PHASE 1 ARCHAEOLOGICAL/ HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED ESTABLISHMENT OF AN INTEGRATED SUSTAINABLE HUMAN SETTLEMENT ON PORTIONS 8 OF THE FARM BUHRMANNS TAFELKOP 135 IT, MSUKALINGWA LOCAL MUNICIPALITY, MPUMALANGA PROVINCE.

AUGUST 2020

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DOCUMENT INFORMATION

Item	Description
Proposed development and location	Proposed establishment of an integrated sustainable human settlement on Portions 8 of the farm Buhrmanns Tafelkop 135 IT, Msukalingwa Local Municipality, Mpumalanga Province**.**
Title	Phase 1 Heritage Impact Assessment for proposed establishment of an integrated sustainable human settlement on Portions 8 of the farm Buhrmanns Tafelkop 135 IT, Msukalingwa Local Municipality, Mpumalanga Province.
Purpose of the study	The purpose of this study is an Archaeological and Heritage Impact Assessment report that describes the cultural values and heritage factors that may be impacted on by the proposed development
1:50 000 Topographic Map	2730AB
Coordinates	S26° 29' 36.36"and S30° 00' 15.35".,
Municipalities	Msukaligwa Local Municipality
Predominant land use of surrounding area	Residential and associated infrastructure, road and transport
Developer/Applicant	**MPUMALANGA DEPARTMENT OF HUMAN SETTLEMENTS** Government Blvd, Riverside Park Private Bag X 11328, Nelspruit. 1201 Tel: 013 766 6088 Fax: 013 766 8441 Website: dhs.mpg.gov.za
Heritage Consultant	Integrated Specialist Services (Pty) Ltd
Date of Report	12 August 2020
EAP	**OURA SOLUTIONS** Constantia Park, Building 16-2, 546, 16th Road, Midrand, 1685 **C**ell: 076 328 1558 Fax: 086 652 9774, **E**-mail: ourasolutions@gmail.com
Author Identification	Trust Mlilo (Archaeologist and Heritage specialist).

NATIONAL LEGISLATION AND REGULATIONS GOVERNING THIS REPORT

This is a specialist report' and is compiled in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014.

DECLARATION OF INDEPENDENCE

In terms of Chapter 5 of the National Environmental Management Act of 1998 specialists involved in Impact Assessment processes must declare their independence.

I, **Trust Mlilo**, do hereby declare that I am financially and otherwise independent of the client and their consultants, and that all opinions expressed in this document are substantially my own, notwithstanding the fact that I have received fair remuneration from the client for preparation of this report.

Expertise:

Trust Mlilo, MA. (Archaeology), BA Hons, PDGE and BA & (Univ. of Pretoria) ASAPA (affiliation member) and more than 15 years of experience in archaeological and heritage impact assessment and management. Mlilo is an accredited member of the Association for Southern African Professional Archaeologists (ASAPA), Amafa akwaZulu Natali and Eastern Cape Heritage Resources Agency (ECPHRA). He has conducted more than hundred AIA/HIA Studies, heritage mitigation work and heritage development projects over the past 15 years of service. The completed projects vary from Phase 1 and Phase 2 as well as heritage nomination work for government, parastatals (Eskom) and several private companies such as BHP Billiton, Rhino Minerals and GIBB.

Independence

The views expressed in this document are the objective, independent views of Mr Trust Mlilo and the survey was carried out under OURA Solutions (Pty) Ltd. Integrated Specialist Services (Pty) Ltd has no any business, personal, financial or other interest in the proposed development apart from fair remuneration for the work performed.

Conditions relating to this report

The content of this report is based on the author's best scientific and professional knowledge as well as available information. Integrated Specialist Services (Pty) Ltd reserves the right to modify the report in any way deemed fit should new, relevant or previously unavailable or undisclosed information become known to the author from on-going research or further work in this field or pertaining to this investigation.

This report must not be altered or added to without the prior written consent of the author and OURA Solutions (Pty) Ltd. This also refers to electronic copies of the report which are supplied for the purposes of inclusion as part of other reports, including main reports. Similarly, any recommendations, statements or conclusions drawn from or

based on this report must refer to this report. If these form part of a main report relating to this investigation or report, this report must be included in its entirety as an appendix or separate section to the main report.

Authorship: This AIA/HIA Report has been prepared by Mr Trust Mlilo and Mr Joshua Kumbani (Professional Archaeologists). The report is for the review of the Heritage Resources Agency (PHRA).

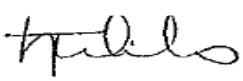
Geographic Co-ordinate Information: Geographic co-ordinates in this report were obtained using a hand-held Garmin Global Positioning System device. The manufacturer states that these devices are accurate to within +/- 5 m.

Maps: Maps included in this report use data extracted from the NTS Map and Google Earth Pro.

Disclaimer: The Authors are not responsible for omissions and inconsistencies that may result from information not available at the time this report was prepared.

The Archaeological and Heritage Impact Assessment Study was carried out within the context of tangible and intangible cultural heritage resources as defined by the SAHRA Regulations and Guidelines as to the authorisation of proposed development being proposed by Mpumalanga Department of Human Settlements

Signed by



12/ 08/ 2020

ACKNOWLEDGEMENTS

The author acknowledges OURA Solutions (Pty) Ltd team for their assistance with project information, and the associated project BID as well as responding to technical queries related to the project.

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EXECUTIVE SUMMARY

This Archaeological and Heritage Impact Assessment (AIA/HIA) Report has been prepared to address requirements of Section 38 of the National Heritage Resources Act, Act 25 of 1999 (NHRA). Integrated Specialist Services (Pty) Ltd was retained by OURA Solutions (Pty) Ltd to conduct this Archaeological and Heritage Impact Assessment (AIA/HIA) study for the Proposed establishment of an integrated sustainable human settlement on Portions 8 of the farm Buhrmanns Tafelkop 135 IT, Msukalingwa Local Municipality, Mpumalanga Province. The proposed project is located in the Msukaligwa Local Municipality, Mpumalanga Province. This report comprises an impact study on potential archaeological and cultural heritage resources that may be associated with the proposed development project. This study was conducted as part of the specialist input for the Basic Impact Assessment for the proposed development. The study covers 15 668 hectares of the farm Buhrmanns 135 IT. The site has been determined by the developer and project information has been passed to Integrated Specialist Service (Pty) Ltd research team by the project EAP. Analysis of the archaeological, cultural heritage, environmental and historic contexts of the study area predicted that archaeological sites, cultural heritage sites, burial grounds or isolated artefacts were likely to be present on the affected landscape. The field survey was conducted to test this supposition and verify this prediction within the proposed development site. The main urban residential areas in the project area is Ermelo.

The report makes the following observations:

- The findings of this report have been informed by desktop data review, field survey and impact assessment reporting which include recommendations to guide heritage authorities in making decisions with regards to the proposed project.
- The project area is accessible, and the field survey was effective enough to cover all sections of the project receiving environs.
- Although the possibility of archaeological or historical sites associated with the general project area is medium, however, from a contextual studies perspective, no medium to high significance archaeological, heritage landmark or monument was recorded during this study.

The report sets out the potential impacts of the proposed development on heritage matters and recommends appropriate protection and mitigation measures that are designed to minimize the impacts where appropriate. The Report makes the following recommendations:

1. From a heritage perspective supported by the findings of this study, the proposed township establishment is feasible. However, the proposed development should be approved to proceed as planned under observation that the development dimensions do not extend beyond the proposed site.
2. A management plan must be drawn for the burial site since it is not going to be relocated, the management plan will ensure protection of the recorded burial sites during construction and operational phase.
3. The identified burial sites must be mapped and fenced to protect it from uncontrolled access.

4. The project planners must provide for a minimum of 25m buffer zone around the burial sites and must provide access through the main entrance of the cemetery
5. Since the burial sites are not fenced currently, we recommend that a professional archaeologist must be appointed to monitor earth works and municipal services installation around the burial sites.
6. Construction workers must be inducted on the possibility of encountering archaeological resources that may be accidentally exposed during subsurface clearance before the commencement of work on the site to ensure appropriate mitigation measures and that course of action is afforded to any chance finds.
7. No stone robbing or removal of any material is allowed. Any disturbance or alteration on this graveyard would be illegal and punishable by law, under section 36 (3) of the National Heritage Resources Act NHRA of 1999 (Act 25 of 1999).
8. No dumping of construction material is allowed within the burial sites and no un-monitored alteration or excavation within the cemetery may occur.
9. Noteworthy that any measures to cover up any accidental damage of graves or to collect any grave goods is illegal and punishable by law. In the same manner, no person may exhume or collect such remains, whether of recent origin or not, without the endorsement by relevant authority.
10. The footprint impact of the proposed development should be kept to a minimal to limit the possibility of encountering chance finds.
11. From a Palaeontological perspective, the region is known for its fossiliferous shales and sandstones and it is highly probable that fossils will be encountered when the intact bedrock under the soil cover and layer of eroded rock is exposed during construction.
12. If an exceptionally fossil-rich layer of shale or sandstone is exposed during construction, it is advised that the ECO must follow the Chance Palaeontological Find Procedure as stipulated below and to contact a palaeontologist for further advice
13. Should chance archaeological materials or human remains be exposed during subsurface construction work on any section of the proposed development laydown sites, work should cease on the affected area and the discovery must be reported to the heritage authorities immediately so that an investigation and evaluation of the finds can be made. The overriding objective, where remedial action is warranted, is to minimize disruption in construction scheduling while recovering archaeological and any affected cultural heritage data as stipulated by the NHRA regulations (see appended Chance Find Procedure)
14. The Project Public Participation Process should ensure that any cultural heritage related matters for this project are given due attention whenever they arise and are communicated PHRA throughout the proposed project development. This form of extended community involvement would pre-empty any potential disruptions that may arise from previously unknown cultural heritage matter that may have escaped the attention of this study.

15. Subject to the recommendations herein made and the implementation of the mitigation measures and adoption of the project EMP, there are no significant cultural heritage resources barriers to the proposed development. The Heritage authority may approve the proposed extension of the township and associated infrastructure to proceed as planned with special commendations to implement the recommendations here in made.
16. The findings of this report, with approval of the PHRA/SAHRA, may be classified as accessible to any interested and affected parties within the limits of the laws.

The conclusion of this study is that the impacts of the proposed development on the cultural environmental values are not likely to be significant if the Environmental Management Plan includes recommended safeguard and mitigation measures identified in this report.

ABBREVIATIONS

AIA	Archaeological Impact Assessment
ECO	Environmental Control Officer
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EM	Environmental Manager
EMP	Environmental Management Plan
GPS	Geographical Positioning System
HIA	Heritage Impact Assessment
ISS	Integrated Specialist Services (Pty) Ltd
LIA	Late Iron Age
NHRA	Nation Heritage Resources Act, Act 25 of 1999
PM	Project Manager
MPHRA	Mpumalanga Province Provincial Heritage Agency
SM	Site Manager
SAHRA	South African Heritage Resources Agency

KEY CONCEPTS AND TERMS

Periodization Archaeologists divide the different cultural epochs according to the dominant material finds for the different time periods. This periodization is usually region-specific, such that the same label can have different dates for different areas. This makes it important to clarify and declare the periodization of the area one is studying. These periods are nothing a little more than convenient time brackets because their terminal and commencement are not absolute and there are several instances of overlap. In the present study, relevant archaeological periods are given below;

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)

Early Iron Age (~ AD 200 to 1000)

Late Iron Age (~ AD1100-1840)

Historic (~ AD 1840 to 1950, but a Historic building is classified as over 60 years old)

Definitions Just like periodization, it is also critical to define key terms employed in this study. Most of these terms derive from South African heritage legislation and its ancillary laws, as well as international regulations and norms of best practice. The following aspects have a direct bearing on the investigation and the resulting report:

Cultural (heritage) resources are all non-physical and physical human-made occurrences, and natural features that are associated with human activity. These can be singular or in groups and include significant sites, structures, features, ecofacts and artefacts of importance associated with the history, architecture, or archaeology of human development.

Cultural significance is determined by means of aesthetic, historic, scientific, social, or spiritual values for past, present or future generations.

Value is related to concepts such as worth, merit, attraction or appeal, concepts that are associated with the (current) usefulness and condition of a place or an object. Although significance and value are not mutually exclusive, in some cases the place may have a high level of significance but a lower level of value. Often, the evaluation of any feature is based on a combination or balance between the two.

Isolated finds are occurrences of artefacts or other remains that are not in-situ or are located apart from archaeological sites. Although these are noted and recorded, but do not usually constitute the core of an impact assessment, unless if they have intrinsic cultural significance and value.

In-situ refers to material culture and surrounding deposits in their original location and context, for example an archaeological site that has not been disturbed.

Archaeological site/materials are remains or traces of human activity that are in a state of disuse and are in, or on, land and which are older than 100 years, including artefacts, human and hominid remains, and artificial features and structures. According to the National Heritage Resources Act (NHRA) (Act No. 25 of 1999), no archaeological artefact, assemblage or settlement (site) and no historical building or structure older than 60 years may be altered, moved or destroyed without the necessary authorisation from the South African Heritage Resources Agency (SAHRA) or a provincial heritage resources authority.

Historic material are remains resulting from human activities, which are younger than 100 years, but no longer in use, including artefacts, human remains and artificial features and structures.

Chance finds means archaeological artefacts, features, structures or historical remains accidentally found during development.

A grave is a place of interment (variably referred to as burial) and includes the contents, headstone or other marker of such a place, and any other structure on or associated with such place. A grave may occur in isolation or in association with others where upon it is referred to as being situated in a cemetery (contemporary) or burial ground (historic).

A site is a distinct spatial cluster of artefacts, structures, organic and environmental remains, as residues of past human activity.

Heritage Impact **Assessment (HIA)** refers to the process of identifying, predicting, and assessing the potential positive and negative cultural, social, economic and biophysical impacts of any proposed project, which requires authorisation of permission by law and which may significantly affect the cultural and natural heritage resources. Accordingly, an HIA must include recommendations for appropriate mitigation measures for minimising or circumventing negative impacts, measures enhancing the positive aspects of the proposal and heritage management and monitoring measures.

Impact is the positive or negative effects on human well-being and / or on the environment.

Mitigation is the implementation of practical measures to reduce and circumvent adverse impacts or enhance beneficial impacts of an action.

Mining heritage sites refer to old, abandoned mining activities, underground or on the surface, which may date from the prehistorical, historical or the relatively recent past.

Study area or 'project area' refers to the area where the developer wants to focus its development activities (refer to plan).

Phase I studies refer to surveys using various sources of data and limited field walking in order to establish the presence of all possible types of heritage resources in any given area.

INTRODUCTION

Background

This Archaeological and Heritage Impact Assessment (AIA/HIA) Report has been prepared by Integrated Specialist Services (Pty) Ltd for the purpose of Basic Impact Assessment being conducted by OURA Solutions (Pty) Ltd. Msukaligwa Local Municipality is proposing to construct an integrated sustainable human settlement on Portions 8 of the farm Buhrmanns Tafelkop 135 IT, Msukalingwa Local Municipality, Mpumalanga Province. This report details the field study, results of the study as well as discussion on the anticipated impacts of the proposed development as is required by Section 38 of the National Heritage Resources Act, Act 25. It focuses on identifying and assessing potential impacts on archaeological resources as well as on other physical cultural properties including historical heritage resources in relation to the proposed development. ISS research team undertook the assessments, research and consultations required for the preparation of the report comprising archaeological and heritage impacts for the purpose of ensuring that the cultural environmental values are taken into consideration and reported into the Basic Assessment process.

