communities in the recent past. Both sites are utilised as dumping sites for general household waste and building rubble from the surrounding villages.

The vegetation type of the study areas for the borrow pit and quarry has been defined as Central Sandy Bushveld at a national scale (Mucina and Rutherford, 2006). Central Sandy Bushveld is located within Limpopo, Mpumalanga, Gauteng and North-West occurring within a narrow irregular band along the western edge of the Springbokvlakte extending into a series of valleys and lower altitude areas in the vicinity of the Waterberg. The vegetation type generally comprises tall deciduous *Terminalia sericea* and *Burkea africana* woodland on deep sandy soils and low, broad-leaved *Combretum* sp. woodland on shallower sandy soils (Mucina and Rutherford, 2006). The sites show some signs of the original prevailing vegetation types, but it has been disturbed over most of the site.



Figure 8. Witfontein Borrow Pit 3 – General site conditions



Figure 9. General site conditions –Witfontein Borrow Pit 3



Figure 10. General site conditions Walkraal Quarry



Figure 11. General site conditions Walkraal Quarry

6 Results of Public Consultation and Stakeholder Engagement:

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

7 Literature / Background Study:

7.1 Literature Review

Wits Archaeological Data Bases

No previously recorded sites are on record for the 2529 AA topographic map at the Wits database (referenced 2009).

SAHRA Report Mapping Project

The SAHRIS and the SAHRA Report Mapping project (version 1) have two surveys on record, the first is to the west of the study area (van Schalkwyk 2007) and the other is to the east (Murimbika 2005). Both these studies also recorded no significant heritage resources.

7.1.1 Genealogical Society and Google Earth Monuments

No known grave sites are on record close to the study area.

7.2 General History of the area

7.2.1 Archaeology of the area

The archaeological record for the greater study area consists of the Stone Age and Iron Age.

7.2.1.1 The Stone Age

It is important to understand the social history of the surrounding area. It is essential to consider the history of towns in the vicinity of the property under investigation, since these social centres would have affected those individuals living close by. The city of Marble Hall is of obvious significance, as it is located close to the study area. The history of this area will be discussed.

J. S. Bergh's historical atlas of the four northern provinces of South Africa is a very useful source for the writing of local and regional histories. No signs of Stone Age or Iron Age terrains are present in the vicinity of Marble Hall. (Bergh 1999: 4-5, 7)

7.2.1.2 Iron Age

No major tribes seem to have settled near the area where Marble Hall is located today by the start of the nineteenth century, but the Kôpa Tribe was prominent in the area to the south thereof. (Bergh 1999: 10) In a few decades, the sociographic nature of the then Transvaal province would change forever. The Difaqane (Sotho), or Mfekane ("the crushing" in Nguni) was a time of bloody upheavals in Natal and on the Highveld, which occurred around the early 1820's until the late 1830's. (Bergh 1999: 109-115) It came about in response to heightened competition for land and trade and caused population groups like gun-carrying Griquas and Shaka's Zulus to attack other tribes. (Bergh 1999: 14; 116-119) Ndebele raiders moved through the area and displaced the Kôpa and various other tribes. (Bergh 1999: 110-111) It is not known if these events had a great influence on the area where the area under investigation is located today, but it is important to understand the social dynamics of this area.

7.2.1.3 Historical Background

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

By the late 1820's, a mass-movement of Dutch speaking people in the Cape Colony started advancing into the northern areas. This was due to feelings of mounting dissatisfaction caused by economical and other circumstances in the Cape. This movement later became known as the Great Trek. This migration resulted in a massive increase in the extent of that proportion of modern South Africa dominated by people of European descent. (Ross 2002: 39) As can be expected, the movement of whites into the northern provinces would have a significant impact on the black people who populated the land. By 1860, the population of whites in the central Transvaal was already very dense and the administrative machinery of their leaders was firmly in place. Many of the policies that would later be entrenched as legislation during the period of apartheid had already been developed. (Bergh 1999: 170)

7.2.1.4 Battles close to the study area

The discovery of diamonds and gold in the northern provinces had very important consequences for South Africa. After the discovery of these resources, the British, who at the time had colonized the Cape and Natal, had intentions of expanding their territory into the northern Boer republics. This eventually led to the Anglo-Boer War, which took place between 1899 and 1902 in South Africa, and which was one of the most turbulent times in South Africa's history. Even before the outbreak of war in October 1899 British politicians, including Sir Alfred Milner and Mr. Chamberlain, had declared that should Britain's differences with the Z.A.R. result in violence, it would mean the end of republican independence. This decision was not immediately publicized, and republican leaders based their assessment of British intentions on the more moderate public utterances of British leaders. Consequently, in March 1900, they asked Lord Salisbury to agree to peace on the basis of the status quo ante bellum. Salisbury's reply was; however, a clear statement of British war aims. (Du Preez 1977)

The skirmish that took place closest to where Marble Hall is located today is the battle at Vrieskraal. The British Commander, W. Kitchener, attacked the Boer troops of Commandant Muller on 16 Augustus 1901. (Bergh 1999: 54)

7.3 Cultural Landscape



Figure 12. 2017 Google Earth image showing the sites under investigation in relation to Walkraal, the R573, Moteti and other sites. (Google Earth 2017)

7.3.1 Walkraal Borrow Pit

This site is situated about three kilometres to the north east of Walkraal, just to the east of the R573 in Limpopo Province.

