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PHASE I ARCHAEOLOGICAL AND CULTURAL HERITAGE IMPACT ASSESSMENT SPECIALIST REPORT FOR THE PROPOSED DEVELOPMENT OF A NEW TOMATO FARMING AND PROCESSING FACILITIES ON PORTIONS OF THE FARMS PLATDOORNS, DAVIDSPOORT AND GRASLAAGTE AT LEBOWAKGOMO AREA IN THE LEPELLE-NKUMPI LOCAL MUNICIPALITY OF CAPRICON DISTRICT MUNICIPALITIY, LIMPOPO PROVINCE

September, 2019

Draft Report

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DECLARATION

ABILITY TO CONDUCT THE PROJECT

Munyadziwa Magoma is a professional archaeologist, having obtained his BA degree in Archaeology and Anthropology at University of South Africa (UNISA), an Honours degree at the University of Venda (UNIVEN), and a Master's degree at the University of Pretoria (UP). He is an accredited Cultural Resource Management (CRM) member of the Association for southern African Professional Archaeologists (ASAPA) and Amafa aKwaZulu-Natali. Munyadziwa is further affiliated to the South African Archaeological Society (SAAS), the Society of Africanist Archaeologists (SAfA), Historical Association of South Africa (HESA); Anthropology Southern Africa (ASnA); International Association for Impact Assessment (IAIAsa); International Council on Monuments and Sites (ICOMOS) and the International Council of Archaeozoology (ICAZ). He has more than fifteen years' experience in heritage management, having worked for different CRM organisations and government heritage authorities. As a CRM specialist, Munyadziwa has completed well over 1000 Archaeological Impact Assessments (AIA) for developmental projects situated in several provinces of the Republic of South Africa. The AIAs projects he has been involved with are diverse, and include the establishment of major substation, upgrade and establishment of roads, establishment and extension of mines. In addition, he has also conducted Heritage Impact Assessments (HIAs) for the alteration to heritage buildings and the relocation of graves. His detailed CV is available on request.

INDEPENDENCE

I, Munyadziwa Magoma declare that this report has been prepared independently of any influence as may be specified by all relevant department, institution and organization. I act as the independent specialist in this application, and will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favorable to the applicant. I declare that there are no circumstances that may compromise my objectivity in performing such work, I vow to comply with all relevant Act, Regulations and applicable Legislation. Furthermore, Vhubvo Consultancy Cc, which is a company I represent in this application, is an independent service provider and apart from fair remuneration for services rendered, it has no financial interest or vested interest in the proposed project.

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EXECUTIVE SUMMARY

Introduction

Vhubvo Consultancy Cc was appointed by Nsovo Environmental Consulting to conduct an Archaeological and Cultural-Heritage Impact Assessment for the proposed development of new tomato farming and processing facilities in the region of Lebowakgomo. The aim of the study was to outline the archaeological sites, cultural resources, sites associated with oral histories, graves, cultural landscapes, and any structure of historical significance that may be affected by the proposed development, and to advise on mitigation measure should any sites be affected, these mitigation will in turn assist the developer to make a decision on the most appropriate option (s) in line with the National Heritage Resource Act, 1999 (Act 25 of 1999). The findings of this cultural study have been informed by desktop study and field survey. The desktop study was undertaken through SAHRIS for previous Cultural Heritage Impact Assessments conducted in the region of the proposed development, and also for researches that have been carried out in the area over the past years.

Background and Need of the Project

The project entails the preparation of approximately 1700 hectare (ha) for the planting of tomatoes and approximately 4ha for a tomato processing facility.

Methodology and Approach

The study method refers to the SAHRA Policy Guidelines for impact assessment, 2012. As part of this impact assessment; thefollowing process were followed:

- Literature Review: To understand the background archaeology of the area, a background study was undertaken and relevant institutions were consulted. These studies entails review of archaeological and heritage impact assessment studies that have been conducted around the proposed area thorough SAHRIS. In addition, E-journal platforms such as J-stor, Google scholars and History Resource Centre were searched. The University of Pretoria's Library collection was also pursued;
- The field survey was conducted from the 17th and 18th of August 2019, this also include oral interviews;
- The final step involved the recording and documentation of relevant archaeological resources, as well as the assessment of resources in terms of the heritage impact assessment criteria and report writing, mapping and constructive recommendations.