The study was designed to ensure that any significant archaeological or cultural physical property or sites are located and recorded, and site significance is evaluated to assess the nature and extent of expected impacts from the proposed development. The assessment includes recommendations to manage the expected impact of the proposed development site. The report includes recommendations to guide heritage authorities in making appropriate decision in respect of the proposed development. The report concludes with detailed recommendations on heritage management associated with the proposed development work. ISS an independent consulting firm, conducted the assessment; research and consultations required for the preparation of the report in accordance with obligations set out in the NHRA.

In accordance with SAHRA guidelines, this report, not necessarily in that order, provides:

1) Management summary
2) Methodology
3) Information regarding the desktop study
4) Map and relevant geodetic images and data
5) GPS co-ordinates
6) Directions to the site
7) Site description and interpretation of the cultural area where the project will take place
8) Management details, description of affected cultural environment, photographic records of the project area
9) Recommendations regarding the significance of the site and recommendations regarding further monitoring of the site
10) Conclusion.

Location of the proposed project site

The project area is located on portions 8 of the farm Buhrmanns Tafelkop 135 IT Msukaligwa Local Municipality within Mpumalanga Province **(See Figure 1& 2)**. The proposed project is located at GPS Coordinates S26° 29' 36.36"and S30° 00' 15.35". (See to Fig. 1& 2 – Google Site Map).

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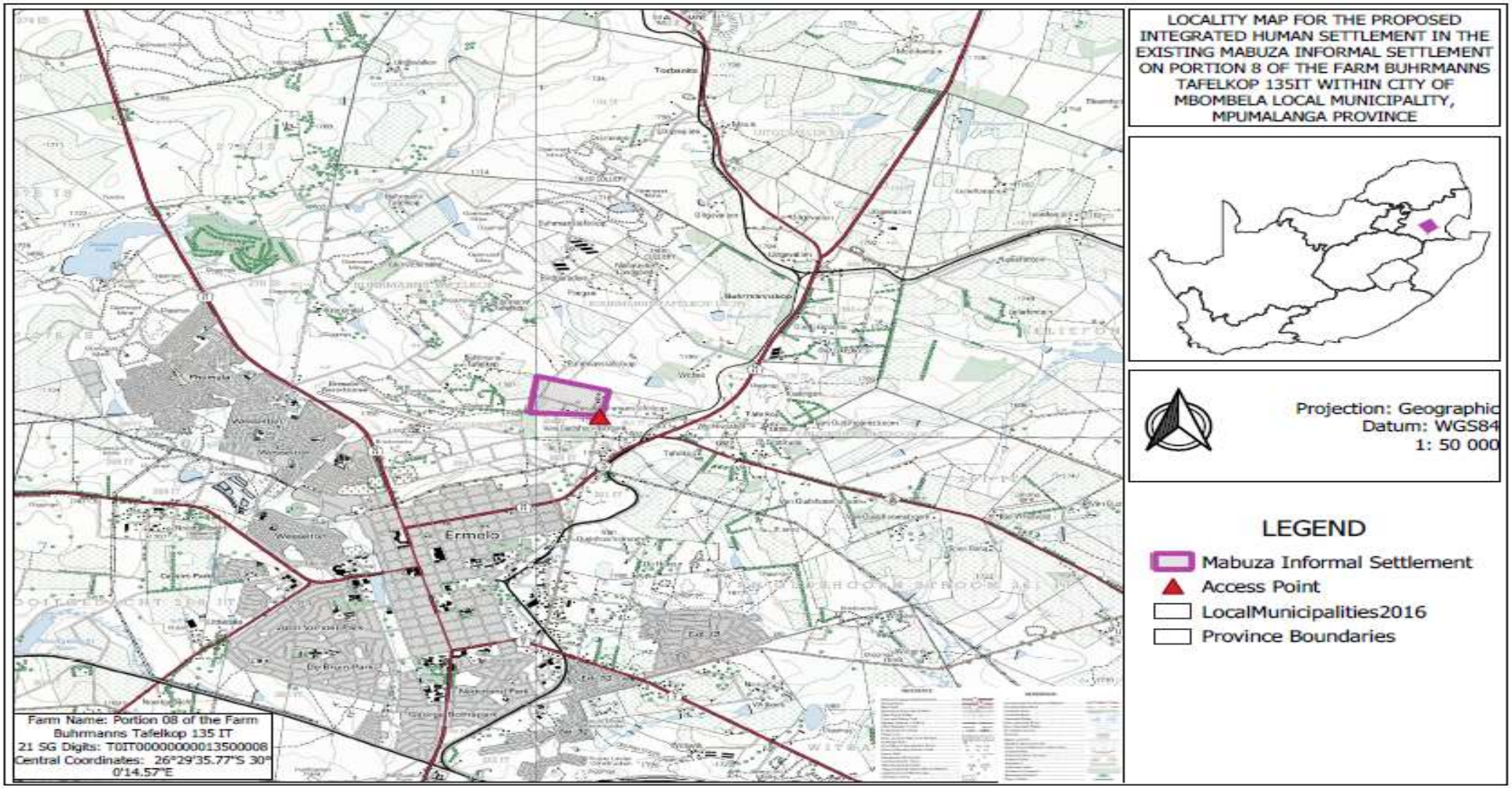

Figure 1: Site and directions to access to the proposed development (OURA 2020)

Figure 2: Location of burial sites MSBS 01 and MSBS 02 (ISS 2020)

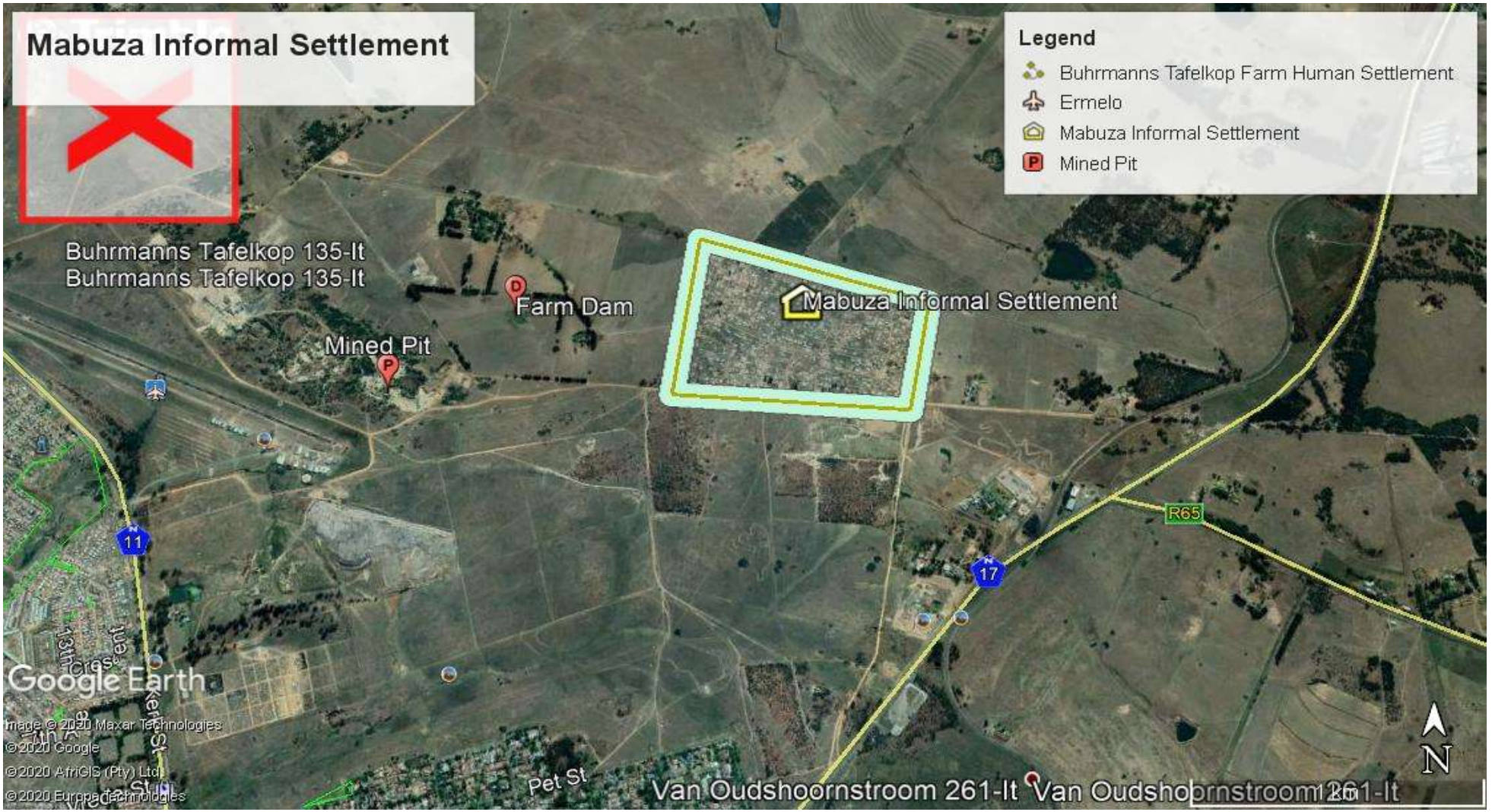

Figure 3: Site and directions to access to the proposed development (OURA 2020)

Description of the Proposed Project

The proposed development entails the formalisation of Mabuza informal settlement by creating an integrated sustainable human settlement on Portions 8 of the farm Buhrmanns Tafelkop 135 IT in Ermelo Town of Msukaligwa Local Municipality, Mpumalanga Province. The Environmental assessment was done in terms of Section 24G of National Environmental Management Act, 1998 (Act No.107 of 1998), to rectify and undertake the listed activities in terms of Government Notice Regulation (GNR) 326 of the Environmental Impact Assessment Regulation, 2017 as amended.

The township establishment process entails construction/upgrading of the already existing 700 informal houses to low cost residential housing located in Portion 8 with the intention to increase the number of units to be catered for to about 1185 units including the already existing 700 households.

Mabuza Farm is an informal settlement located in Portion 8 of Buhrmanns Tafelkop 135 IT in Ermelo. Currently those who reside in this settlement have no legal ownership on the land. In order to address the housing backlog and social objectives, the Mpumalanga Human Settlements Department (DHS) appointed Nkolele Projects as the Implementing Agent to manage the creation of an integrated sustainable human settlement.

Mabuza Farm Informal Settlement is mainly a residential area with very few business activities and there is no localised economic base. Most of the residents commute to work in nearby areas (Ermelo town, mines and other surrounding areas). All the ±700 households have no legal status. Mabuza Farm Informal Settlement is mainly surrounded by private land. In dealing with the future land issue for human settlement, the client's other alternative is to purchase land from private landowners in order to create a sustainable human settlement for all the residents of Mabuza Farm Informal Settlement., due to its inherent "non-legal" status and has services and infrastructure below the "adequate" or minimum levels. Such services are both network and social infrastructure, like water supply, sanitation, electricity, roads and drainage systems.

In order to improve the lives of the residents and meet the minimum standards there will be design and construction of new housing units which include its associated Infrastructure and services **s**uch as:

- Bulk Storm Water
- Bulk Sewers
- Bulk Water Supply
- Bulk Electrical Supply
- Solid Waste Management
- Access, Internal Roads and Public Transport

This report is a component of the Basic Assessment Report that address the requirements of Section 38 of the NHRA Act 25 of 1999 and EIA Terms of Reference in relation to the assessment of impacts of the proposed development on the cultural and heritage resources associated with the receiving environment. The statutory mandate of heritage impact assessment studies is to encourage and facilitate the protection and conservation of archaeological and cultural heritage sites, in accordance with the provisions of the NHRA and auxiliary regulations. Therefore, in pre-development context, heritage impact assessment study is conducted to fulfil the requirements of Section 38 (1) of the National Heritage Resources Act (No 25 of 1999).

LEGAL REQUIREMENTS

Relevant pieces of legislations are to the present study are presented here. Under the National Heritage Resources Act (Act 25 of 1999) (NHRA), Mineral and Petroleum Resources Development Act 28 of 2002, and the National Environmental Management Act 107 of 1998 (NEMA) and 2014 Regulations, an AIA or HIA is required as a specialist sub-section of the EIA.

Heritage management and conservation in South Africa is governed by the NHRA and falls under the overall jurisdiction of the SAHRA and its PHRAs. There are different sections of the NHRA that are relevant to this study. The proposed development is a listed activity in terms of Section 38 of the NHRA which stipulates that the following development categories require a HIA to be conducted by an independent heritage management consultant:

- Construction of a road, wall, **powerline**, pipeline, canal or other linear form of development or barrier exceeding 300m in length
- Construction of bridge or similar structure exceeding 50m in length
- Development or other activity that will change the character of a site -
  - Exceeding 5000 sq. m
  - Involving three or more existing erven or subdivisions
  - Involving three or more erven or divisions that have been consolidated within past five years
  - Rezoning of site exceeding 10 000 sq. m
  - The costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority
- Any other development category, public open space, squares, parks, recreation grounds

Thus, any person undertaking any development in the above categories, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development. Section 38 (2) (a) of the NHRA also requires the submission of a heritage impact assessment report for authorization purposes to the responsible heritage resources agencies (SAHRA/PHRAs).

Related to Section 38 of the NHRA are Sections 34, 35, 36 and 37. Section 34 stipulates that no person may alter, damage, destroy, relocate etc any building or structure older than 60 years, without a permit issued by SAHRA or a provincial heritage resources authority. Section 35 (4) of the NHRA stipulates that no person may, without a permit issued by SAHRA, destroy, damage, excavate, alter or remove from its original position, or collect, any archaeological material or object. This section may apply to any significant archaeological sites that may be discovered before or during construction. This means that any chance find must be reported to SAHRA or

PHRA (the relevant PHRA), who will assist in investigating the extent and significance of the finds and inform about further actions. Such actions may entail the removal of material after documenting the find site or mapping of larger sections before destruction. Section 36 (3) of the NHRA also stipulates that no person may, without a permit issued by the SAHRA, destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority. This section may apply in case of the discovery of chance burials, which is unlikely. The procedure for reporting chance finds also applies to the likely discovery of burials or graves by the developer or his contractors. Section 37 of the NHRA deals with public monuments and memorials which exist in the proposed project area.

In addition, the new EIA Regulations (4 December 2014) promulgated in terms of NEMA (Act 107 of 1998) determine that any environmental reports will include cultural (heritage) issues. The new regulations in terms of Chapter 5 of the NEMA provide for an assessment of development impacts on the cultural (heritage) and social environment and for Specialist Studies in this regard. The end purpose of such a report is to alert the developer the environmental consultant, SAHRA or PHRA and interested and affected parties about existing heritage resources that may be affected by the proposed development, and to recommend mitigatory measures aimed at reducing the risks of any adverse impacts on these heritage resources.

Assessing the Significance of Heritage Resources

The appropriate management of cultural heritage resources is usually determined based on their assessed significance as well as the likely impacts of any proposed developments. Cultural significance is defined in the Burra Charter as meaning aesthetic, historic, scientific, or social value for past, present, or future generations (Article 1.2). Social, religious, cultural, and public significance are currently identified as baseline elements of this assessment, and it is through the combination of these elements that the overall cultural heritage values of the site of interest, associated place or area are resolved.