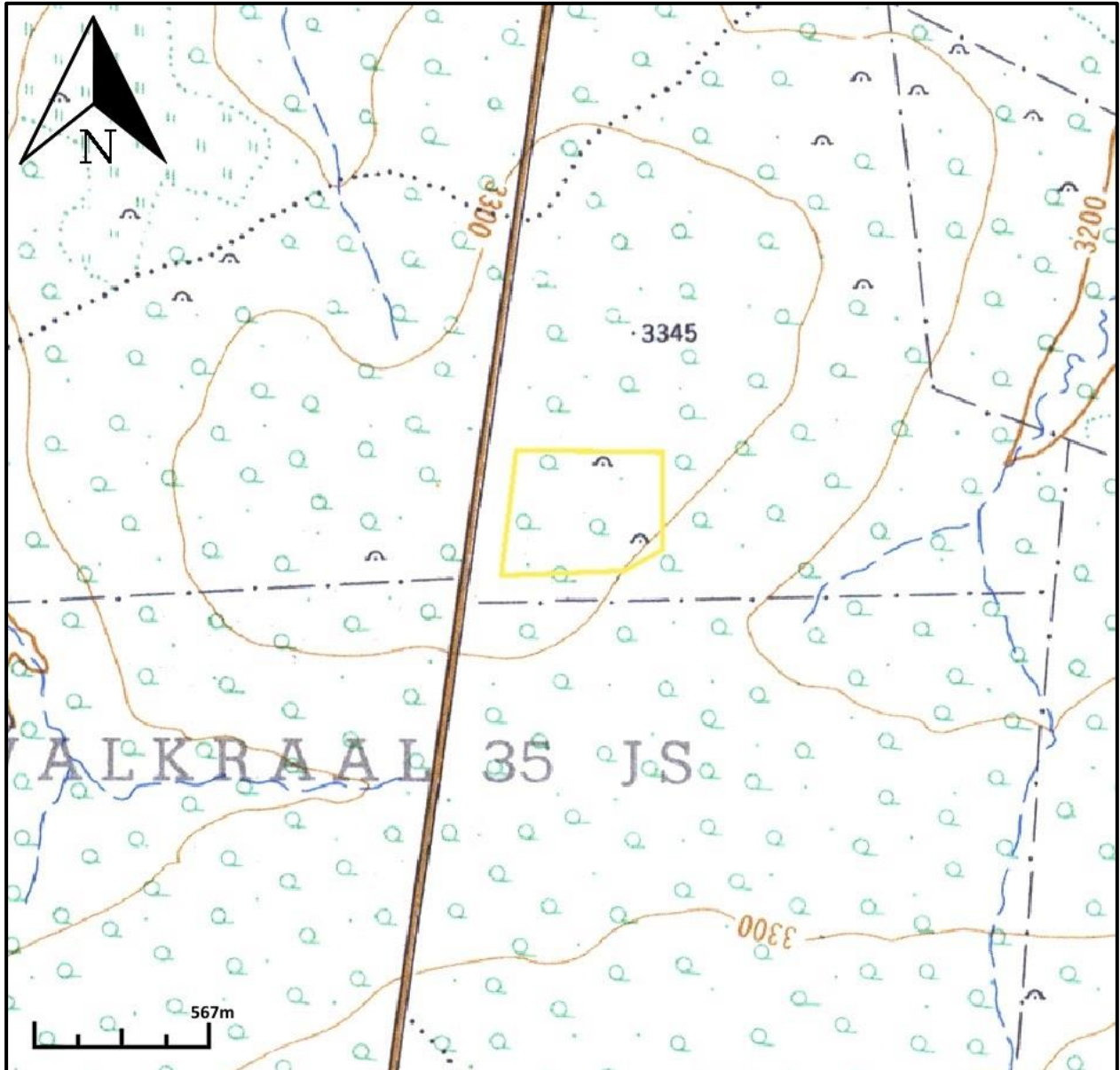


Figure 13. 1965 Topographical map of the site under investigation. The approximate study area is indicated with a yellow border. Natural trees and bush made up the vegetation in the study area, and two traditional huts can be seen. A secondary road can be seen to the west of the site. (Topographical Map 1965)