The applicable maps, tables and figures, are included as stipulated in the NHRA (no 25 of 1999), the National Environmental Management Act (NEMA) (no 107 of 1998) and the Minerals and Petroleum Resources Development Act (MPRDA) (28 of 2002).

Brief History of the Area

There are several heritage studies that had been conducted around the area of the proposed development. The most recent ones include HIA reports conducted by Mlilo 2018; Tomose 2018; Magoma 2017, 2018; Steyn 2017; Van Schalkwyk 2013 and Pelser 2013. These authors had familiarise with the area, and publications on Iron Age Archaeology of the region and the spatial arrangement of Iron Age sites in terms of space for settlements and burial. The province of Limpopo is one of the most extensively researched region in terms of Iron Age archaeology owing to the diverse Iron Age cultures and traditions found in this area. The Iron Age of Limpopo Province can be subdivided into three chronological categories: the EIA (Early Iron Age), MIA (Middle Iron Age) and LIA [Late Iron Age) (e.g. Huffman, 2007]. Many of the Iron Age sites occur near the flood plains, along and near some of the major rivers; however, some are known to occur in defensive slopes along some of the Limpopo hill slopes and/or mountainous areas (e.g. Huffman 2007).

Impact statement

The development of new tomato farming and processing facilities may result in various threats to archaeological, and mostly grave sites, with impacts ranging from moderate to high. Impact of the proposed development on archaeological and cultural heritage remains is expected to be medium (see Table 1). It is important to note that all categories of heritage resources, with the possible exception of movable objects, are generally known to occur in the area proposed for development. The primary areas of concern in this study are the impacts on archaeological sites and the cultural landscape.

Restrictions and Assumptions

Most of the area proposed for development is encroached by bush which makes it almost impossible to access. It is thus possible that some materials could have been overlooked due to that the area was investigated only in a broad, overview approach as access to the different properties was not possible. In spite of this, care was under taken to cover as much of the proposed area as possible. It is assumed that the Public Participation Process might also result in the identification of sites, features and objects, including sites of intangible heritage potential in the area and that these then will also have to be considered.

Survey Findings and Discussions

The main aim of the survey was to evaluate potential heritage resources that would occur within the boundaries of the proposed area (s), as well as to determine if there is any hamartia that may prevent the proposed development from taking place in any of the proposed study area. The Phase I Archaeological and Cultural-Heritage Impact Assessment for the proposed tomato farming and processing facilities revealed three (3) grave sites within the area proposed for development. Some of the noted graves are over 60 years of age and thus protected against any form of alteration by the National Heritage Resources Act (Act 25 of 1999), while others appears to be unknown and will thus be viewed as those that are over 60 years of age. Burial sites and its

contents are accorded the highest heritage accolades in South Africa, and elsewhere, principally by their relation with human being. Burial sites are often the focus of emotional and ethical sentiments to people. Dealing with human remains thus requires the highest ethical standards, Section 36 of the National Heritage Resources Act (3) states that, no person may, without a permit issued by SAHRA or a provincial heritage resources authority: 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. If the grave is less than 60 years of age, it is protected against any damage, altering or exhumation by the Human Tissue Act (Act 65 of 1983) and to local regulations. In addition, The World Archaeological Congress (WAC) has set international ethical standards for the treatment of human remains, these includes:

- Respect for the mortal remains of the dead shall be accorded to all, irrespective of origin, race, religion, nationality, custom and tradition;
- Respect for the wishes of the dead concerning disposition shall be accorded whenever possible, reasonable and lawful, when they are known or can be reasonably inferred;
- Respect for the wishes of the local community and of relatives or guardians of the dead shall be accorded whenever possible, reasonable and lawful;
- Respect for the scientific research value of skeletal, mummified and other human remains (including fossil hominids) shall be accorded when such value is demonstrated to exist;
- Agreement on the disposition of fossil, skeletal, mummified and other remains shall be reached by negotiation on the basis of mutual respect for the legitimate concerns of communities for the proper disposition of their ancestors, as well as the legitimate concerns of science and education;
- The express recognition that the concerns of various ethnic groups, as well as those of science are legitimate and to be respected, will permit acceptable agreements to be reached and honoured.