Not all sites are equally significant and not all are worthy of equal consideration and management. The significance of a place is not fixed for all time, and what is considered of significance at the time of assessment may change as similar items are located, more research is undertaken, and community values change. This does not lessen the value of the heritage approach but enriches both the process and the long-term outcomes for future generations as the nature of what is conserved and why, also changes over time (Pearson and Sullivan 1995:7). This assessment of the Indigenous cultural heritage significance of the Site of Interest as its environments of the study area will be based on the views expressed by the traditional authority and community representatives, consulted documentary review and physical integrity.

African indigenous cultural heritage significance is not limited to items, places or landscapes associated with pre-European contact. Indigenous cultural heritage significance is understood to encompass more than ancient archaeological sites and deposits, broad landscapes, and environments. It also refers to sacred places and story sites, as well as historic sites, including mission sites, memorials, and contact sites. This can also refer to modern sites with resonance to the indigenous community. The site of interest considered in this project falls within this realm of broad significance.

Archaeological sites, as defined by the National Heritage Resources Act (Act 25 of 1999) are places in the landscape where people once lived in the past – generally more than 60 years ago – and have left traces of their presence behind. In South Africa, archaeological sites include hominid fossil sites, places where people of the Earlier, Middle and Later Stone Age lived in open sites, river gravels, rock shelters and caves, Iron Age sites, graves, and a variety of historical sites and structures in rural areas, towns and cities. Palaeontological sites are those with fossil remains of plants and animals where people were not involved in the accumulation of the deposits. The basic principle of cultural heritage conservation is that archaeological and other heritage sites are valuable, scarce and non-renewable. Many such sites are unfortunately lost daily through infrastructure developments such as powerlines, roads and other destructive economic activities such as mining and agriculture. This true for the Mpumalanga Province (proposed project area) whose main economic activities are mining and agriculture. It should be noted that once archaeological sites are destroyed, they cannot be replaced as site integrity and authenticity is permanently lost. Archaeological heritage contributes to our understanding of the history of the region and of our country and continent at large. By preserving links with our past, we may be able to appreciate the role past generations have played in the history of our country and the continent at large.

Categories of Significance

Rating the significance of archaeological sites, and consequently grading the potential impact on the resources is linked to the significance of the site itself. The significance of an archaeological site is based on the amount of deposit, the integrity of the context, the kind of deposit and the potential to help answer present research questions. Historical structures are defined by Section 34 of the National Heritage Resources Act, 1999, while other historical and cultural significant sites, places and features, are generally determined by community preferences. The guidelines as provided by the NHRA (Act No. 25 of 1999) in Section 3, with special reference to subsection 3 are used when determining the cultural significance or other special value of archaeological or historical sites. In addition, ICOMOS (the Australian Committee of the International Council on Monuments and Sites) highlights four cultural attributes, which are valuable to any given culture:

Aesthetic Value:

Aesthetic value includes aspects of sensory perception for which criteria can and should be stated. Such criteria include consideration of the form, scale, colour, texture and material of the fabric, the general atmosphere associated with the place and its uses and also the aesthetic values commonly assessed in the analysis of landscapes and townscape.

Historical Value:

Historic value encompasses the history of aesthetics, science and society and therefore to a large extent underlies all of the attributes discussed here. Usually a place has historical value because of some kind of influence by an event, person, phase or activity.

Scientific Value:

The scientific or research value of a place will depend upon the importance of the data involved, on its rarity, quality and on the degree to which the place may contribute further substantial information.

Social Value:

Social value includes the qualities for which a place has become a focus of spiritual, political, national or other cultural sentiment to a certain group. It is important for heritage specialist input in the EIA process to consider the heritage management structure set up by the NHR Act. It makes provision for a 3-tier system of management including the South Africa Heritage Resources Agency (SAHRA) at a national level, Provincial Heritage Resources Authorities (PHRAs) at a provincial and the local authority. The Act makes provision for two types or forms of protection of heritage resources, i.e. formally protected and generally protected sites:

Formally Protected Sites

- Grade 1 or national heritage sites, which are managed by SAHRA
- Grade 2 or provincial heritage sites, which are managed by the PHRA.
- Grade 3 or local heritage sites.

General Protection

- Human burials older than 60 years.
- Archaeological and palaeontological sites.
- Shipwrecks and associated remains older than 70 years.
- Structures older than 60 years.

The certainty of prediction is definite, unless stated otherwise and if the significance of the site is rated high, the significance of the impact will also result in a high rating. The same rule applies if the significance rating of the site is low. The significance of archaeological sites is generally ranked into the following categories:

Significance Rating Action

No significance: sites that do not require mitigation.

Low significance: sites, which may require mitigation.

2a. Recording and documentation (Phase 1) of site; no further action required

2b. Controlled sampling (shovel test pits, auguring), mapping and documentation (Phase 2 investigation); permit required for sampling and destruction

Medium significance: sites, which require mitigation.

3. Excavation of representative sample, C14 dating, mapping and documentation (Phase 2 investigation); permit required for sampling and destruction [including 2a & 2b]

High significance: sites, where disturbance should be avoided.

4a. Nomination for listing on Heritage Register (National, Provincial or Local) (Phase 2 & 3 investigation); site management plan; permit required if utilised for education or tourism

High significance: Graves and burial places

4b. Locate demonstrable descendants through social consulting; obtain permits from applicable legislation, ordinances and regional by-laws; exhumation and reinternment [including 2a, 2b & 3]

Furthermore, the significance of archaeological sites was based on six main criteria:

- Site integrity (i.e. primary vs. secondary context),
- Amount of deposit, range of features (e.g., stonewalling, stone tools and enclosures),
- Density of scatter (dispersed scatter),
- Social value,
- Uniqueness, and
- Potential to answer current and future research questions.

An important aspect in assessing the significance and protection status of a heritage resource is often whether the sustainable social and economic benefits of a proposed development outweigh the conservation issues at stake. When, for whatever reason the protection of a heritage site is not deemed necessary or practical, its research potential must be assessed and mitigated in order to gain data /information, which would otherwise be lost.

Table 1: Evaluation of the proposed development as guided by the criteria in NHRA, MPRDA and NEMA

ACT	Stipulation for developments	Requirement details
NHRA Section 38	Construction of road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length	No
	Construction of bridge or similar structure exceeding 50m in length	No
	Development exceeding 5000 sq. m	Yes
	Development involving three or more existing erven or subdivisions	No
	Development involving three or more erven or divisions that have been consolidated within past five years	No
	Rezoning of site exceeding 10 000 sq. m	No
	Any other development category, public open space, squares, parks, recreation grounds	No
NHRA Section 34	Impacts on buildings and structures older than 60 years	No
NHRA Section 35	Impacts on archaeological and paleontological heritage resources	Subject to identification during Phase 1 walk down survey
NHRA Section 36	Impacts on graves	Subject to identification during Phase 1
NHRA Section 37	Impacts on public monuments	No
Chapter 5 (21/04/2006) NEMA	HIA is required as part of an EIA	Yes
Section 39(3)(b) (iii) of the MPRDA	AIA/HIA is required as part of an EIA	Not a mining development

Other relevant legislations

The Human Tissue Act

Human Tissue Act of 1983 and Ordinance on the Removal of Graves and Dead Bodies of 1925 Graves 60 years or older are heritage resources and fall under the jurisdiction of both the National Heritage Resources Act and the Human Tissues Act of 1983. However, graves younger than 60 years are specifically protected by the Human Tissues Act (Act 65 of 1983) and the Ordinance on the Removal of Graves and Dead Bodies (Ordinance 7 of 1925) as well as any local and regional provisions, laws and by-laws. Such burial places also fall under the jurisdiction of the National Department of Health and the Provincial Health Departments. Approval for the exhumation and re-burial must be obtained from the relevant Provincial Member of the Executive Committee as well as the relevant Local Authorities.

TERMS OF REFERENCE

The author was requested to conduct an AIA/HIA study addressing the following issues:

- Archaeological and heritage potential of the proposed development site including any known data on affected areas;
- Provide details on methods of study; potential and recommendations to guide the PHRA/ SAHRA to make an informed decision in respect of authorisation of the proposed development.
- Identify all objects, sites, occurrences and structures of an archaeological or historical nature (cultural heritage sites) located in and around the proposed development site;
- Assess the significance of the cultural resources in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value;
- Describe the possible impact of the proposed development on these cultural remains, according to a standard set of conventions;
- Propose suitable mitigation measures to minimize possible negative impacts on the cultural resources;
- Review applicable legislative requirements;

Photographic Presentation of the Project Sites

Plate 1: Photo 1: View of informal settlements within the development site (Photograph © by Author 2020).

Plate 2: Photo 2: View of formal informal site (Photograph © by Author 2020).

Plate 3: Photo 3: View of access roads into the informal settlement (Photograph © by Author 2020).

Plate 4: Photo 4: View of informal shacks within the project area (Photograph © by Author 2020).

Plate 5: Photo 5: View of section of the development site (Photograph © by Author 2020).

Plate 6: Photo 6: View of access road into the informal settlement (Photograph © by Author 2020).

Plate 7: Photo 7: View of proposed development site (Photograph © by Author 2020).

Plate 8: Photo 8: View of proposed development site (Photograph © by Author 2020).

Plate 9: Photo 9: Informal toilets are like the one depicted are a common feature in the settlement (Photograph © by Author 2019).

Plate 10: Photo 10: View of access road cutting through the site (Photograph © by Author 2020)

Plate 11: Photo 11: View of another access road to the site (Photograph © by Author 2020)

Plate 12: Photo 12: View of built up area within the proposed development site (Photograph © by Author 2020)

Plate 13: Photo 13: View of built up area within the proposed development site (Photograph © by Author 2020)

Plate 14: Photo 14: View of access road to the site (Photograph © by Author 2020)

Plate 15: Photo 15: View of access roads (Photograph © by Author 2020)

METHODOLOGY

This document falls under the Basic assessment phase of the AIA/HIA and therefore aims at providing an informed heritage-related opinion about the proposed housing development in Ermelo, Mpumalanga Province. This is usually achieved through a combination of a review of any existing literature and a basic site inspection. As part of the desktop study, published literature and cartographic data, as well as archival data on heritage legislation, the history and archaeology of the area were studied. The desktop study was followed by field surveys. The field assessment was conducted according to generally accepted AIA/HIA practices and aimed at locating all possible objects, sites and features of cultural significance on the development footprint. Initially a drive-through was undertaken around the proposed development site as a way of acquiring the archaeological impression of the general area. This was then followed by a walk down survey in the study area, with a handheld Global Positioning System (GPS) for recording the location/position of each possible site. Detailed photographic recording was also undertaken where relevant. The findings were then analysed in view of the proposed development in order to suggest further action. The result of this investigation is a report indicating the presence/absence of heritage resources and how to manage them in the context of the proposed development.

The fieldwork survey was undertaken on the 20th of March 2020. The main focus of the survey involved a pedestrian survey which was conducted within the proposed project site. The pedestrian survey focused on parts of the project area where it seemed as if disturbances may have occurred in the past, for example bald spots in

the grass veld; stands of grass which are taller that the surrounding grass veld; the presence of exotic trees; evidence for building rubble, existing buildings and ecological indicators such as invader weeds. The proposed project site is built up (See Plate 1 to 12).

The literature survey suggests that prior to the 20th century modern residential and on-going infrastructure developments; the general area where the proposed development is located would have been a rewarding region to locate heritage resources related to Stone Age and particularly Iron Age and historical sites (Bergh 1999: 4). However, the situation today is completely different. The study area now lies on a clearly modified landscape that is dominated by agricultural infrastructure and developments.

Assumptions and Limitations

The investigation has been influenced by the unpredictability of buried archaeological remains (absence of evidence does not mean evidence of absence) and the difficulty in establishing intangible heritage values. It should be remembered that archaeological deposits (including graves and traces of mining heritage) usually occur below the ground level. Should artefacts or skeletal material be revealed at the site during construction, such activities must be stopped immediately, and a competent heritage practitioner, SAHRA or PHRA must be notified in order for an investigation and evaluation of the find(s) to take place (see NHRA (Act No. 25 of 1999), Section 36 (6). Recommendations contained in this document do not exempt the developer from complying with any national, provincial, and municipal legislation or other regulatory requirements, including any protection or management or general provision in terms of the NHRA. The author assumes no responsibility for compliance with conditions that may be required by SAHRA in terms of this report.

The field survey did not include any form of subsurface inspection beyond the inspection of burrows, road cut sections, and the sections exposed by erosion or field ploughing. Some assumptions were made as part of the study and therefore some limitations, uncertainties and gaps in information apply. It should, however, be noted that these do not invalidate the findings of this study in any significant way:

- The proposed development will be limited to specific site as detailed in the development layout (Figure 1 & 2).
- The construction team will utilize existing access to the proposed development site and service sites will use the existing access roads.
- The study observed that most sections of the project area have low potential to yield significant *in situ* archaeological or physical cultural properties.
- No excavations or sampling were undertaken, since a permit from heritage authorities is required to disturb a heritage resource. As such the results herein discussed are based on observable surface indicators, these surface observations concentrated on exposed sections such as road cuts and clear farmland.
- This study did not include any ethnographic and oral historical studies, nor did it investigate the settlement history of the area.

Consultation

The EIA Public Participation invited comments from stakeholder's interested parties on any archaeological heritage matters related to the proposed development. The study team consulted residents regarding any known heritage resources located within the proposed development site.

CULTURE HISTORY BACKGROUND OF THE PROJECT AREA

Stone Age Archaeology

Introduction

In order to place the project area in archaeological and historical context, primary and secondary sources were consulted. Ethnographical and linguistic studies by early researchers such as Theal and Van Warmelo provide insights on the cultural groups who lived in and around the project area since ca 1600. Historic and academic sources by Küsel and Bergh, Makhura, Delius, and Webb were also consulted. Limited contemporary research has been done on prehistoric African settlements in the study area, and according to Bergh, there are no recorded sites that date from the Stone Age, (including Rock paintings or engravings), Early or Later Iron Age. The topographical map of the area shows that the project area has been previously disturbed with cultivated land, and residential developments and associated infrastructure.

Stone Age Archaeology

Stone Age sites are marked by stone artefacts that are found scattered on the surface of the earth or as parts of deposits in caves and rock shelters. The Stone Age is divided into the Early Stone Age (covers the period from 2.5 million years ago to 250 000 years ago), the Middle Stone Age (refers to the period from 250 000 years ago to 22 000 years ago) and the Late Stone Age (the period from 22 000 years ago to 200 years ago). The Later Stone Age is also associated with rock paintings and engravings which were done by the San, Khoi Khoi and in more recent times by Iron Age farmers. Heritage surveys up to now have recorded few outstanding Stone Age sites, rock paintings and engravings in the Eastern Highveld - primarily as a result of limited extensive archaeological surveys. Stone tools have been recorded around some of the pans which occur on the Eastern Highveld.