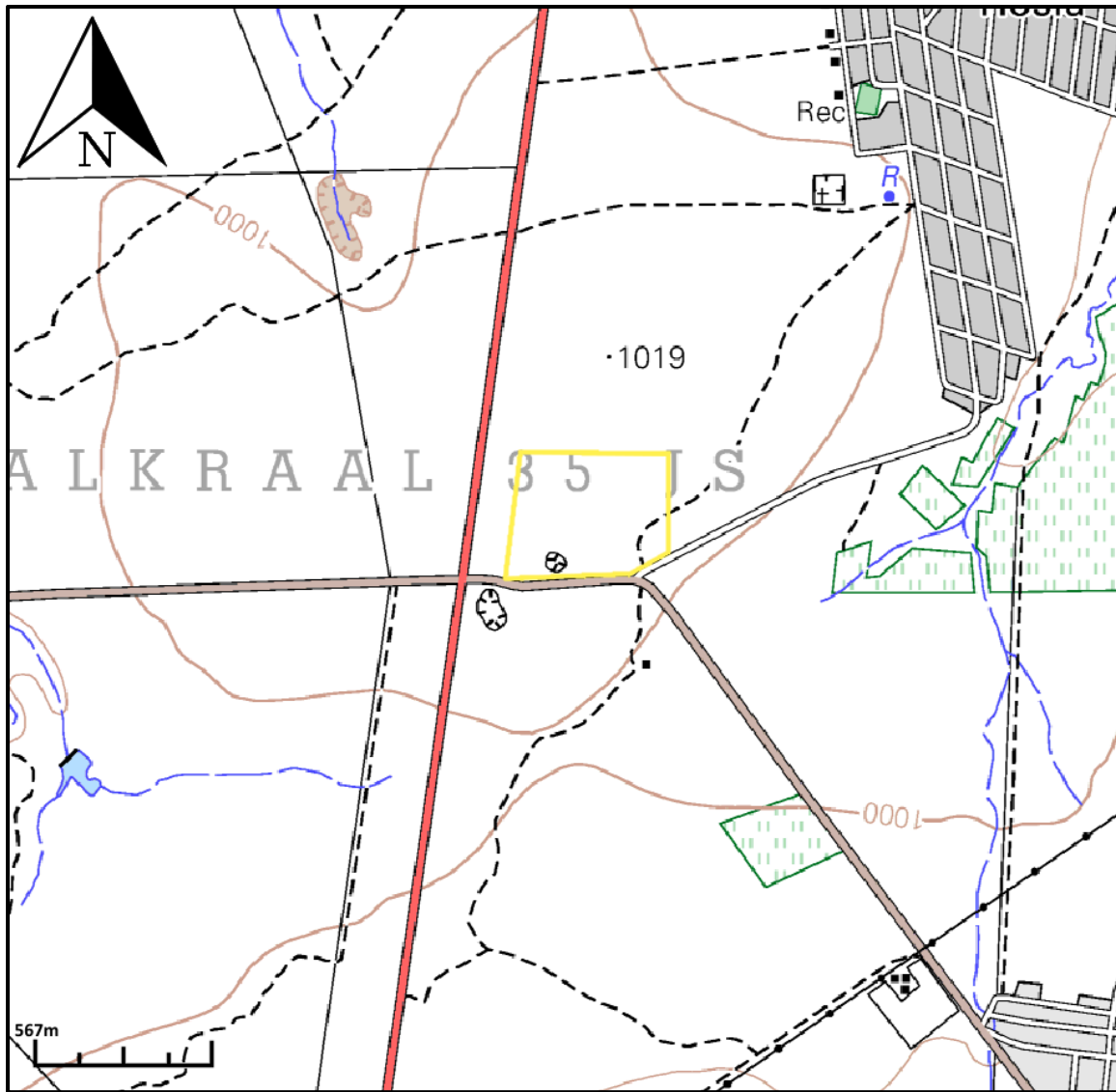


Figure 14. 2000 Topographical map of the site under investigation. The approximate study area is indicated with a yellow border. A small excavation site can be seen in the south western part of the study area, and a track / hiking trail went through the eastern part of the site. Another excavation site can be seen to the south west of the study area. A secondary road and a minor road formed the southern boundary of the study area, and a main road can be seen to the west of the site. (Topographical Map 2000).

7.3.2 Witfontein Borrow Pit 3

This site is situated about 10 km to the west of Dennilton, just to the south east of the R573, and close to the Moteti Village in Limpopo Province.