Recommendations and Discussions

Burial grounds and Graves are directly associated with human being and are thus accorded a high value (Local Grade III B). This means they must be protected and properly conserved to ensure longevity. However, they can be mitigated if serious need arise. There are two possibilities on how graves can be mitigated. Firstly and mostly preferred is to compile a heritage management plan (HMP) which will ensure their continuous conservation. This HMP should be completed by a heritage specialist, and is done when graves are not in direct jeopardy of the proposed development. The second option is a Phase-2 mitigation (relocation of graves), this should always be considered as a last option. This procedure entails social consultation, and application of permits for those older than 60 years and unknown graves, while those less than 60 years of age, only authorization is required. Taking all the above information into account, I, as an independent archaeologist due recommend the following:

- A heritage practitioner should be assigned during bush clearing to further assess the area; and

- A Heritage Management Plan must be devised to ensure that all graves in the area are protected and preserved. The management plan is an open document meaning that it should be adapted and reassessed from time to time.

No major heritage flaws which can hamper the success of this project where noted in the area. It must be noted that the noted graves are family graves and the respective families are known.

Despite that no archaeological objects were observed during the survey, the client is reminded that unavailability of archaeological material does not mean absentee, archaeological material might be hidden underground. It is thus the responsibility of the developer to notify contractors and workers about archaeological material (e.g., pottery, stone tools, remnants of stone-walling, graves, etc) and fossils that may be located underground. Furthermore, the client is reminded to take precautions during construction.

Pre-construction education and awareness training

Prior to construction, contractors should be given training on how to identify and protect archaeological remains that may be discovered during the project. The pre-construction training should include some limited site recognition training for the types of archaeological sites that may occur in the construction areas. Below are some of the indicators of archaeological site that may be found during construction:

- Flaked stone tools, bone tools and loose pieces of flaked stone;
- Ash and charcoal;
- Bones and shell fragments;
- Artefacts (e.g., beads or hearths);
- Packed stones which might be uncounted underground, and might indicate a grave or collapse stone walling.

In the event that any of the above are unearthed, all construction within a radius of at least 10m of such indicator should cease and the area be demarcated by a danger tape. Accordingly, a professional archaeologist or LIHRA officer should be contacted immediately. In the meantime, it is the responsibility of the contractor to protect the site from publicity (i.e., media) until a mutual agreement is reached. Noteworthy that any measures to cover up the suspected archaeological material or to collect any resources 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 LIHRA.

Conclusions

A thorough background study and survey of the proposed development was conducted and findings were recorded in line with SAHRA guidelines. It is recommended that LIHRA (Limpopo Heritage Resource

Authority) exercise its discretion and allow the developer to proceed with the project subject to the recommendations given above.

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ACRONYMS AND ABBREVIATIONS

AIA	Archaeological Impact Assessment
EMPr	Environmental Management Programme
HIA	Heritage Impact Assessment
LIA	Late Iron Age
MIA	Middle Iron Age
EIA	Early Iron Age
HMP	Heritage Management Plan
LSA	Late Stone Age
MSA	Middle Stone Age
ESA	Early Stone Age
NASA	National Archives of South Africa
NHRA	National Heritage Resources Act
LIHRA	Limpopo Heritage Resources Authority
SAHRA	South African Heritage Resources Agency

GLOSSARY OF TERMS

The following terms used in this Archaeology are defined in the National Heritage Resources Act [NHRA], Act Nr. 25 of 1999, South African Heritage Resources Agency [SAHRA] Policies as well as the Australia ICOMOS Charter *(Burra Charter)*:

Archaeological Material: remains resulting from human activities, which are in a state of disuse and are in, or on, land and which are older than 100 years, including artifacts, human and hominid remains, and artificial features and structures.

Artefact: Any movable object that has been used modified or manufactured by humans.

Conservation: All the processes of looking after a site/heritage place or landscape including maintenance, preservation, restoration, reconstruction and adaptation.

Cultural Heritage Resources: refers to physical cultural properties such as archaeological sites, palaeolontological sites, historic and prehistorical places, buildings, structures and material remains, cultural sites such as places of rituals, burial sites or graves and their associated materials, geological or natural features of cultural importance or scientific significance. This include intangible resources such religion practices, ritual ceremonies, oral histories, memories indigenous knowledge.