In the larger geographical area, there is material manifestation of Stone Age people but generally, Highveld area did not attract much of habitation in these early times due to lack of rock-shelters and domination of exposed environments. Thus, it is mostly in the vicinity of large watercourses and lower parts of mountains that some ESA (~ 2.6 million to 250 000 years ago) materials (crude chopper and other unifacial tools of the Oldowan industry and the characteristic Acheulian hand axes and cleavers) and MSA (~ 250 000 to 40-25 000 years ago) materials are generally found. The MSA is a flake-technological stage characterized by faceted platforms, produced from prepared cores, as distinct from the core tool-based ESA technology. More technological and behavioural

changes than those witnessed in the MSA, occurred during the LSA (~ 40-25 000, to recently, 100 years ago), which is also associated with Homo Sapiens (Barham and Mitchell 2008). For the first time we get evidence of people's activities derived from material other than stone tools (ostrich eggshell beads, ground bone arrowheads, small bored stones and wood fragments) (Deacon and Deacon 1999). The LSA people are also credited with the production of rock art (engravings and paintings), which is an expression of their complex social and spiritual beliefs (Parkington et al. 2008). However, it is important to note that no Stone Age materials were recorded during the field walking, perhaps due to the presence of tall grass. Nonetheless, it is possible to encounter isolated finds of these objects in the study area, even though these would most likely be out of context due to the modern disturbances.

The characteristics of Stone Age sites in the Ermelo area is that they occur near pans or close to raw material sources that can make stone tools (Pistorius 2006). There are some known Late Stone Age sites in the area around the Ermerlo area. The sites are Welgelegen Skuiling close to Ermelo, Chrissiesmeer (also known for rock art) and lastly Groenvlei close to Carolina, this area is also known for rock art (Bergh 1999). The broader study area is also associated with rock paintings and engravings which were done by San hunter-gatherers, Khoi Khoi herders and EIA (Early Iron Age) farmers (Maggs 1983). It is estimated that about 400 rock art sites are distributed throughout Mpumalanga, notably in the northern and eastern regions at places. The Ermelo area holds eight rock paintings (Smith and Zubieta 2007). Engravings also occur for example at Boomplaats.

Iron Age Archaeology

The Iron Age is associated with the agro-pastoralists who lived in semi-permanent villages and practiced metal working (Pistorius 2017). The Iron Age archaeology is generally divided into two phase which are Early Iron Age and Late Iron Age. The presence of pottery associated with LSA material points to the starting of farming communities. For example, the Welgelegen Shelter on the banks of the Vaal River near Ermelo has evidence of this coexistence (Pistorius 2017).

Iron Age of the Mpumalanga Province is dated to the 5th Century AD when the Early Iron Age (EIA) proto-Bantu-speaking farming communities began arriving in this region which was then occupied by hunter-gatherers. These EIA communities are archaeologically referred to as the Mzonjani Facies of the Urewe EIA Tradition (Huffman, 2007: 127-9). They occupied the foothills and valley lands along the general Indian Ocean coastland introducing settled life, domesticated livestock, crop production and the use of iron (also see Maggs 1984a; 1984b; Huffman 2007). Alongside the Urewe Tradition was the Kalundu Tradition whose EIA archaeological sites have been recorded along the Mpumalanga areas. From AD 650 to 750 the EIA sites in the region are classified as the Msuluzi facies which was replaced by the Ndondondwane and Ntsekane facies from AD 750 to 950 and AD 950 to 1050 respectively (Huffman, 2007).

By 1050 AD proto-Nguni Bantu-speaking groups associated with the Late Iron Age (LIA) called the Blackburn sub-branch of the Urewe Tradition had arrived in the eastern regions of South Africa, including modern day Mpumalanga, migrating from the central African region of the Lakes Tanganyika and Victoria (Huffman 2007: 154-5). According to archaeological data available, the Blackburn facies ranged from AD 1050 to 1500 (ibid. p.155). The Mpumalanga and the Natal inland regions saw the development of the LIA Moor Park facies between AD 1350 and 1750. These archaeological facies are interpreted as representing inland migration by LIA Nguni speaking groups (Huffman 2007). Moor Park is associated with settlements marked by stonewalling. The period from AD 1300 to 1750 saw multiple Nguni dispersal from the coastland into the hinterland and eventually across the Drakensberg Escapement into central and eastern South Africa (ibid).

Around 220 Late Iron Age stone walled sites are known from the Bethal area (Bergh 1999). These stone walls date to around 17th century and are known to have been built by the Sotho, Pedi, Ndebele and Swazi prior to the arrival of the arrival of the colonial settlers. It is considered that this style architecture may have been adopted by the first colonial farmers in the Eastern Highveld (Pistorius 2006). For example, one of the known Late Iron Age site is located at the top of Tafelkop that is located North West of Ermelo where more than 100 corbelled huts are found. The site is associated with the early Sotho and associated with the corbeled huts which mainly occur in the north-eastern Free State (Mason 1962; Maggs 1972).

Historical Background

Historical sites also occur in the study area. Historical sites include historical farming sites and historical mining sites. The farming related sites usually consists of farmsteads and farm cemeteries, either belonging to the landowners or their labourers (Pistorius 2006). Historical mining related sites that exist in the broader study area include old Albion Colliery north east of the study area, dating to the 1940's (van de Walt 2014).

The Late Iron Age Nguni communities engaged in the Indian Ocean Trade exporting ivory and importing consumables such as cloth and glass beads. The exporting point was Delagoa. This brought the Nguni speaking community in touch with the Indo-Asian and first Europeans (Portuguese). It was the arrival of the Dutch and the English traders that opened Delagoa Bay to more trade did the Nguni engaged in extensive trade with the international traders (Huffman 2007). From the late 1700s, trade in supply of meat to passing ship had increased substantially to an extent that by 1800 meat trade is estimated to have surpassed ivory trade. At the same time population was booming following the increased food production that came with the introduction of maize that became the staple food. Naturally, there were signs that population groups had to compete for resources especially along the east coastal regions. The KwaZulu Natal coastal region has a special place in the history of the region and country at large. This relates to the most referenced Mfecane (wandering hordes) period of tremendous insecurity and military stress which eventually affected the entire Southern Africa including the

modern-day Mpumalanga area. Around the 1830s, the region also witnessed the massive movements associated with the Mfecane. The causes and consequences of the Mfecane are well documented elsewhere (e.g. Hamilton 1995; Cobbing 1988). In this context new African kingdoms emerged such as the Zulu Kingdom under Shaka in the second quarter of the 1800s AD. Military pressure from Zululand spilled onto the highveld by at least 1821. Various marauding groups of displaced Sotho-Tswana moved across the plateau in the 1820s. Mzilikazi raided the plateau extensively between 1825 and 1837. During the Difaquane they fled to the south from the Ndebele of Mzilikazi who established several settlement complexes in Eastern Bankveld between Pretoria and Witbank (Bergh 1999: 10-11; 109). Ethnographical and linguistic studies by early researchers such as Ziervogel, Theal and Van Warmelo shed light on the cultural groups living in the area since ca 1600. Historic and academic sources by Küsel and Bergh, were consulted, as well as historic sources by Makhura and Webb.

History of Ermelo Town

Historically early Europeans did not travel to this area (Bergh 1999: 12-13). White farmers only moved into the south-eastern Mpumalanga after 1853 when the government of the South African Republic (ZAR or Transvaal) traded the land from the Swazi. Ermelo is a district in Mpumalanga Province of South Africa. It was founded by the Reverend Frans Lion Cachet of the Dutch Reformed Church, who was converted to Christianity in the town of Ermelo in the Netherlands. Ermelo is situated at crossroads of three national highways, N2, N11 and the N17. (https://www.sahistory.org.za/dated-event/ermelo-founded).

Ermelo was a stopover for the ANC's Umkhonto we Sizwe members who were travelling to Swaziland and Mozambique. Like many other areas in South Africa, Ermelo also experienced forced removals during the 1960s. (http://www.mpumalanga.com/places-to-go/grass-wetlands/ermelo). Another important historical site in Ermelo area are the remains of Nyebe settlement. The Nyebe settlement is close to the current settlement of New Ermelo. A number of recent historically related sites, including graves and remains of earlier coal mining, were also recorded in the project area (Van Vollenhoven 2012). Some graves and LIA and early historical settlement remains were also recorded in the project area. Ermelo has two memorials which are both dedicated to victims of the two Transvaal-Britain Wars (www.harveyworld-centurion.co.za). One is for the concentration camp victims and the other for those involved in active service.

SAHRIS Database and Impact assessment reports in the proposed project area

Several archaeological and heritage studies were conducted within the Ermelo area and their vicinity since 2002 and these presents the nature and heritage character of the area. The HIA conducted in the area also provide some predictive evidence regarding the types and ranges of heritage resources to be expected in the proposed project area: (see reference list for HIA reports). The studies include mining, water pipeline and powerline projects completed by Birkholtz (2017). No sites were recorded, but the reports mention that structures older than 60 years

occur in the area, Pelser and Van Vollenhoven (2011,2013, 2011, 2014, 2015) for mining and infrastructure development survey also recorded no sites. Van Schalkwyk did extensive work in the project area mostly for mining and infrastructure developments for example Van Schalkwyk, (2002, 2004, 2006, 2006, and 2010). Other than burial sites and buildings older than 60 years the studies did not record any significant archaeological sites in the project area.

Intangible Heritage

As defined in terms of the UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage (2003) intangible heritage includes oral traditions, knowledge and practices concerning nature, traditional craftsmanship and rituals and festive events, as well as the instruments, objects, artefacts and cultural spaces associated with group(s) of people. Thus, intangible heritage is better defined and understood by the group of people that uphold it. In the present study area, very little intangible heritage is anticipated on the development footprint because most historical knowledge does not suggest a relationship with the study area per se, even though several other places in the general area such do have intangible heritage.

RESULTS OF THE ARCHAEOLOGICAL/HERITAGE ASSESSMENT STUDY

The main cause of impacts to archaeological and heritage sites is direct, physical disturbance of the archaeological remains themselves and their contexts. It is important to note that the heritage and scientific potential of an archaeological site is highly dependent on its geological and spatial context. This means that even though, for example a deep excavation may expose buried archaeological sites and artefacts, the artefacts are relatively meaningless once removed from their original position. The severe impacts are likely to occur during construction period although indirect impacts may occur during movements in and out of the site by construction equipment and vehicles. The construction will result in the relocation or destruction of all existing surface heritage material. Similarly, the clearing of additional access roads will impact material that lies buried in the surface sand. Since heritage sites, including archaeological sites, are non-renewable, it is important that they are identified, and their significance assessed prior to construction. It is important to note, that due to the localised nature of archaeological resources, that individual archaeological sites could be missed during the survey, although the probability of this is very low within the proposed development site. Further, archaeological sites and unmarked graves may be buried beneath the surface and may only be exposed during construction activities. The purpose of the AIA is to assess the sensitivity of the area in terms of archaeology and to avoid or reduce the potential impacts of the proposed development by means of mitigation measures (see appended Chance Find Procedure). The following section presents results of the field survey. The following section presents results of the archaeological and Heritage survey conducted within the proposed development site.

Summary of Results

Heritage resource	Status/Findings
Buildings, structures, places and equipment of cultural significance	Informal settlements younger than 60 years.
Areas to which oral traditions are attached or which are associated with intangible heritage	None confirmed
Historical settlements and townscapes	None survives in the proposed area
Landscapes and natural features of cultural significance	None
Archaeological and palaeontological sites	Non were recorded within proposed development site.
Graves and burial grounds	Two burial sites were recorded within the proposed development site. Given that this a Section 24G application, the burial sites must be preserved in situ.
Movable objects	None
Overall comment	Although disturbed the proposed project site has potential to yield significant archaeological remains during earth moving activities.

Archaeological and Heritage Site

The proposed development site did not yield any confirmable archaeological remains. It is assumed that the chances of recovering significant archaeological materials *in situ* were seriously compromised by erosion and other destruction agents.

Historical Buildings and Structures

The proposed development site did not yield any buildings or structures older than 60 years. In terms of the built environment, the area has no significance. There are no other structures, features or old equipment in the study area. It should be noted that traces of old buildings and structures are significant because communities' burry infants and still borns within houses or on the edge of houses. In addition, remains of houses or homestead ruins play an import role in proving footprint by land claimants. The proposed project area has a history of forced removals and such evidence of removals may be concealed in the project area.

Burial Grounds and Graves

Human remains and burials are commonly found close to archaeological sites; they may be found in abandoned and neglected burial sites or occur sporadically anywhere as a result of prehistoric activity, victims of conflict or crime. It is often difficult to detect the presence of archaeological human remains on the landscape as these

burials, in most cases, are not marked at the surface. Archaeological and historical burials are usually identified when they are exposed through erosion and earth moving activities for infrastructure developments such as power lines and roads. In some instances, packed stones or stones may indicate the presence of informal pre-colonial burials.

The survey team recorded two burial sites within the proposed development site. The burial sites were recorded as Mabuza Settlement Burial Site 1 (MSBS 1 and MSBS2). Mabuza Burial Site 1(MSBS1) is located within the proposed project site at GPS Coordinates S26° 490285"and S30° 00' 10.74". A solitary grave was recorded at this site. The grave is marked by tombstones and an inscribed headstone. The grave is barely 10m from the nearby house. It is not clear if the grave belongs to the current occupants of the nearby house. We could not get the family to confirm if the grave belongs to the family. It is not clear from a heritage perspective if the planners for the project are going to accommodate the grave or it will be affected. The location of the grave is problematic.

Burial site MSBS2 is located on the north eastern edge of the proposed development site at GPS Coordinates S26° 493736"and S30° 00' 8511". Nine traditional graves were recorded at this burial site. We established that the graves are younger than 60 years and therefore falls under the jurisdiction of The Human Tissue Act administered by the Mpumalanga Provincial Department of Health. The graves are marked by oval shaped stone piles facing west. The burial site known by the local communities, but it is not clear if their custodians still live at Mabuza settlement. Like MSBS1, burial site MSBS2 is located within the proposed development footprint and may be affected in one way or another if the planners do not provide for their protection. In our view graves must be preserved in situ. The planners must plan around them and provide adequate buffer zones around the graves. However, should the custodians prefer to have their family graves relocated, then proper procedure for consultation and burial permit applications must be adhered to in accordance with the NHRA. It should be noted that burial grounds and gravesites are accorded the highest social significance threshold **(See Appendix 3)**. They have both historical and social significance and are considered sacred. Wherever they exist or not, they may not be tempered with or interfered with during any development. The possibility of encountering human remains during subsurface earth moving works anywhere on the landscape is ever present. Although the possibility of encountering previously unidentified burial sites is low along the proposed development site, should such sites be identified during subsurface construction work, they are still protected by applicable legislations and they should be protected (**See Appendices 2 &3 for more details**). In addition, any mitigation measures in respect of graves that may be located in a proposed development site must put into consideration the need to protect graves as evidence of previous settlement by African populations who were forcibly evicted due racially discriminatory legislations and practices associated with the colonial and apartheid regimes.

Plate 16: Photo 16: View of Burial site MSBS1 on the edge of the proposed development site (Photograph © by Author 2020)

Plate 17: Photo 17: View of Burial site MSBS1(Photograph © by Author 2020)

Plate 18: Photo 18: View of Burial Site MSBS2 on the edge of the proposed development site (Photograph © by Author 2020)

Plate 19: Photo 19: View of Burial Site MSBS2 (Photograph © by Author 2020)

Historical Monuments and Memorials

The proposed development site did not yield any historical monuments and memorials.