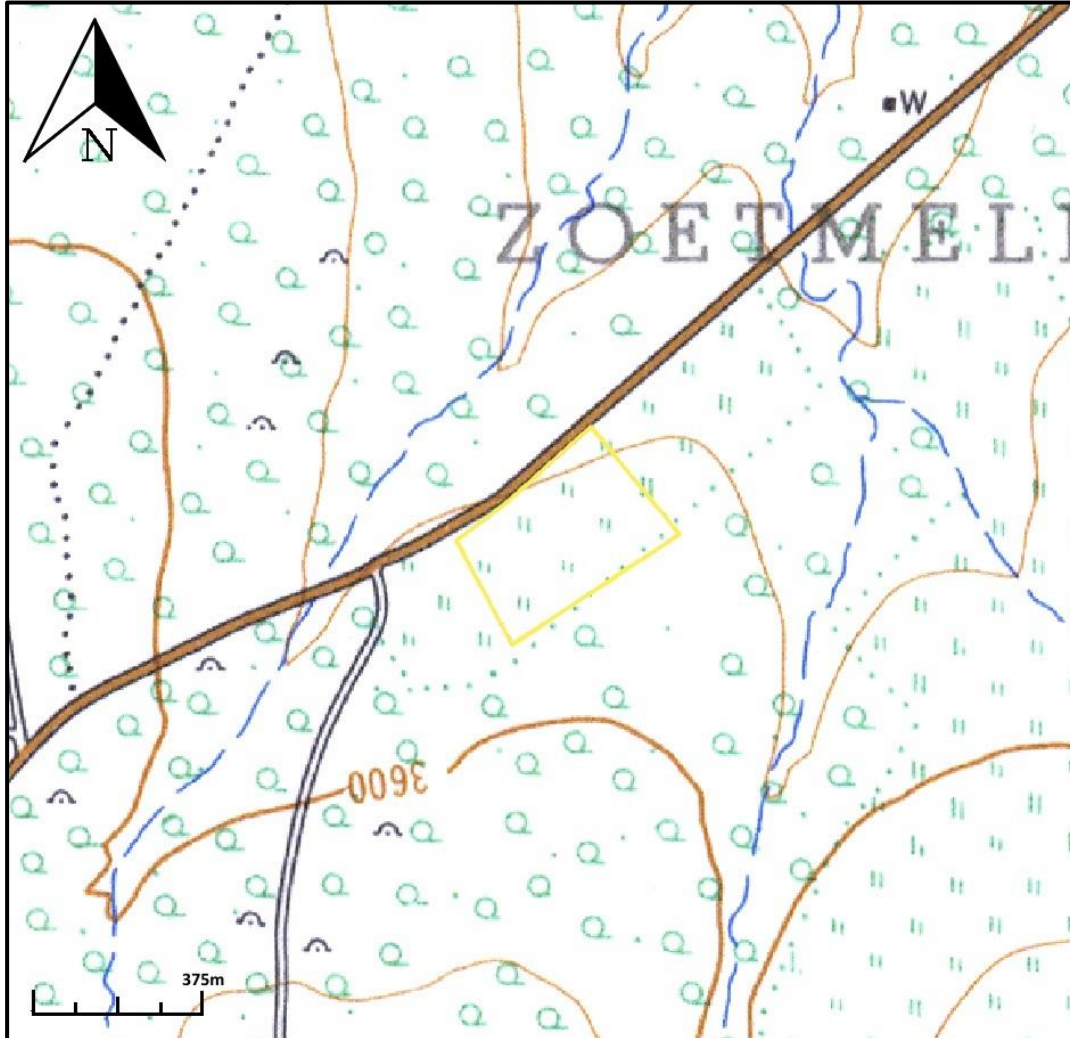


Figure 15. 1965 Topographical map of the site under investigation. The approximate study area is indicated with a yellow border. The site under investigation was used as cultivated lands at the time, and a secondary road formed the northern boundary of the site. (Topographical Map 1965)

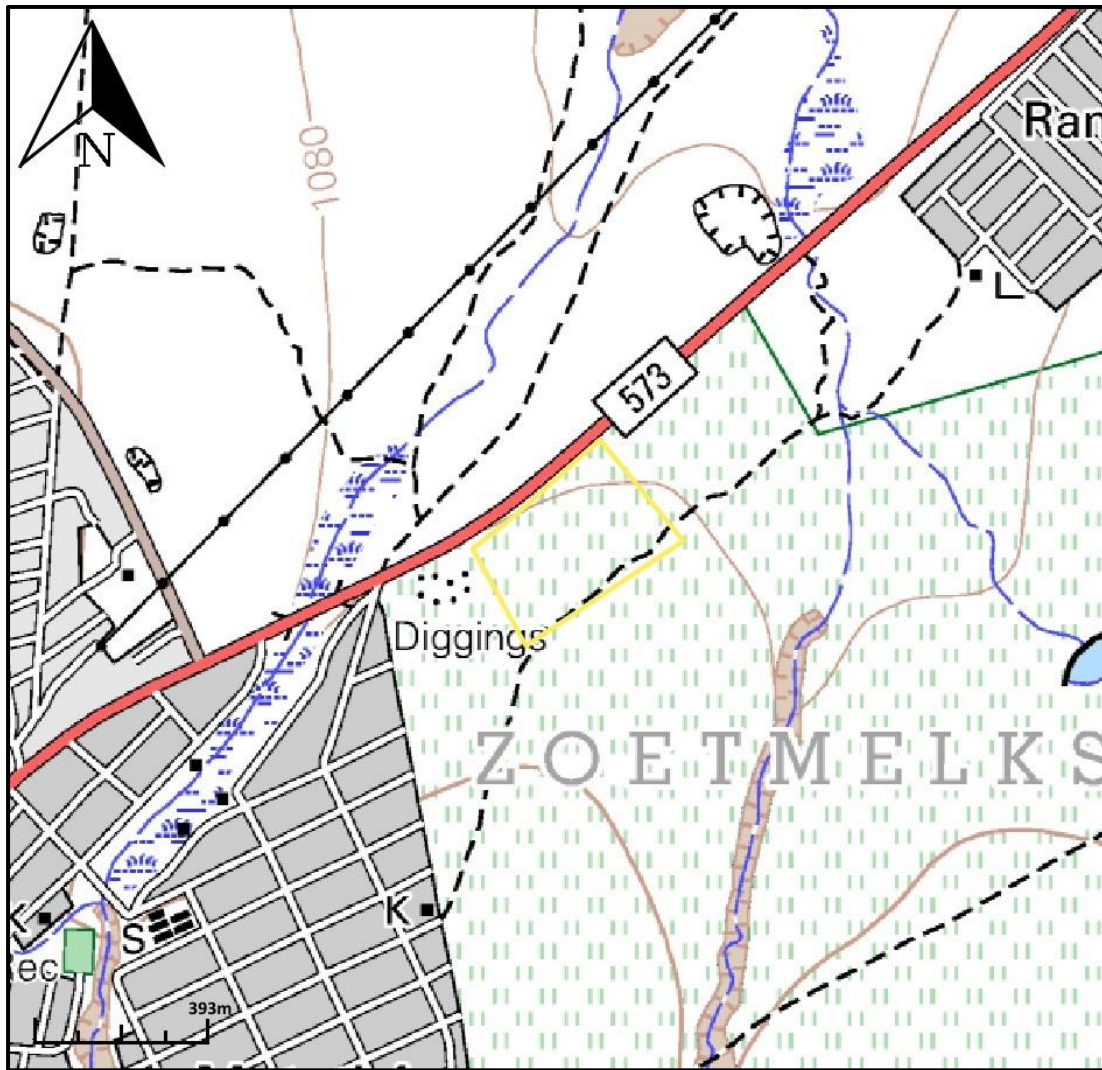


Figure 16. 2000 Topographical map of the site under investigation. The approximate study area is indicated with a yellow border. The approximate study area is indicated with a yellow border. The site under investigation was used as cultivated lands, and a track / hiking trail went through the south eastern part of the site. A main road formed the northern boundary of the study area. A diggings / excavation site can be seen directly to the west of the area under investigation. (Topographical Map 2000)

8 Findings of the Survey

Witfontein Borrow Pit 3 falls within an area previously used for agricultural activities. Walkraal Quarry is located within an area described as bushveld. The greater study area is rural by nature, with both sites used for grazing and collection of firewood.