Palaeontology

The Palaeontology study was conducted by Durand (2021). The study noted that Geomorphologically the study area is characterised by a generally flat and at places gently undulating landscape consistent with the erosion of the almost horizontally orientated underlying sandstone and mudstone layers of the Ecca Group. The study area falls within the Ecca Group of the Karoo Supergroup. The Ecca Group is renowned for its fossil content. The Ecca Group is characterized by shale, mudstone, sandstone and seams of coal (Johnson *et al.,* 2009). The near horizontal layering of the geological strata and erosion of the adjacent and underlying rock strata results in a gently undulating landscape covered to a great extent by sandy soil. Exposures of the underlying geology are therefore exceptionally scarce in the northern part of the Main Karoo Basin and are mostly limited to gullies, river banks, road cuttings and the mines in the region. The study area is considered to be of **very high Palaeontological sensitivity (SAHRA, 2019)**. Fossils have been found on the farms and the mines in the region. These Permian fossils are mostly leaf and stem imprints of Glossopteris, lycopods, ferns, horsetails, cordaitaleans, conifers and ginkgoaleans. Rare fossils of silicified and coalified wood, insects, bivalves, conchostrachans and fish scales have also been found in the shales and sandstones of the Vryheid Formation in Mpumalanga (Groenewald & Groenewald, 2014).

Mitigation Measures

Mitigation is required to protect the recorded burial site MSBS1 and MSBS2 which are located within the proposed development site. The burial sites must be properly mapped and fenced or barricaded to increase their visibility during construction. Construction workers must be informed of their existence and must be inducted on how to work around heritage sites. The contractor must keep a copy of the appended Chance Find Procedure at the site office. In addition, the contractor must inform the affected families about the proposed development and potential impacts to the burial site. The affected families must be involved in any mitigation work at the burial sites and their consent must always be sought prior to any mitigation work. From a Palaeontological perspective, the region is known for its fossiliferous shales and sandstones and it is highly probable that fossils will be encountered when the intact bedrock under the soil cover and layer of eroded rock is exposed during construction. As such if an exceptionally fossil-rich layer of shale or sandstone is exposed during construction it is advised that the ECO must follow the Chance Palaeontological Find Procedure as stipulated in the appended report and to contact a palaeontologist for further advice

ASSESSMENT OF CONSTRUCTION IMPACTS

An impact can be defined as any change in the physical-chemical, biological, cultural and/or socio-economic environmental system that can be attributed to human activities related to the project site under study for meeting a project need. The significance of the impacts of the process will be rated by using a matrix derived from Plomp (2004) and adapted to some extent to fit this process. These matrixes use the consequence and the likelihood of the different aspects and associated impacts to determine the significance of the impacts.

The significance of the impacts will be determined through a synthesis of the criteria below:

Probability: This describes the likelihood of the impact actually occurring

Improbable: The possibility of the impact occurring is very low, due to the circumstances, design or experience.

Probable: There is a probability that the impact will occur to the extent that provision must be made, therefore.

Highly Probable: It is most likely that the impact will occur at some stage of the development.

Definite: The impact will take place regardless of any prevention plans and there can only be relied on mitigatory measures or contingency plans to contain the effect.

Duration: The lifetime of the impact

Short Term: The impact will either disappear with mitigation or will be mitigated through natural processes in a time span shorter than any of the phases.

Medium Term: The impact will last up to the end of the phases, where after it will be negated.

Long Term: The impact will last for the entire operational phase of the proposed development but will be mitigated by direct human action or by natural processes thereafter.

Permanent: The impact is non-transitory. Mitigation either by man or natural processes will not occur in such a way or in such a time span that the impact can be considered transient.

Scale: The physical and spatial size of the impact

Local: The impacted area extends only as far as the activity, e.g. footprint

Site: The impact could affect the whole, or a measurable portion of the above-mentioned properties.

Regional: The impact could affect the area including the neighboring residential areas.

Magnitude/ Severity: Does the impact destroy the environment, or alter its function

Low: The impact alters the affected environment in such a way that natural processes are not affected.

Medium: The affected environment is altered, but functions and processes continue in a modified way.

High: Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.

Significance: This is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required.

Negligible: The impact is non-existent or unsubstantial and is of no or little importance to any stakeholder and can be ignored.

Low: The impact is limited in extent, has low to medium intensity; whatever its probability of occurrence is, the impact will not have a material effect on the decision and is likely to require management intervention with increased costs.

Moderate: The impact is of importance to one or more stakeholders, and its intensity will be medium or high; therefore, the impact may materially affect the decision, and management intervention will be required.

High: The impact could render development options controversial or the project unacceptable if it cannot be reduced to acceptable levels; and/or the cost of management intervention will be a significant factor in mitigation.

Table 1: The following weights were assigned to each attribute:

Aspect	Description	Weight
Probability	Improbable	1
	Probable	2
	Highly Probable	4
	Definite	5
Duration	Short term	1
	Medium term	3
	Long term	4
	Permanent	5
Scale	Local	1
	Site	2
	Regional	3
Magnitude/Severity	Low	2
	Medium	6
	High	8
Significance	Sum (Duration, Scale, Magnitude) x Probability	
	Negligible	≤20
	Low	>20 ≤40
	Moderate	>40 ≤60
	High	>60

The significance of each activity should be rated without mitigation measures (WOM) and with mitigation (WM) measures for both construction, operational and closure phases of the proposed development

Table 2: **Impact Assessment Matrix**

Proposed establishment of Mabuza Informal settlement housing project								
Nature of Impact	Management Measures	Duration	Scale	Magnitude/Severity	Probability	Calculations Sum (Duration, Scale, Magnitude) x Probability	Proposed Mitigation Measures	Significance
Archaeological Remains	Without management	3	3	6	2	(3+3+6) x 2=24	No archaeological remains were recorded within the proposed project site, no measures are required.	Low to medium
	With management	3	2	2	2	(3+2+2) x 2=14	No archaeological remains were recorded within the development site. However, the chance find procedure applies.	Low to medium
Graves and Burial Grounds	Without management	5	4	6	4	(5+4+6) x 4=60	Two burial sites were recorded within the development site. They can be avoided because they are known. Avoid and fence the burial sites	High
	With management	4	3	3	2	(4+3+3) x 2=20	Mitigation required for MSBS1 &2 Avoid and fence the burial sites	Low
Historical buildings and structures	Without management	3	3	1	2	(3+3+2) x 2=14	Informal settlement, no need for mitigation.	Negligible
	With management	3	3	2	2	(3+3+2) x 2=16	Mitigation may not be required if buildings and structures are confirmed to be younger than 60 years.	Negligible
Mining Heritage	Without management	3	3	1	4	(3+3+1) x 4=28	No traces of historical mining in the project area. Mitigation not required	Negligible
	With management	3	2	1	2	(3+2+1) x 2=12	No traces of historical mining in the site. Mitigation not required	Negligible
Public Monuments and memorials	Without management	3	3	1	1	(3+3+1) x 1=7	None recorded within the site. Mitigation not required	Negligible
	With management	1	3	1	1	(1+3+1) x 1=5	Induct construction workers and mark any memorials and plaques	Negligible
Palaeontology	Without management	5	4	8	4	(5+4+8) x 4=70	The region is palaeontological sensitive and very high chance of unearthing fossils	High
	Without management	4	4	6	4	(4+4+6) x 4=56	Mitigation required (see chance find procedure)	Moderate

IMPACT ASSESSMENT

The main causes of impact during construction of the proposed development are excavation for foundations and municipal services and clearance, movement of heavy construction equipment during transporting of material and during construction as well as maintenance of the infrastructure. The project area has been altered significantly due to the existing informal settlement and various infrastructure developments in the town and its periphery.

Potential impacts

The biggest potential negative impacts on the affected landscape are activities related to excavations, and movement of construction equipment within the proposed project site. The two recorded burial sites may be affected by municipal services such as water reticulation and storm drains. However, because the project area is already significantly impacted on, the potential impacts on archaeological remains are negligible. The following impact assessment was done for this study. The impact assessment takes into consideration that the general landscape is already significantly disturbed. However, the recorded burial sites must be protected. The impacts of the proposed construction of houses and municipal services may affect the recorded burial sites if measures to protect them are not put in place. Construction teams must take into consideration the appended chance find procedures below to cater for potential accidental finds during construction.

ASSESSING CULTURAL HERITAGE SITE ASSESSMENT OF SIGNIFICANCE

The appropriate management of cultural heritage resources is usually determined based on their assessed significance as well as the likely impacts of any proposed developments. Cultural significance is defined in the Burra Charter as meaning aesthetic, historic, scientific, or social value for past, present, or future generations (Article 1.2). Social, religious, cultural, and public significance are currently identified as baseline elements of this assessment, and it is through the combination of these elements that the overall cultural heritage values of the site of interest, associated place or area are resolved. The recorded burial sites MSBS1 and MSBS2 retain high social significance and they are regarded as sacred. This implies the burial sites must be protected by providing adequate buffer zones and possibly fencing them off as a protective measure.

Not all sites are equally significant and not all are worthy of equal consideration and management. The significance of a place is not fixed for all time, and what is considered of significance at the time of assessment may change as similar items are located, more research is undertaken, and community values change. This does not lessen the value of the heritage approach but enriches both the process and the long-term outcomes for future generations as the nature of what is conserved and why, also changes over time (Pearson and Sullivan 1995:7).

African indigenous cultural heritage significance is not limited to items, places or landscapes associated with pre-European contact. Indigenous cultural heritage significance is understood to encompass more than ancient archaeological sites and deposits, broad landscapes, and environments. It also refers to sacred places and story sites, as well as historic sites, including mission sites, memorials, and contact sites. This can also refer to modern sites with resonance to the indigenous community. The proposed project site falls within this realm of broad significance.

DISCUSSION

In terms of sensitivity, the site considered for this study is equally viable from a heritage perspective. The site did not yield any significant heritage resources to warrant abandonment of the project. Various archaeological and heritage specialist studies were conducted in the general project area since 2002. The current study should be read in conjunction with previous Phase 1 Impact Studies conducted in the general project area. These studies recorded sites of varying significance for example Pelser and Van Vollenhoven (2011,2013, 2011, 2014, 2015, Van Schalkwyk, (2002, 2004, 2006, 2006, and 2010) which testify that the project area is a cultural landscape with high potential to yield significant archaeological sites. The study noted that the proposed development site is located within a degraded area and have reduced sensitivity for the presence of high significance physical cultural site remains, be they archaeological, historical or burial sites, due to previous disturbances resulting from mainly agriculture activities in the area. However, the absence of confirmable and significant archaeological cultural heritage sites is not evidence that such sites did not exist in the proposed development site. There is potential of recovering significant archaeological remains beneath the surface. Significance of the site of interest is not limited to presence or absence of physical archaeological sites.

RECOMMENDATIONS

The study did not find any permanent barriers on the site presented for this study. The three sites presented for consideration are equally viable for the proposed construction of housing infrastructure. The following recommendations are based on the results of the AIA/HIA research, cultural heritage background review, site inspection and assessment of significance. The proposed project is viable from an archaeological perspective. All the potential impacts associated with the development site can be mitigated without serious design alterations. The project may be approved subject to the following recommendations:

17. From a heritage perspective supported by the findings of this study, the proposed township establishment is feasible. However, the proposed development should be approved to proceed as planned under observation that the development dimensions do not extend beyond the proposed site.

18. A management plan must be drawn for the burial site since it is not going to be relocated, the management plan will ensure protection of the recorded burial sites during construction and operational phase.
19. The identified burial sites must be mapped and fenced to protect it from uncontrolled access.
20. The project planners must provide for a minimum of 25m buffer zone around the burial sites and must provide access through the main entrance of the cemetery
21. Since the burial sites are not fenced currently, we recommend that a professional archaeologist must be appointed to monitor earth works and municipal services installation around the burial sites.
22. Construction workers must be inducted on the possibility of encountering archaeological resources that may be accidentally exposed during subsurface clearance before the commencement of work on the site to ensure appropriate mitigation measures and that course of action is afforded to any chance finds.
23. No stone robbing or removal of any material is allowed. Any disturbance or alteration on this graveyard would be illegal and punishable by law, under section 36 (3) of the National Heritage Resources Act NHRA of 1999 (Act 25 of 1999).
24. No dumping of construction material is allowed within the burial sites and no un-monitored alteration or excavation within the cemetery may occur.
25. Noteworthy that any measures to cover up any accidental damage of graves or to collect any grave goods is illegal and punishable by law. In the same manner, no person may exhume or collect such remains, whether of recent origin or not, without the endorsement by relevant authority.
26. The footprint impact of the proposed development should be kept to a minimal to limit the possibility of encountering chance finds.
27. From a Palaeontological perspective, the region is known for its fossiliferous shales and sandstones and it is highly probable that fossils will be encountered when the intact bedrock under the soil cover and layer of eroded rock is exposed during construction.
28. If an exceptionally fossil-rich layer of shale or sandstone is exposed during construction, it is advised that the ECO must follow the Chance Palaeontological Find Procedure as stipulated below and to contact a palaeontologist for further advice
29. Should chance archaeological materials or human remains be exposed during subsurface construction work on any section of the proposed development laydown sites, work should cease on the affected area and the discovery must be reported to the heritage authorities immediately so that an investigation and evaluation of the finds can be made. The overriding objective, where remedial action is warranted, is to minimize disruption in construction scheduling while recovering archaeological and any affected cultural heritage data as stipulated by the NHRA regulations (see appended Chance Find Procedure)

30. The Project Public Participation Process should ensure that any cultural heritage related matters for this project are given due attention whenever they arise and are communicated PHRA throughout the proposed project development. This form of extended community involvement would pre-empty any potential disruptions that may arise from previously unknown cultural heritage matter that may have escaped the attention of this study.

31. Subject to the recommendations herein made and the implementation of the mitigation measures and adoption of the project EMP, there are no significant cultural heritage resources barriers to the proposed development. The Heritage authority may approve the proposed extension of the township and associated infrastructure to proceed as planned with special commendations to implement the recommendations here in made.

32. The findings of this report, with approval of the PHRA/SAHRA, may be classified as accessible to any interested and affected parties within the limits of the laws.

CONCLUDING REMARKS

Integrated Specialist Services (Pty) Ltd was retained by OURA Solutions (Pty) Ltd on behalf of Department: Human Settlement to conduct Archaeological and Heritage Impact Assessment for the proposed construction of an Integrated Human Settlement on Portions of the Farm Buhrmanns Tafelkop 135 IT. Literature review and field research confirmed that the project area is situated within a contemporary cultural landscape dotted with settlements with long local history. In terms of the archaeology and heritage in respect of the proposed construction of municipal services, there are no obvious 'Fatal Flaws' or 'No-Go' areas on the site earmarked for the project. No archaeological sites were recorded within the proposed development sites. However, mitigation is required for the recorded burial sites which must be preserved in situ and protected to avoid any accidental damage during construction. Since the region is known for its fossiliferous shales and sandstones and it is highly probable that fossils will be encountered when the intact bedrock under the soil cover and layer of eroded rock is exposed during construction the proposed project must be monitored for any exposure of fossils (see appended Chance Find Procedure on how to deal with accidental finds). The field survey established that the affected project area is degraded by existing informal settlement and previous agriculture activities. This report concludes that the proposed development may be approved by SAHRA/PHRA to proceed as planned subject to recommendations herein made (**See Appendices 1, 2 &3**). The measures are informed by the results of the study and principles of heritage management enshrined in the NHRA, Act 25 of 1999.

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APPENDIX 1: PALAEONTOLOGICAL IMPACT ASSESSMENT FOR THE PROPOSED FORMALIZATION OF THE MABUZA INFORMAL SETTLEMENT ON PORTION 8 OF THE FARM BUHRMANNS TAFELKOP 135, MSUKALIGWA MUNICIPALITY, MPUMALANGA PROVINCE

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27 January 2021

DOCUMENT SYNOPSIS (EXECUTIVE SUMMARY)

Item	Description
Proposed development and location	Proposed formalization of the Mabuza Informal Settlement on portion 8 of the farm Buhrmanns Tafelkop 135, Msukaligwa Municipality, Mpumalanga Province
Purpose of the study	Phase 1 Palaeontological Impact Assessment to determine the presence of fossils and the impact of the proposed project on these resources within the area demarcated for the proposed development.
1:50 000 Topographic Map	
Coordinates	26°29'46.86"S 30°00'28.27"E
Municipalities	Msukaligwa Municipality.
Predominant land use of surrounding area	Agriculutral, Informal residence
Applicant	**MPUMALANGA DEPARTMENT OF HUMAN SETTLEMENTS** Government Blvd, Riverside Park Private Bag X 11328, Nelspruit. 1201 Tel: 013 766 6088 Fax: 013 766 8441 Website: dhs.mpg.gov.za
Heritage Practitioner	**Integrated Specialists Services (Pty) Ltd** Constantia Park, Building 16-2, 546, 16th Road, Midrand, 1685 **C**ell: 067 217 4511 Fax: 086 652 9774, **E**-mail: trust@issolutions.co.za

Palaeontologist	Prof. JF Durand
Contact Person	Trust Mlilo
Date of Report	29 January 2021

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1. EXECUTIVE SUMMARY

Shale and sandstone of the Vryheid Formation of the Ecca Group of the Karoo Supergroup underlie the study site but is covered over by a layer of sandy soil.

The sedimentary rocks of the Vryheid Formation are highly fossiliferous in places and the chances are high that such layers will be exposed during development. The uppermost part of the underlying rocks is highly weathered however which diminishes the possibility of finding fossils in the study area.

The fossils that occur in the Vryheid Formation are mostly that of leaf and stem imprints of plants such as *Glossopteris*, lycopods, ferns, horsetails, conifers, cordaitaleans and ginkgoaleans. Rare fossils of silicified and coalified wood, insects, bivalves, conchostrachans and fish scales also occur in this formation.

A palaeontologist should be contacted if an exceptional fossil discovery is made in the shale or sandstone units during the construction, exploration or mining phase. The ECO should follow the guidelines as stipulated under the Chance Find Procedure on p. 15-16 in such an event.

2. INTRODUCTION

The palaeontological heritage of South Africa is unsurpassed and can only be described in superlatives. The South African palaeontological record gives us insight in *i.a.* the origin of life, dinosaurs and humans. Fossils are also used to identify rock strata and determine the geological context of the subregion with other continents and to study evolutionary relationships, sedimentary processes and palaeoenvironments. The Ecca Group of the Karoo Supergroup contains a vast amount of fossil leaf imprints of plants that occurred in Southern Gondwana during the Permian. These lacustrine deposits contained plant matter that turned into coal in certain parts of the Ecca Group. The resulting coal fields form a very important mineral resource for the country.

The Heritage Act of South Africa stipulates that fossils and fossil sites may not be altered or destroyed. The purpose of this document is to detail the probability of finding fossils in the study area that may be impacted by the proposed development.

3. TERMS OF REFERENCE FOR THE REPORT

According to the South African Heritage Resources Act (Act 25 of 1999) (Republic of South Africa, 1999), certain clauses are relevant to palaeontological aspects for a terrain suitability assessment.

- **Subsection 35(4)** No person may, without a permit issued by the responsible heritage resources authority-
- (a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
- (b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;
- (c) trade in, sell for private gain, export or attempt to export from the republic any category of archaeological or palaeontological material or object, or any meteorite; or
- (d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist with the detection or recovery of metals or archaeological material or objects, or use such equipment for the recovery of meteorites.
- **Subsection 35(5)** When the responsible heritage resources authority has reasonable cause to believe that any activity or development which will destroy, damage or alter any archaeological or palaeontological site is under way, and where no application for a permit has been submitted and no heritage resources management procedures in terms of section 38 has been followed, it may-
- (a) serve on the owner or occupier of the site or on the person undertaking such development an order for the development to cease immediately for such period as is specified in the order;
- (b) carry out an investigation for the purpose of obtaining information on whether or not an archaeological or palaeontological site exists and whether mitigation is necessary;
- (c) if mitigation is deemed by the heritage resources authority to be necessary, assist the person on whom the order has been served under paragraph (a) to apply for a permit as required in subsection (4); and
- (d) recover the costs of such investigation form the owner or occupier of the land on which it is believed an archaeological or palaeontological site is located or from the person proposing to undertake the development if no application for a permit is received within two weeks of the order being served.

South Africa's unique and non-renewable palaeontological heritage is protected in terms of the NHRA. According to this act, heritage resources may not be excavated, damaged, destroyed or

otherwise impacted by any development without prior assessment and without a permit from the relevant heritage resources authority.

As areas are developed and landscapes are modified, heritage resources, including palaeontological resources, are threatened. As such, both the environmental and heritage legislation require that development activities must be preceded by an assessment of the impact undertaken by qualified professionals. Palaeontological Impact Assessments (PIAs) are specialist reports that form part of the wider heritage component of:

- Heritage Impact Assessments (HIAs) called for in terms of Section 38 of the National Heritage Resources Act, Act No. 25, 1999 by a heritage resources authority.
- Environmental Impact Assessment process as required in terms of other legislation listed in s. 38(8) of NHRA;
- Environmental Management Plans (EMPs) required by the Department of Mineral Resources.

HIAs are intended to ensure that all heritage resources are protected, and where it is not possible to preserve them in situ, appropriate mitigation measures are applied. An HIA is a comprehensive study that comprises a palaeontological, archaeological, built environment, living heritage, etc specialist studies. Palaeontologists must acknowledge this and ensure that they collaborate with other heritage practitioners. Where palaeontologists are engaged for the entire HIA, they must refer heritage components for which they do not have expertise on to appropriate specialists. Where they are engaged specifically for the palaeontology, they must draw the attention of environmental consultants and developers to the need for assessment of other aspects of heritage. In this sense, Palaeontological Impact Assessments that are part of Heritage Impact Assessments are similar to specialist reports that form part of the EIA reports.

The standards and procedures discussed here are therefore meant to guide the conduct of PIAs and specialists undertaking such studies must adhere to them.

The process of assessment for the palaeontological (PIA) specialist components of heritage impact assessments, involves:

Scoping stage in line with regulation 28 of the National Environmental Management Act (No. 107 of 1998) Regulations on Environmental Impact Assessment. This involves an **initial assessment** where the

specialist evaluates the scope of the project (based, for example, on NID/BIDs) and advises on the form and extent of the assessment process. At this stage the palaeontologist may also decide to compile a **Letter of Recommendation for Exemption from further Palaeontological Studies**. This letter will state that there is little or no likelihood that any significant fossil resources will be impacted by the development. This letter should present a reasoned case for exemption, supported by consultation of the relevant geological maps and key literature.

A **Palaeontological Desktop Study** – the palaeontologist will investigate available resources (geological maps, scientific literature, previous impact assessment reports, institutional fossil collections, satellite images or aerial photos , etc) to inform an assessment of fossil heritage and/or exposure of potentially fossiliferous rocks within the study area. A Desktop studies will conclude whether a further field assessment is warranted or not. Where further studies are required, the desktop study would normally be an integral part of a field assessment of relevant palaeontological resources.

A **Phase 1 Palaeontological Impact Assessment** is generally warranted where rock units of high palaeontological sensitivity are concerned, levels of bedrock exposure within the study area are adequate; large-scale projects with high potential heritage impact are planned; and where the distribution and nature of fossil remains in the proposed project area is unknown. In the recommendations of Phase 1, the specialist will inform whether further monitoring and mitigation are necessary. The Phase 1 should identify the rock units and significant fossil heritage resources present, or by inference likely to be present, within the study area, assess the palaeontological significance of these rock units, fossil sites or other fossil heritage, comment on the impact of the development on palaeontological heritage resources and make recommendations for their mitigation or conservation, or for any further specialist studies that are required in order to adequately assess the nature, distribution and conservation value of palaeontological resources within the study area.

A **Phase 2 Palaeontological Mitigation** involves planning the protection of significant fossil sites, rock units or other palaeontological resources and/or the recording and sampling of fossil heritage that might be lost during development, together with pertinent geological data. The mitigation may take place before and / or during the construction phase of development. The specialist will require a Phase 2 mitigation permit from the relevant Heritage Resources Authority before Phase 2 may be implemented.

A **'Phase 3' Palaeontological Site Conservation and Management Plan** may be required in cases where the site is so important that development will not be allowed, or where development is to co-exist with the resource. Developers may be required to enhance the value of the sites retained on their properties with appropriate interpretive material or displays as a way of promoting access of such resources to the public.

The assessment reports will be assessed by the relevant heritage resources authority and depending on which piece of legislation triggered the study, a response will be given in the form of a Review Comment or Record of Decision (ROD). In the case of PIAs that are part of EIAs or EMPs, the heritage resources authority will issue a comment or a record of decision that may be forwarded to the consultant or developer, relevant government department or heritage practitioner and where feasible to all three.

4. DETAILS OF STUDY AREA AND THE TYPE OF ASSESSMENT:

Figure 4: Google Earth photo of the study site (yellow rectangle)

The study area (indicated by the yellow rectangle in Fig. 1) is situated north of Ermelo in Msukaligwa Municipality in Mpumalanga Province.

Geomorphologically the study area is characterised by a generally flat and at places gently undulating landscape consistent with the erosion of the almost horizontally orientated underlying sandstone and mudstone layers of the Ecca Group.

The area in which the study site is located is considered to be of VERY HIGH PALAEONTOLOGICAL SENSITIVITY (SAHRA, 2019) (see Fig. 5). The relevant literature and geological maps for the region in which the development is proposed to take place, have been studied and the site has been visited for a Palaeontological Impact Assessment.

5. GEOLOGICAL SETTING

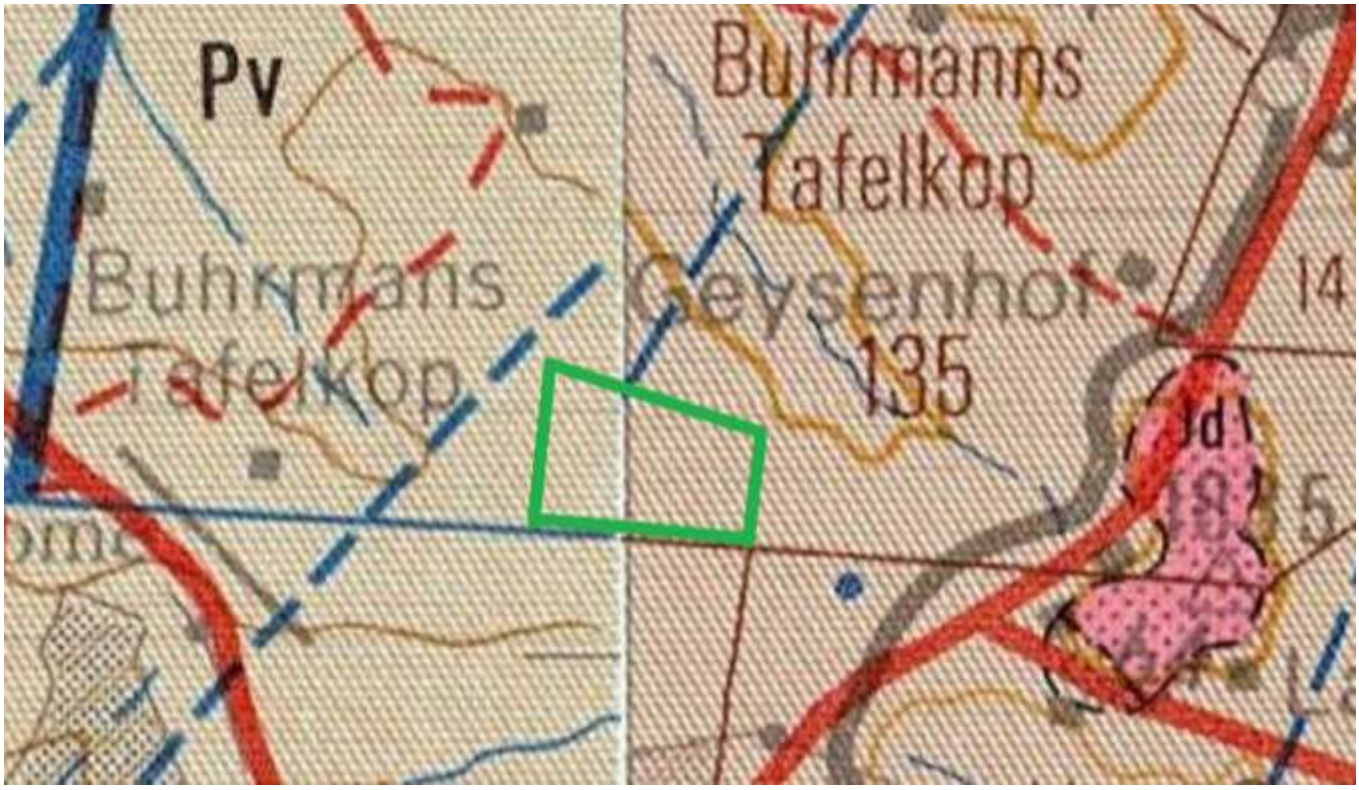

Figure 5:The study area is indicated by the green rectangle (Geology Map of the study area adapted from the 2628 EAST RAND and the 2630 MBABANE 1:250 000 Geology Maps, Geological Survey, 1986)

Table 3: Geological Legend

Legend				
	Lithology	**Stratigraphy**		**Age**
Jd	Dolerite			Jurassic
Pv	Shale, subordinate sandstone, coal	Vryheid Formation of the Ecca Group	Karoo Supergroup	Permian

The study area is underlain by sedimentary rocks consisting mostly of shale (metamorphosed mudstone), shaly sandstone, sandstone, grit, gravel, conglomerate and coal of the Vryheid Formation of the Ecca Group of the Karoo Supergroup (see Fig. 2).

The Karoo Supergroup sediments were deposited in valleys and basins that existed in the pre-Karoo topography in the region. The Karoo Supergroup rocks overlie unconformably the older Waterberg Group and Transvaal Supergroup rocks (Johnson *et al*. 2009).

The Vryheid Formation was formed when glacial and fluvio-glacial sediments were deposited in shallow marine to fluvio-deltaic environments approximately 280 Ma ago. In places coal seams are associated with these fluvial valley deposits. The coal seams formed in peat swamps which originated on alluvial plains or more rarely in back swamps (Johnson, *et al*., 2009).

6. PALAEONTOLOGICAL FIELD ASSESSMENT

The topography of the study area is essentially flat and covered in grass (see Fig.3). The underlying rock formation is covered in sandy soil. No fossils were found during the field survey. There is however a high probability that fossiliferous sandstone could be uncovered in the study area when the soil and weathered rock are cleared, and unweathered bedrock is exposed.