Walkraal Quarry has been mined by the local communities in the recent past. Both sites are utilised as dumping sites for general household waste and building rubble from the surrounding villages. Three sites were located in the impact area of Walkraal Quarry – 2 ruins (Site 1 and 3) and a grave site (Site 2) (Figure 18) as described below.

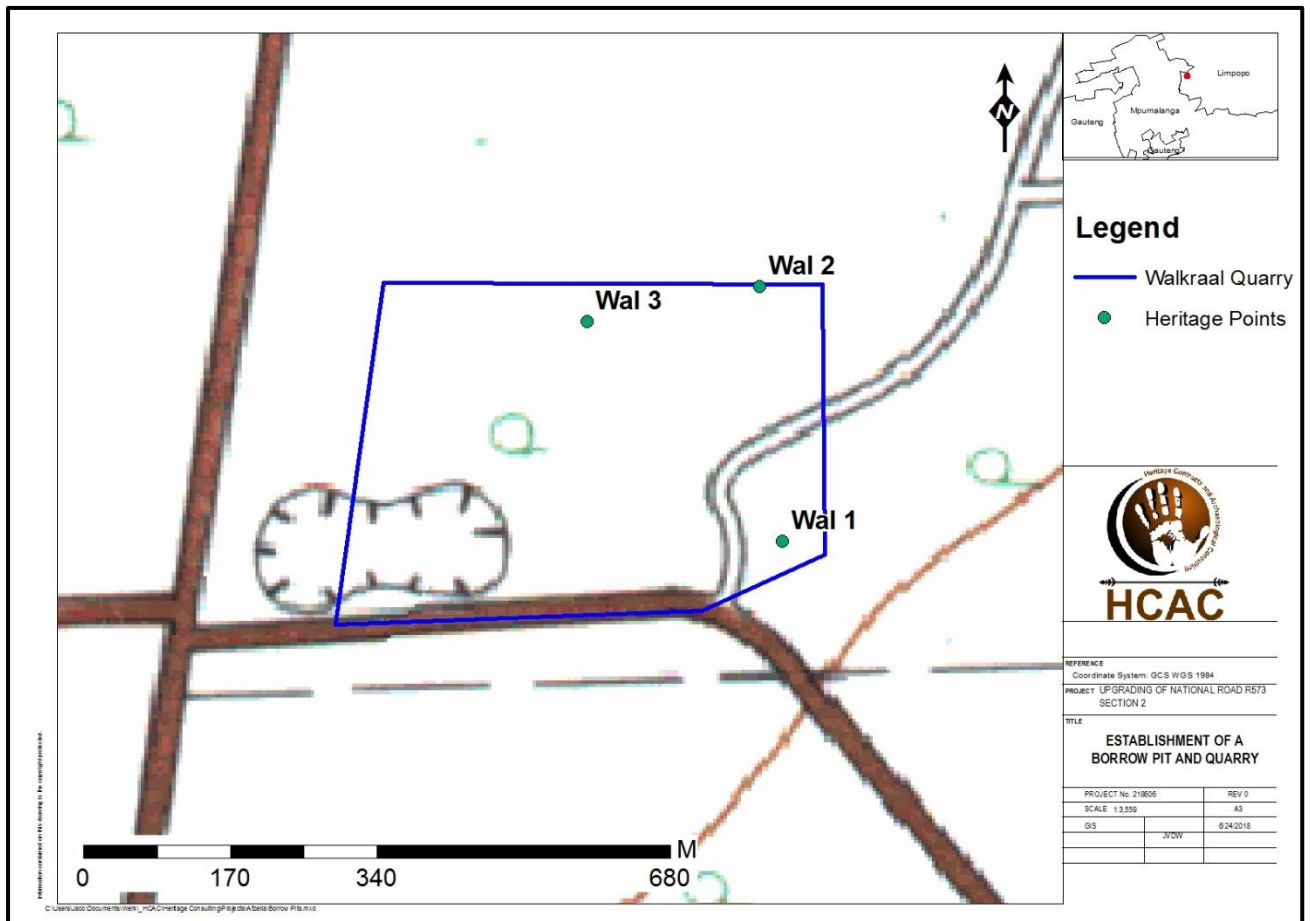


Figure 17. Sites in relation to the development.

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

9.1 Walkraal Quarry

9.1.1 Built Environment (Section 34 of the NHRA)

Two ruins (Site 1 and 3) of an unknown age were identified on site. Based on historical maps the area included two huts in 1965 but these were no longer indicated on subsequent maps. The structures have been completely destroyed and foundations are the only indicators of the sites. Site 1 (Figure 19 and 20) consist of two rectangular and a circular structure that was constructed with cement bricks. Site 3 (Figure 21 and 22) was constructed with mud bricks and consist of the foundations of a rectangular building with a lapa wall. Both the structures' potential to contribute to aesthetic, historic, scientific and social aspects are non-existent and it is therefore of no heritage significance. It should be noted that sites like these are known to contain unmarked graves and this should be confirmed during the social consultation process by the community liaison officer. No further actions are recommended prior to construction based on approval from SAHRA but should be monitored during construction.



Figure 18. Ruins in study area - Site 1



Figure 19. Ruins in study area –Site 1



Figure 20. Ruins at Site 3



Figure 21. Ruins at Site 3 in study area.

Field Rating: GP C - Low significance

9.1.2 Archaeological and paleontological resources (Section 35 of the NHRA)

No archaeological sites or material was recorded during the survey and based on the SAHRIS Paleontological Sensitivity Map (Figure 23) the area is of insignificant paleontological significance. Therefore, no further mitigation prior to construction is recommended in terms of Section 35 for the proposed development to proceed.



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 22. SAHRA Paleontological Sensitivity map indicating the approximate location of the study area (star) as of insignificant paleontological sensitivity.

9.1.3 Burial Grounds and Graves (Section 36 of the NHRA)

Graves

Site 2 (Figure 24 – 28) comprises a single grave with a granite headstone. The grave is aligned from east to west. Based on the inscription the grave is that of Mr Medupi Kleinbooi and dates to 1946.



Figure 23. General site conditions



Figure 24. Formal Grave in study area.



Figure 25. General site conditions - grave



Figure 26. General site conditions - grave

If any additional graves are located in future they should ideally be preserved *in-situ* or alternatively relocated according to existing legislation.

Field Rating: GP A - High Social significance

9.2 Witfontein Borrow Pit 3

9.2.1 Built Environment (Section 34 of the NHRA)

No structures older than 60 years were recorded in the study area. No further actions are recommended based on approval from SAHRA.

9.2.2 Archaeological and paleontological resources (Section 35 of the NHRA)

No archaeological sites or material was recorded during the survey and based on the SAHRIS Paleontological Sensitivity Map (Figure 28) the area is of insignificant paleontological significance. Therefore, no further mitigation prior to construction is recommended in terms of Section 35 for the proposed development to proceed.



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 27. SAHRA Paleontological Sensitivity map indicating the approximate location of the study area (star) as of insignificant paleontological sensitivity.

9.2.3 Burial Grounds and Graves (Section 36 of the NHRA)

In terms of Section 36 of the Act no burial sites were recorded. If any additional graves are located in future they should ideally be preserved *in-situ* or alternatively relocated according to existing legislation.

9.3 Cultural Landscapes, Intangible and Living Heritage.

Long term impact on the cultural landscape is considered to be negligible as the surrounding area consists of a mostly undeveloped area characterised by township developments. Visual impacts to scenic routes and sense of place are also considered to be low due to the extensive developments in the area.

9.4 Battlefields and Concentration Camps

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

10 Potential Impact

The chances of impacting unknown archaeological sites in the study area is considered to be negligible. If the correct mitigation measures are implemented, impacts on the graves can be avoided. The ruins are of low significance as the structures have been completely destroyed. The sites should be monitored during construction to avoid additional impacts. Any direct impacts that did occur would be during the construction phase only. Cumulative impacts occur from the combination of effects of various impacts on heritage resources. The importance of identifying and assessing cumulative impacts is that the whole is greater than the sum of its parts. In the case of the development, it will, with the recommended mitigation measures and management actions, not impact any significant heritage resources directly. However, this and other projects in the area could have an indirect impact on the heritage landscape.

10.1.1 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 needed for the construction phase. These activities can have a negative and irreversible impact on heritage sites. Impacts include destruction or partial destruction of non-renewable heritage resources.

It is unclear whether the structures would be demolished or incorporated within the proposed development. However, the assessment assumes total demolition. It has very low heritage significance which means that the extent of the impact can be regarded as site-specific. The impact significance is low but if the structure is retained and incorporated in the development then it would be very low.

10.1.2 Construction Phase

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

10.1.3 Operation Phase

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

10.2 Impact assessment and mitigation measures

10.2.1 Witfontein Borrow Pit 3

Table 5. Impact Assessment of the project on heritage resources at Borrow Pit 3

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 material or objects.		
	Without mitigation	With mitigation (Preservation/ excavation of site)
Extent	Local (1)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Low (2)	Low (2)
Probability	Not probable (2)	Not probable (2)
Significance	16 (Low)	16 (Low)
Status (positive or negative)	Negative	Negative
Reversibility	Not reversible	Not reversible
Irreplaceable loss of resources?	No resources were recorded	No resources were recorded.
Can impacts be mitigated?	Yes, a chance find procedure should be implemented.	Yes
Mitigation: Due to the lack of apparent significant archaeological resources no further mitigation is required prior to construction.		
Cumulative impacts: A Chance Find Procedure should be implemented for the project should any sites be identified during the construction process.		
Residual Impacts: If sites are destroyed this results in the depletion of archaeological record of the area. However, if sites are recorded and preserved or mitigated this adds to the record of the area.		

Table 6. EMPR management measures

OBJECTIVE: To preserve and mitigate non-renewable heritage resources in the study area.