Figure 6 View of the study site (SE corner, facing N): 26º29'46.86"S 30º00'28.27"E.

Figure 7 View of the geology exposed in a road cutting to the south of the study site (26º29'53.38"S 30º00'27.59" E)

7. PALAEONTOLOGY OF THE STUDY AREA

The region is fossil rich and is considered by SAHRA as having a Very High Palaeontological Sensitivity (Fig. 5). Fossils have been found on the farms and the mines in the region. These Permian fossils are mostly leaf and stem imprints of *Glossopteris*, lycopods, ferns, horsetails, cordaitaleans, conifers and ginkgoaleans. Rare fossils of silicified and coalified wood, insects, bivalves, conchostrachans and fish scales have also been found in the shales and sandstones of the Vryheid Formation in Mpumalanga (Groenewald & Groenewald, 2014).

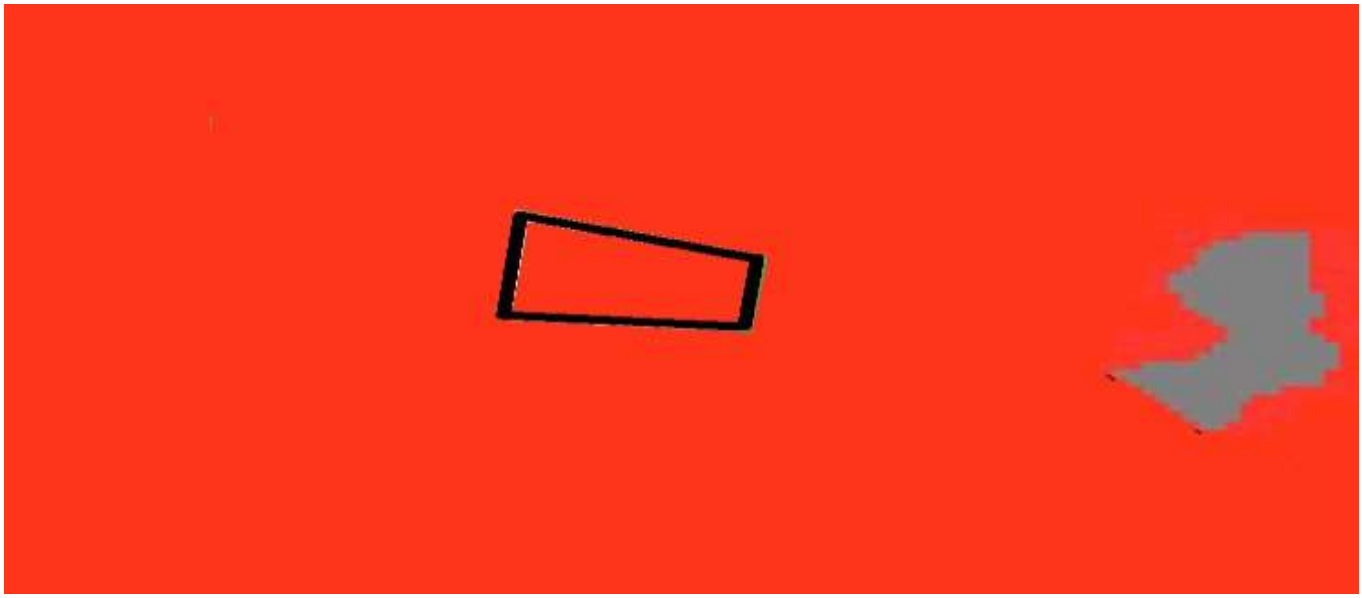

Figure 8: Palaeosensitivity map showing the position of the study site (black polygon) (SAHRA, 2020)

Table 4: Palaeosensitivity Legend:

Colour	Palaeontological Significance	Action
RED	VERY HIGH	Field assessment and protocol for finds are required.
GREY	INSIGNIFICANT / ZERO	No palaeontological studies are required.

The study area falls within the Ecca Group of the Karoo Supergroup. The Ecca Group is renowned for its fossil content. The Ecca Group is characterized by shale, mudstone, sandstone and seams of coal (Johnson *et al*., 2009). The near horizontal layering of the geological strata and erosion of the adjacent and underlying rock strata results in a gently undulating

landscape covered to a great extent by sandy soil. Exposures of the underlying geology are therefore exceptionally scarce in the northern part of the Main Karoo Basin and are mostly limited to gullies, riverbanks, road cuttings and the mines in the region.

The Ecca Group of the Karoo Supergroup contain vast amounts of Permian leaf imprints of plants such as *Glossopteris* in places (Kovács-Endrödy, 1991) (see Fig. 6). Millions of tons of fossiliferous material yielding mostly *Glossopteris* leaf imprints have been exposed at well-studied sites in the northern rim of the main Karoo Basin such as Hammanskraal (Kovács-Endrödy, 1976), Witbank (Bamford, 2004) and Vereeniging (Rayner, 1986) and the ferromanganese mine at Ryedale (Pack *et al*., 2000).

Fossilised leaf imprints are not found ubiquitously throughout the Ecca Group, but in pockets such as in the eMalahleni and Vereeniging areas where the physical and chemical conditions during deposition resulted in the preservation of not only the structure of the leaves but also in some cases the organic material itself. The structure of the fossilised leaves is better preserved in the shales than in the sandstone units. The leaf structures are mostly lost in the coal layers.

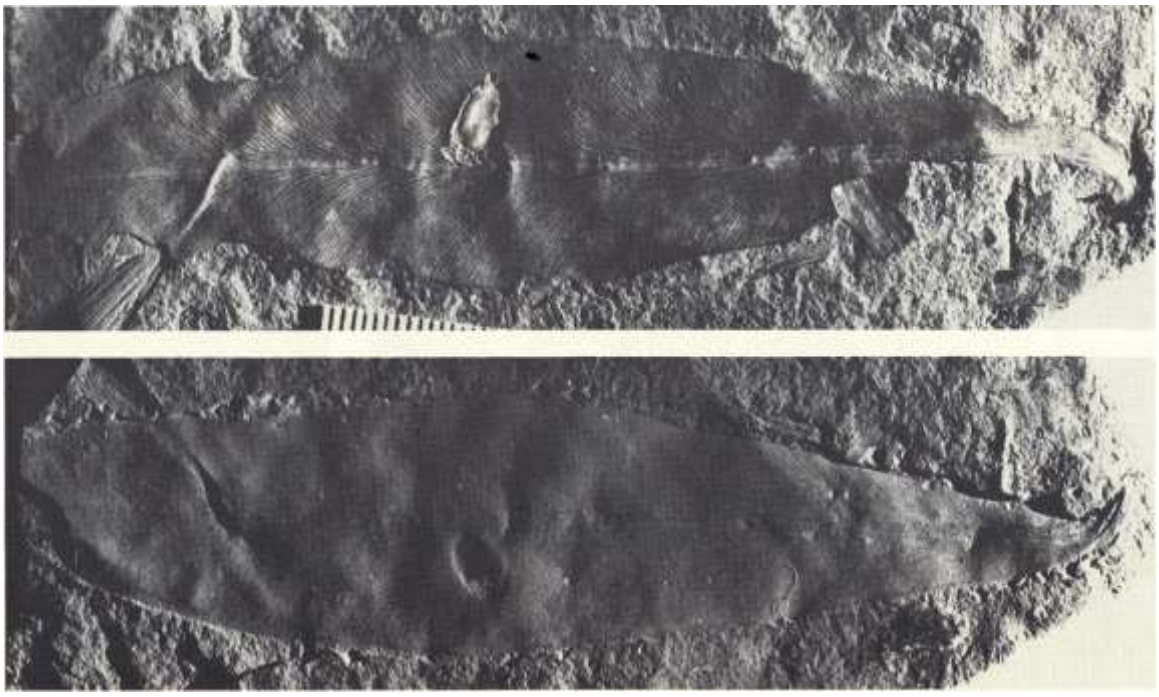

Figure 9: *Glossopteris* leaf imprint (from Kovács-Endrödy, 1976)

There is a high volume but low species diversity of fossil material from this region. Large and well described collections of fossil material from this region are housed at the Council for Geoscience, the Bernard Price Institute for Palaeontology at the University of the Witwatersrand and the Botanical Research Institute. *Glossopteris* leaves are abundant in Ecca Group sediments in Gauteng, Free State, Mpumalanga and KwaZulu-Natal and could be considered to be amongst the most common fossils in South Africa.

The uppermost part of the underlying geology at the study site is highly weathered (Figs. 3 & 4) which diminishes the probability of finding intact fossils in the study area.

8. CONCLUSION AND RECOMMENDATIONS:

The region is known for its fossiliferous shales and sandstones and it is highly probable that fossils will be encountered when the intact bedrock under the soil cover and layer of eroded rock is exposed during construction.

If an exceptionally fossil-rich layer of shale or sandstone is exposed during construction it is advised that the ECO must follow the Chance Palaeontological Find Procedure as stipulated below and to contact a palaeontologist for further advice.

PROCEDURE FOR CHANCE PALAEONTOLOGICAL FINDS

Extracted and adapted from the National Heritage Resources Act, 1999 Regulations Reg No. 6820, GN: 548.

The following procedure must be considered in the event that previously unknown fossils or fossil sites are exposed or found during the life of the project:

1. Surface excavations should continuously be monitored by the ECO and any fossil material be unearthed the excavation must be halted.

2. If fossiliferous material has been disturbed during the excavation process it should be put aside to prevent it from being destroyed.

3. The ECO then has to take a GPS reading of the site and take digital pictures of the fossil material and the site from which it came.

4. The ECO then should contact a palaeontologist and supply the palaeontologist with the information (locality and pictures) so that the palaeontologist can assess the importance of the find and make recommendations.

5. If the palaeontologist is convinced that this is a major find an inspection of the site must be scheduled as soon as possible in order to minimise delays to the development.

From the photographs and/or the site visit the palaeontologist will make one of the following recommendations:

a. The material is of no value so development can proceed, or:

b. Fossil material is of some interest and a representative sample should be collected and put aside for further study and to be incorporated into a recognised fossil repository after a permit was obtained from SAHRA for the removal of the fossils, after which the development may proceed, or:

c. The fossils are scientifically important, and the palaeontologist must obtain a SAHRA permit to excavate the fossils and take them to a recognised fossil repository, after which the development may proceed.

7. If any fossils are found then a schedule of monitoring will be set up between the developer and palaeontologist in case of further discoveries.

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9. DECLARATION OF INDEPENDENCE:

I, Jacobus Francois Durand declare that I am an independent consultant and have no business, financial, personal or other interest in the proposed development, application or appeal in respect of which I was appointed other than fair remuneration for work performed in connection with the activity, application or appeal. There are no circumstances that compromise the objectivity of my performing such work.

Palaeontological specialist:

Dr JF Durand (Sci. Nat.)

BSc Botany & Zoology (RAU), BSc Zoology (WITS), Museology Dipl. (UP),

Higher Education Diploma (RAU), PhD Palaeontology (WITS)

APPENDIX 2: THE PROPOSED ESTABLISHMENT OF AN INTEGRATED SUSTAINABLE HUMAN SETTLEMENT ON PORTIONS 8 OF THE FARM BUHRMANNS TAFELKOP 135 IT, MSUKALINGWA LOCAL MUNICIPALITY, MPUMALANGA PROVINCE.

August 2020

ACRONYMS

BGG	Burial Grounds and Graves
CFPs	Chance Find Procedures
ECO	Environmental Control Officer
HIA	Heritage Impact Assessment
ICOMOS	International Council on Monuments and Sites
NHRA	National Heritage Resources Act (Act No. 25 of 1999)
SAHRA	South African Heritage Resources Authority
SAPS	South African Police Service
UNESCO	United Nations Educational, Scientific and Cultural Organisation

CHANCE FIND PROCEDURE

INTRODUCTION

An Archaeological Chance Find Procedure (CFP) is a tool for the protection of previously unidentified cultural heritage resources during construction. The main purpose of a CFP is to raise awareness of all construction workers and management on site regarding the potential for accidental discovery of cultural heritage resources and establish a procedure for the protection of these resources. Chance Finds are defined as potential cultural heritage (or paleontological) objects, features, or sites that are identified outside of or after Heritage Impact studies, normally as a result of construction monitoring. Chance Finds may be made by any member of the project team who may not necessarily be an archaeologist or even visitors. Appropriate application of a CFP on development projects has led to discovery of cultural heritage resources that were not identified during archaeological and heritage impact assessments. As such, it is considered to be a valuable instrument when properly implemented. For the CFP to be effective, the site manager must ensure that all personnel on the proposed development site understand the CFP and the importance of adhering to it if cultural heritage resources are encountered. In addition, training or induction on cultural heritage resources that might potentially be found on site should be provided. In short, the Chance find procedure details the necessary steps to be taken if any culturally significant artefacts are found during construction.

DEFINITIONS

In short the term 'heritage resource' includes structures, archaeology, meteors, and public monuments as defined in the South African National Heritage Resources Act (Act No. 25 of 1999) (NHRA) Sections 34, 35, and 37. Procedures specific to burial grounds and graves (BGG) as defined under NHRA Section 36 will be discussed separately as this require the implementation of separate criteria for CFPs.

BACKGROUND

The proposed development in the Ermelo, Mpumalanga Province development site is subject to heritage survey and assessment at planning stage in accordance with the NHRA. These surveys are based on surface indications alone and it is therefore possible that sites or significant archaeological remains can be missed during surveys because they occur beneath the surface. These are often accidentally exposed in the course of construction or any associated construction work and hence the need for a Chance Find Procedure to deal with accidental finds. In this case an extensive Archaeological Impact Assessment was completed by Mlilo (2020) on the proposed project site. The AIA/HIA conducted was very comprehensive covering the entire site. The current study (Mlilo 2020) did not record any significant archaeological or heritage resources along the proposed project site.

PURPOSE

The purpose of this Chance Find Procedure is to ensure the protection of previously unrecorded heritage resources along the proposed project site. This Chance Find Procedure intends to provide the applicant and contractors with appropriate response in accordance with the NHRA and international best practice. The aim of this CFP is to avoid or reduce project risks that may occur as a result of accidental finds whilst considering international best practice. In addition, this document seeks to address the probability of archaeological remains finds and features becoming accidentally exposed during digging of foundations and movement of construction equipment. The proposed construction activities have the potential to cause severe impacts on significant tangible and intangible cultural heritage resources buried beneath the surface or concealed by tall grass cover. Integrated Specialist Services (Pty) Ltd developed this Chance Find Procedure to define the process which govern the management of Chance Finds during construction. This ensures that appropriate treatment of chance finds while also minimizing disruption of the construction schedule. It also enables compliance with the NHRA and all relevant regulations. Archaeological Chance Find Procedures are to promote preservation of archaeological remains while minimizing disruption of construction scheduling. It is recommended that due to the low to moderate archaeological potential of the project area, all site personnel and contractors be informed of the Archaeological Chance Find procedure and have access to a copy while on site. This document has been prepared to define the avoidance, minimization and mitigation measures necessary to ensure that negative impacts to known and unknown archaeological remains as a result of project activities and are prevented or where this is not possible, reduced to as low as reasonably practical during construction.

Thus, this Chance Finds Procedure covers the actions to be taken from the discovering of a heritage site or item to its investigation and assessment by a professional archaeologist or other appropriately qualified person to its rescue or salvage.