Project component/s	Heritage resources can be impacted by the pre-construction and construction activities of the project.	
Potential Impact	Irreplaceable loss of heritage resources in the study area and depletion of the archaeological database of the area.	
Activity/risk source	Activities such as vegetation clearing and construction could destroy archaeological resources.	
Mitigation: Target/Objective	An environmental management plan that considers heritage resources in the event of any future extensions of infrastructure or identification of heritage resources.	
Mitigation: Action/control	Responsibility	Timeframe
Implement a Chance Finds Procedure to ensure that if any heritage resources are uncovered that these are reported and correctly mitigated.	ECO	Daily
Performance Indicator	<ul style="list-style-type: none"> Heritage impacts should be considered in any future development in the area. 	
Monitoring	NA	

10.2.2 Walkraal Quarry

Table 7. Impact Assessment of the project on heritage resources

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 material or objects.		
	Without mitigation	With mitigation (Preservation/ excavation of site)
Extent	Local (3)	Local (3)
Duration	Permanent (5)	Permanent (5)
Magnitude	Low (4)	Low (2)
Probability	Probable (3)	Not probable (2)
Significance	36 (Medium)	20 (Low)
Status (positive or negative)	Negative	Negative
Reversibility	Not reversible	Not reversible
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	Yes
Mitigation: Graves and cemeteries are of high social significance, it is recommended that the cemeteries should be demarcated and preserved <i>in situ</i> . The ruins are of low significance as the structures have been completely destroyed, however it is recommended that a management plan including monitoring should be implemented during construction for both sites. Sites like these are often associated with unmarked graves and the presence of graves or lack thereof should be confirmed by the community liaison officer during the social consultation process. A chance find procedure should be implemented for the project.		
Cumulative impacts: The surrounding area is characterised by township and road developments and due to the lack of significant heritage resources that will be impacted on in the study area cumulative impacts are considered to be low.		
Residual Impacts: If sites are destroyed this results in the depletion of archaeological record of the area. However, if sites are recorded and preserved or mitigated this adds to the record of the area.		

Table 8. EMPR management measures

OBJECTIVE: To preserve and mitigate non-renewable heritage resources in the study area.

Project component/s	Heritage resources can be impacted by the pre-construction and construction activities of the project.
Potential Impact	Irreplaceable loss of heritage resources in the study area and depletion of the archaeological database of the area.
Activity/risk source	Activities such as vegetation clearing and construction could destroy archaeological resources.
Mitigation: Target/Objective	An environmental management plan that considers heritage resources in the event of any future extensions of infrastructure or identification of heritage resources. Preservation of the known grave.

Mitigation: Action/control	Responsibility	Timeframe
Implement a Chance Finds Procedure to ensure that if any heritage resources are uncovered that these are reported and correctly mitigated.	ECO	Daily

Performance Indicator	<ul style="list-style-type: none"> Graves should be retained in situ. Heritage impacts should be considered in any future development in the area. Implementation of a chance find procedure i.e. immediate reporting to relevant heritage authorities of any heritage feature discovered during any phase of development or operation of the facility.
Monitoring	The ECO should monitor the known heritage resources during construction and the possible occurrence of subsurface heritage resources regularly.

11 Recommendations and conclusion

HCAC was appointed to conduct a Heritage Impact Assessment of the proposed material sources developments (Borrow Pit 3 and Walkraal Quarry) that are located in an area that is characterised by township and road developments as well as previous mining and agricultural developments. Both the Walkraal Quarry and Borrow Pit 3 were assessed on desktop level and by a field survey. The field survey was conducted as a non-intrusive pedestrian survey to cover the extent of the study area as final development plans were not yet available at the time of the survey.

The succession of the previous agricultural/farming activities most probably resulted that most of the proposed sites are disturbed and damaged from a heritage point of view. All of these activities would have impacted on surface indicators of heritage features and no archaeological sites or material was recorded during the survey and according to the SAHRIS Paleontological Sensitivity Map both impact areas are of insignificant paleontological significance. Therefore, no further mitigation prior to construction is recommended in terms of Section 35 for the proposed development to proceed.

In terms of the built environment, 2 ruins (Site 1 and 3) were recorded within the proposed Walkraal Quarry footprint. The exact age of the structures is unknown and sites like these are known to contain unmarked graves. The presence of graves in this area should be confirmed by the community liaison officer during the social consultation process for the project and Site 1 and 3 should be monitored during construction.

In terms of Section 36 of the Act a single grave (Site 2) was recorded located within the Walkraal Quarry. It is recommended that the grave should be retained *in situ* and demarcated with an access gate and a buffer zone of 50 m. If any additional graves are identified they should ideally be preserved *in-situ* or as a last option relocated according to existing legislation. No public monuments are located within or close to the study area. The greater area is characterised by township and road developments and the proposed development will not impact negatively on significant cultural landscapes or viewsapes. During the public participation process conducted for the project no heritage concerns were raised.

The impact of the proposed project on heritage resources is considered low to medium and impacts can be mitigated to an acceptable level. It is therefore recommended that the proposed project can commence on the condition that the following recommendations are implemented as part of the EMPr together with site specific recommendations in Table 2 and based on approval from SAHRA:

- Implementation of a chance find procedure;
- Graves should be retained *in situ* with a 50 m buffer zone. If this is not possible the graves can be relocated adhering to all legal requirements.
- The presence of unmarked graves should be confirmed by the community liaison officer during the social consultation process especially in the region of Sites 1 and 3.
- Ruins should be monitored during construction

Recorded sites and proposed mitigation measures.

LABEL	LAYER	LONGITUDE	LATITUDE	Mitigation
Wal 1	Ruin	29° 05' 12.2063" E	25° 10' 13.8072" S	Monitoring during construction
Wal 2	Cemetery	29° 05' 11.3460" E	25° 10' 04.2635" S	Demarcate and avoid (50 m buffer zone)
Wal 3	Ruin	29° 05' 04.8805" E	25° 10' 05.5704" S	Monitoring during construction

11.1 Chance Find Procedures

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

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

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

11.2 Reasoned Opinion

From a heritage perspective, the proposed project is acceptable. If the above recommendations are adhered to and based on approval from SAHRA, HCAC is of the opinion that the development can continue as the development will not impact negatively on the heritage record of the area.