CHANCE FIND PROCEDURE

General

The following procedure is to be executed in the event that archaeological material is discovered:

- All construction/clearance activities in the vicinity of the accidental find/feature/site must cease immediately to avoid further damage to the find site.
- Briefly note the type of archaeological materials you think you have encountered, and their location, including, if possible, the depth below surface of the find
- Report your discovery to your supervisor or if they are unavailable, report to the project ECO who will provide further instructions.

- If the supervisor is not available, notify the Environmental Control Officer immediately. The Environmental Control Officer will then report the find to the Site Manager who will promptly notify the project archaeologist and SAHRA.
- Delineate the discovered find/ feature/ site and provide 25m buffer zone from all sides of the find.
- Record the find GPS location, if able.
- All remains are to be stabilised *in situ.*
- Secure the area to prevent any damage or loss of removable objects.
- Photograph the exposed materials, preferably with a scale (a yellow plastic field binder will suffice).
- The project archaeologist will undertake the inspection process in accordance with all project health and safety protocols under direction of the Health and Safety Officer.

- **Finds rescue strategy**: All investigation of archaeological soils will be undertaken by hand, all finds, remains and samples will be kept and submitted to a Museum as required by the heritage legislation. In the event that any artefacts need to be conserved, the relevant permit will be sought from the SAHRA.
- An on-site office and finds storage area will be provided, allowing storage of any artefacts or other archaeological material recovered during the monitoring process.
- In the case of human remains, in addition to the above, the SAHRA Burial Ground Unit will be contacted and the guidelines for the treatment of human remains will be adhered to. If skeletal remains are identified, an archaeological will be available to examine the remains.
- The project archaeologist will complete a report on the findings as part of the permit application process.
- Once authorisation has been given by SAHRA, the Applicant will be informed when construction activities can resume.

MANAGEMENT OF CHANCE FINDS

Should the Heritage specialist conclude that the find is a heritage resource protected in terms of the NRHA (1999) Sections 34, 36, 37 and NHRA (1999) Regulations (Regulation 38, 39, 40), ISS will notify SAHRA and/or PHRA on behalf of the applicant. SAHRA/PHRA may require that a search and rescue exercise be conducted in terms of NHRA Section 38, this may include rescue excavations, for which ISS will submit a rescue permit application having fulfilled all requirements of the permit application process.

In the event that human remains are accidently exposed, SAHRA Burial Ground Unit or ISS Heritage Specialist must immediately be notified of the discovery in order to take the required further steps:

a. Heritage Specialist to inspect, evaluate and document the exposed burial or skeletal remains and determine further action in consultation with the SAPS and Traditional authorities:

b. Heritage specialist will investigate the age of the accidental exposure in order to determine whether the find is a burial older than 60 years under the jurisdiction of SAHRA or that the exposed burial is younger than 60 years under the jurisdiction of the Department of Health in terms of the Human Tissue Act.

c. The local SAPS will be notified to inspect the accidental exposure in order to determine where the site is a scene of crime or not.

d. Having inspected and evaluated the accidental exposure of human remains, the project Archaeologist will then track and consult the potential descendants or custodians of the affected burial.

e. The project archaeologist will consult with the traditional authorities, local municipality and SAPS to seek endorsement for the rescue of the remains. Consultation must be done in terms of NHRA (1999) Regulations 39, 40, 42;

f. Having obtained consent from affected families and stakeholders, the project archaeologist will then compile a Rescue Permit application and submit to SAHRA Burial Ground and Graves Unit.

g. As soon as the project archaeologist receives the rescue permit from SAHRA he will in collaboration with the company/contractor arrange for the relocation in terms of logistics and appointing of an experienced undertaker to conduct the relocation process.

h. The rescue process will be done under the supervision of the archaeologist, the site representative and affected family members. Retrieval of the remains shall be undertaken in such a manner as to reveal the stratigraphic and spatial relationship of the human skeletal remains with other archaeological features in the excavation (e.g., grave goods, hearths, burial pits, etc.). A catalogue and bagging system shall be utilised that will allow ready reassembly and relational analysis of all elements in a laboratory. The remains will not be touched with the naked hand; all Contractor personnel working on the excavation must wear clean cotton or non-powdered latex gloves when handling remains in order to minimise contamination of the remains with modern human DNA. The project archaeologist will document the process from exhumation to reburial.

i. Having fulfilled the requirements of the rescue/burial permit, the project archaeologist will compile a mitigation report which details the whole process from discovery to relocation. The report will be submitted to SAHRA and to the company.

Note that the relocation process will be informed by SAHRA Regulations and the wishes of the descendants of the affected burial.

APPENDIX 3: HERITAGE MANAGEMENT PLAN INPUT INTO THE PROPOSED CONSTRUCTION OF AN INTEGRATED SUSTAINABLE HUMAN SETTLEMENT EMP

Objective	• Protection of archaeological sites and land considered to be of cultural value; • Protection of known physical cultural property sites against vandalism, destruction and theft; and • The preservation and appropriate management of new archaeological finds should these be discovered during construction.							
No.	Activity	Mitigation Measures	Duration	Frequency	Responsibility	Accountable	Contacted	Informed
Pre-Construction Phase								
1	Planning	Ensure all known sites of cultural, archaeological, and historical significance are demarcated on the site layout plan and marked as no-go areas.	Throughout Project	Weekly Inspection	Contractor [C] CECO	SM	ECO	EA EM PM
Construction Phase								
1	Emergency Response	Should any archaeological or physical cultural property heritage resources be exposed during excavation for the purpose of construction, construction in the vicinity of the finding must be stopped until heritage authority has cleared the development to continue.	N/A	Throughout	C CECO	SM	ECO	EA EM PM
		Should any archaeological, cultural property heritage resources be exposed during excavation or be found on development site, a registered heritage specialist or PHRA official must be called to site for inspection.		Throughout	C CECO	SM	ECO	EA EM PM
		Under no circumstances may any archaeological, historical or any physical cultural property heritage material be destroyed or removed form site.		Throughout	C CECO	SM	ECO	EA EM PM
		Should remain and/or artefacts be discovered on the development site during earthworks, all work will cease in the area affected and the Contractor will immediately inform the Construction Manager who in turn will inform PHRA.		When necessary	C CECO	SM	ECO	EA EM PM
		Should any remains be found on site that is potentially human remains, the PHRA and South African Police Service should be contacted.		When necessary	C CECO	SM	ECO	EA EM PM
Rehabilitation Phase								
		Same as construction phase.						
Operational Phase								
		Same as construction phase.						

APPENDIX 4: HERITAGE MITIGATION MEASURE TABLE

SITE REF	HERITAGE ASPECT	POTENTIAL IMPACT	MITIGATION MEASURES	RESPONSIBLE PARTY	PENALTY	METHOD STATEMENT REQUIRED
Chance Archaeological and Burial Sites	General area where the proposed project is situated is a historic landscape, which may yield archaeological, cultural property, remains. There are possibilities of encountering unknown archaeological sites during subsurface construction work which may disturb previously unidentified chance finds.	Possible damage to previously unidentified archaeological and burial sites during construction phase. • Unanticipated impacts on archaeological sites where project actions inadvertently uncovered significant archaeological sites. • Loss of historic cultural landscape; • Destruction of burial sites and associated graves. • Loss of aesthetic value due to construction work. • Loss of sense of place Loss of intangible heritage value due to change in land use	In situations where unpredicted impacts occur construction activities must be stopped, and the heritage authority should be notified immediately. Where remedial action is warranted, minimize disruption in construction scheduling while recovering archaeological data. Where necessary, implement emergency measures to mitigate. • Where burial sites are accidentally disturbed during construction, the affected area should be demarcated as no-go zone by use of fencing during construction, and access thereto by the construction team must be denied. • Accidentally discovered burials in development context should be salvaged and rescued to safe sites as may be directed by relevant heritage authority. The heritage officer responsible should secure relevant heritage and health authority permits for possible relocation of affected graves accidentally encountered during construction work.	• Contractor / • Project Manager • Archaeologist • Project EO	Fine and or imprisonment under the PHRA Act & NHRA	Monitoring measures should be issued as instruction within the project EMP. PM/EO/Archaeologists Monitor construction work on sites where such development projects commence within the farm.

APPENDIX 5: LEGAL BACK GROUND AND PRINCIPLES OF HERITAGE RESOURCES MANAGEMENT IN SOUTH AFRICA

Extracts relevant to this report from the National Heritage Resources Act No. 25 of 1999, (Sections 5, 36 and 47):

General principles for heritage resources management

5. (1) All authorities, bodies and persons performing functions and exercising powers in terms of this Act for the management of heritage resources must recognise the following principles:

(a) Heritage resources have lasting value in their own right and provide evidence of the origins of South African society and as they are valuable, finite, non-renewable and irreplaceable they must be carefully managed to ensure their survival;

(b) every generation has a moral responsibility to act as trustee of the national heritage for succeeding generations and the State has an obligation to manage heritage resources in the interests of all South Africans;

(c) heritage resources have the capacity to promote reconciliation, understanding and respect, and contribute to the development of a unifying South African identity; and

(d) heritage resources management must guard against the use of heritage for sectarian purposes or political gain.

(2) To ensure that heritage resources are effectively managed—

(a) the skills and capacities of persons and communities involved in heritage resources management must be developed; and

(b) provision must be made for the ongoing education and training of existing and new heritage resources management workers.

(3) Laws, procedures and administrative practices must—

(a) be clear and generally available to those affected thereby;

(b) in addition to serving as regulatory measures, also provide guidance and information to those affected thereby; and

(c) give further content to the fundamental rights set out in the Constitution.

(4) Heritage resources form an important part of the history and beliefs of communities and must be managed in a way that acknowledges the right of affected communities to be consulted and to participate in their management.

(5) Heritage resources contribute significantly to research, education and tourism and they must be developed and presented for these purposes in a way that ensures dignity and respect for cultural values.

(6) Policy, administrative practice and legislation must promote the integration of heritage resources conservation in urban and rural planning and social and economic development.

(7) The identification, assessment and management of the heritage resources of South Africa must—

(a) take account of all relevant cultural values and indigenous knowledge systems;

(b) take account of material or cultural heritage value and involve the least possible alteration or loss of it;

(c) promote the use and enjoyment of and access to heritage resources, in a way consistent with their cultural significance and conservation needs;

(d) contribute to social and economic development;

(e) safeguard the options of present and future generations; and

(f) be fully researched, documented and recorded.

Burial grounds and graves

36. (1) Where it is not the responsibility of any other authority, SAHRA must conserve and generally care for burial grounds and graves protected in terms of this section, and it may make such arrangements for their conservation as it sees fit.

(2) SAHRA must identify and record the graves of victims of conflict and any other graves which it deems to be of cultural significance and may erect memorials associated with the grave referred to in subsection (1) and must maintain such memorials.

(3) (a) No person may, without a permit issued by SAHRA or a provincial heritage resources authority—

(a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;

(b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or

(c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

(4) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction or damage of any burial ground or grave referred to in subsection (3)(a) unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources authority.

(5) SAHRA or a provincial heritage resources authority may not issue a permit for any activity under subsection (3)(b) unless it is satisfied that the applicant has, in accordance with regulations made by the responsible heritage resources authority—

(a) made a concerted effort to contact and consult communities and individuals who by tradition have an interest in such grave or burial ground; and

(b) reached agreements with such communities and individuals regarding the future of such grave or burial ground.

(6) Subject to the provision of any other law, any person who in the course of development or any other activity discovers the location of a grave, the existence of which was previously unknown, must immediately cease such

activity and report the discovery to the responsible heritage resources authority which must, in co-operation with the South African Police Service and in accordance with regulations of the responsible heritage resources authority—

(a) carry out an investigation for the purpose of obtaining information on whether or not such grave is protected in terms of this Act or is of significance to any community; and

(b) if such grave is protected or is of significance, assist any person who or community which is a direct descendant to make arrangements for the exhumation and re-interment of the contents of such grave or, in the absence of such person or community, make any such arrangements as it deems fit.

(7) (a) SAHRA must, over a period of five years from the commencement of this Act, submit to the Minister for his or her approval lists of graves and burial grounds of persons connected with the liberation struggle and who died in exile or as a result of the action of State security forces or agents provocateur and which, after a process of public consultation, it believes should be included among those protected under this section.

(b) The Minister must publish such lists as he or she approves in the Gazette.

(8) Subject to section 56(2), SAHRA has the power, with respect to the graves of victims of conflict outside the Republic, to perform any function of a provincial heritage resources authority in terms of this section.

(9) SAHRA must assist other State Departments in identifying graves in a foreign country of victims of conflict connected with the liberation struggle and, following negotiations with the next of kin, or relevant authorities, it may re-inter the remains of that person in a prominent place in the capital of the Republic.

General policy

47. (1) SAHRA and a provincial heritage resources authority—

(a) must, within three years after the commencement of this Act, adopt statements of general policy for the management of all heritage resources owned or controlled by it or vested in it; and

(b) may from time to time amend such statements so that they are adapted to changing circumstances or in accordance with increased knowledge; and

(c) must review any such statement within 10 years after its adoption.

(2) Each heritage resources authority must adopt for any place which is protected in terms of this Act and is owned or controlled by it or vested in it, a plan for the management of such place in accordance with the best environmental, heritage conservation, scientific and educational principles that can reasonably be applied taking into account the location, size and nature of the place and the resources of the authority concerned, and may from time to time review any such plan.

(3) A conservation management plan may at the discretion of the heritage resources authority concerned and for a period not exceeding 10 years, be operated either solely by the heritage resources authority or in conjunction with an environmental or tourism authority or under contractual arrangements, on such terms and conditions as

the heritage resources authority may determine.

(4) Regulations by the heritage resources authority concerned must provide for a process whereby, prior to the adoption or amendment of any statement of general policy or any conservation management plan, the public and interested organisations are notified of the availability of a draft statement or plan for inspection, and comment is invited and considered by the heritage resources authority concerned.

(5) A heritage resources authority may not act in any manner inconsistent with any statement of general policy or conservation management plan.

(6) All current statements of general policy and conservation management plans adopted by a heritage resources authority must be available for public inspection on request.

APPENDIX 5

SIGNIFICANCE AND FIELD RATING:

Cultural significance:

- Low A cultural object being found out of context, not being part of a site or without any related feature/structure in its surroundings.
- Medium Any site, structure or feature being regarded less important due to a number of factors, such as date and frequency. Also, any important object found out of context.
- High Any site, structure or feature regarded as important because of its age or uniqueness. Graves are always categorized as of a high importance. Also, any important object found within a specific context.

Heritage significance:

- Grade I Heritage resources with exceptional qualities to the extent that they are of national significance
- Grade II Heritage resources with qualities giving it provincial or regional importance although it may form part of the national estate
- Grade III Other heritage resources of local importance and therefore worthy of conservation

Field ratings:

i. National Grade I significance should be managed as part of the national estate

ii. Provincial Grade II significance should be managed as part of the provincial estate

iii. Local Grade IIIA should be included in the heritage register and not be mitigated (high significance)

iv. Local Grade IIIB should be included in the heritage register and may be mitigated (high/ medium significance)

v. General protection A (IV A) site should be mitigated before destruction (high/ medium significance)

vi. General protection B (IV B) site should be recorded before destruction (medium significance)

vii. General protection C (IV C) phase 1 is seen as sufficient recording and it may be demolished (low significance)