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MAPS

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13 Appendices:

Curriculum Vitae of Specialist

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Archaeologist

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Education:

Particulars of degrees/diplomas and/or other qualifications:

Name of University or Institution: University of Pretoria
Degree obtained : BA Heritage Tourism & Archaeology
Year of graduation : 2001

Name of University or Institution: University of the Witwatersrand
Degree obtained : BA Hons Archaeology
Year of graduation : 2002

Name of University or Institution : University of the Witwatersrand
Degree Obtained : MA (Archaeology)
Year of Graduation : 2012

Name of University or Institution : University of Johannesburg
Degree : PhD
Year : Currently Enrolled

EMPLOYMENT HISTORY:

2011 – Present: **Owner – HCAC (Heritage Contracts and Archaeological Consulting CC).**
 2007 – 2010 : **CRM Archaeologist**, Managed the Heritage Contracts Unit at the University of the Witwatersrand.
 2005 - 2007: **CRM Archaeologist**, Director of Matakoma Heritage Consultants
 2004: **Technical Assistant**, Department of Anatomy University of Pretoria
 2003: **Archaeologist**, Mapungubwe World Heritage Site
 2001 - 2002: **CRM Archaeologists**, For R & R Cultural Resource Consultants, Polokwane
 2000: **Museum Assistant**, Fort Klapperkop.

Countries of work experience include:

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

SELECTED PROJECTS INCLUDE:**Archaeological Impact Assessments (Phase 1)**

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

Archaeological Impact Assessment Mmamethlake Landfill

Archaeological Impact Assessment Libangeni Landfill

Linear Developments

Archaeological Impact Assessment Link Northern Waterline Project At The Suikerbosrand Nature Reserve

Archaeological Impact Assessment Medupi – Spitskop Power Line,

Archaeological Impact Assessment Nelspruit Road Development

Renewable Energy developments

Archaeological Impact Assessment Karoshoek Solar Project

Grave Relocation Projects

Relocation of graves and site monitoring at Chloorkop as well as permit application and liaison with local authorities and social processes with local stakeholders, Gauteng Province.

Relocation of the grave of Rifle Man Maritz as well as permit application and liaison with local authorities and social processes with local stakeholders, Ndumo, Kwa Zulu Natal.

Relocation of the Magolwane graves for the office of the premier, Kwa Zulu Natal

Relocation of the OSuthu Royal Graves office of the premier, Kwa Zulu Natal

Phase 2 Mitigation Projects

Field Director for the Archaeological Mitigation For Booyensdal Platinum Mine, Steelpoort, Limpopo Province. Principle investigator Prof. T. Huffman

Monitoring of heritage sites affected by the ARUP Transnet Multipurpose Pipeline under directorship of Gavin Anderson.

Field Director for the Phase 2 mapping of a late Iron Age site located on the farm Kameelbult, Zeerust, North West Province. Under directorship of Prof T. Huffman.

Field Director for the Phase 2 surface sampling of Stone Age sites effected by the Medupi – Spitskop Power Line, Limpopo Province

Heritage management projects

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

MEMBERSHIP OF PROFESSIONAL ASSOCIATIONS:

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

PUBLICATIONS AND PRESENTATIONS

- A Culture Historical Interpretation, Aimed at Site Visitors, of the Exposed Eastern Profile of K8 on the Southern terrace at Mapungubwe.
 - J van der Walt, A Meyer, WC Nienaber
 - Poster presented at Faculty day, Faculty of Medicine University of Pretoria 2003
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 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2004
- A War Uncovered: Human Remains from Thabantšho Hill (South Africa), 10 May 1864.
 - M. Steyn, WS Boshoff, WC Nienaber, J van der Walt
 - Paper read at the 12th Congress of the Pan-African Archaeological Association for Prehistory and Related Studies 2005
- Field Report on the mitigation measures conducted on the farm Bokfontein, Brits, North West Province .
 - J van der Walt, P Birkholtz, W. Fourie
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2007
- Field report on the mitigation measures employed at Early Farmer sites threatened by development in the Greater Sekhukhune area, Limpopo Province. J van der Walt
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2008
- Ceramic analysis of an Early Iron Age Site with vitrified dung, Limpopo Province South Africa.
 - J van der Walt. Poster presented at SAFA, Frankfurt Germany 2008

- Bantu Speaker Rock Engravings in the Schoemanskloof Valley, Lydenburg District, Mpumalanga (*In Prep*)
 - J van der Walt and J.P Celliers
- Sterkspruit: Micro-layout of late Iron Age stone walling, Lydenburg, Mpumalanga. W. Fourie and J van der Walt. A Poster presented at the Southern African Association of Archaeologists Biennial Conference 2011
- Detailed mapping of LIA stone-walled settlements' in Lydenburg, Mpumalanga. J van der Walt and J.P Celliers
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2011
- Bantu-Speaker Rock engravings in the Schoemanskloof Valley, Lydenburg District, Mpumalanga. J.P Celliers and J van der Walt
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2011
- Pleistocene hominin land use on the western trans-Vaal Highveld ecoregion, South Africa, Jaco van der Walt.
 - J van der Walt. Poster presented at SAFA, Toulouse, France. Biennial Conference 2016

REFERENCES:

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