Cultural landscape: "the combined works of nature and man" and demonstrate "the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both internal and external".

Cultural Resources Management (CRM): the conservation of cultural heritage resources, management, and sustainable utilization and present for present and for the future generations

Cultural Significance: is the aesthetic, historical, scientific and social value for past, present and future generations.

Chance Finds: means Archaeological artefacts, features, structures or historical cultural remains such as human burials that are found accidentally in context previously not identified during cultural heritage scoping, screening and assessment studies. Such finds are usually found during earth moving activities such as water pipeline trench excavations.

Compatible use: means a use, which respects the cultural significance of a place. Such a use involves no, or minimal, impact on cultural significance.

Conservation means all the processes of looking after a place so as to retain its cultural significance.

Expansion: means the modification, extension, alteration or upgrading of a facility, structure or infrastructure at which an activity takes place in such a manner that the capacity of the facility or the footprint of the activity is increased.

Grave: A place of interment (variably referred to as burial), including the contents, headstone or other marker of such a place, and any other structure on or associated with such place.

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, plan, programme or policy which requires authorisation of permission by law and which may significantly affect the cultural and natural heritage resources. The HIA includes recommendations for appropriate mitigation measures for minimising or avoiding negative impacts, measures enhancing the positive aspects of the proposal and heritage management and monitoring measures.

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

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

***In situ* material:** means material culture and surrounding deposits in their original location and context, for instance archaeological remains that have not been disturbed.

Interested and affected parties Individuals: communities or groups, other than the proponent or the authorities, whose interests may be positively or negatively affected by the proposal or activity and/ or who are concerned with a proposal or activity and its consequences.

Interpretation: means all the ways of presenting the cultural significance of a place.

Late Iron Age: this period is associated with the development of complex societies and state systems in southern Africa.

Material culture means buildings, structure, features, tools and other artefacts that constitute the remains from past societies.

Mitigate: The implementation of practical measures to reduce adverse impacts or enhance beneficial impacts of an action.

Place: means site, area, land, landscape, building or other work, group of buildings or other works, and may include components, contents, spaces and views.

Protected area: means those protected areas contemplated in section 9 of the NEMPAA and the core area of a biosphere reserve and shall include their buffers.

Public participation process: A process of involving the public in order to identify issues and concerns, and obtain feedback on options and impacts associated with a proposed project, programme or development. Public Participation Process in terms of NEMA refers to: a process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to specific matters.

Setting: means the area around a place, which may include the visual catchment.

Significance: can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of significance and

acceptability). It is an anthropocentric concept, which makes use of value judgments and science-based criteria (i.e. biophysical, physical cultural, social and economic).

Site: a spatial cluster of artefacts, structures, and organic and environmental remains, as residues of past human activity.

1. Introduction

Vhubvo Consultancy Cc was appointed by Nsovo Environmental Consultingto conduct an Archaeological and cultural heritage impact assessment for the proposed development of new tomato farming and processing facilities in the region of Lebowakgomo, Limpopo Province. The aim of the study was to outline the archaeological sites, cultural resources, sites associated with oral histories, graves, cultural landscapes, and any structure of historical significance that may be affected by the proposed construction, and to advise mitigation should any be affected and these will in turn assist the developer to make a decision on the most appropriate option in line with the National Heritage Resource Act, 1999 (Act 25 of 1999).

The findings of this cultural study have been informed by desktop study and field survey. The desktop study was undertaken through SAHRIS for previous Cultural Heritage Impact Assessments conducted in the region of the proposed development, and also for researches that have been carried out in the area over the past years.

2. Sites Location and Description

The proposed development is located north of the Olifants River, and it falls within the Lepelle-Nkumpi Local Municipality in the Capricorn District Municipality. The site is currently largely vacant with trees, scrubs and bushes (See Figure 2 – 5). Section of the proposed area appears to have been used for farming purposes in the past. Conversely, the other section is currently under farming (See Figure 6). It must also be noted that there is informal housing on the farms which were used by the previous tenants. The area comprises of three farms, namely: Platdoorns, Davidspoort and Graslaagte, and its approximate co-ordinates are the following:

- 24°26'29.5"S and 29°39'22.7"

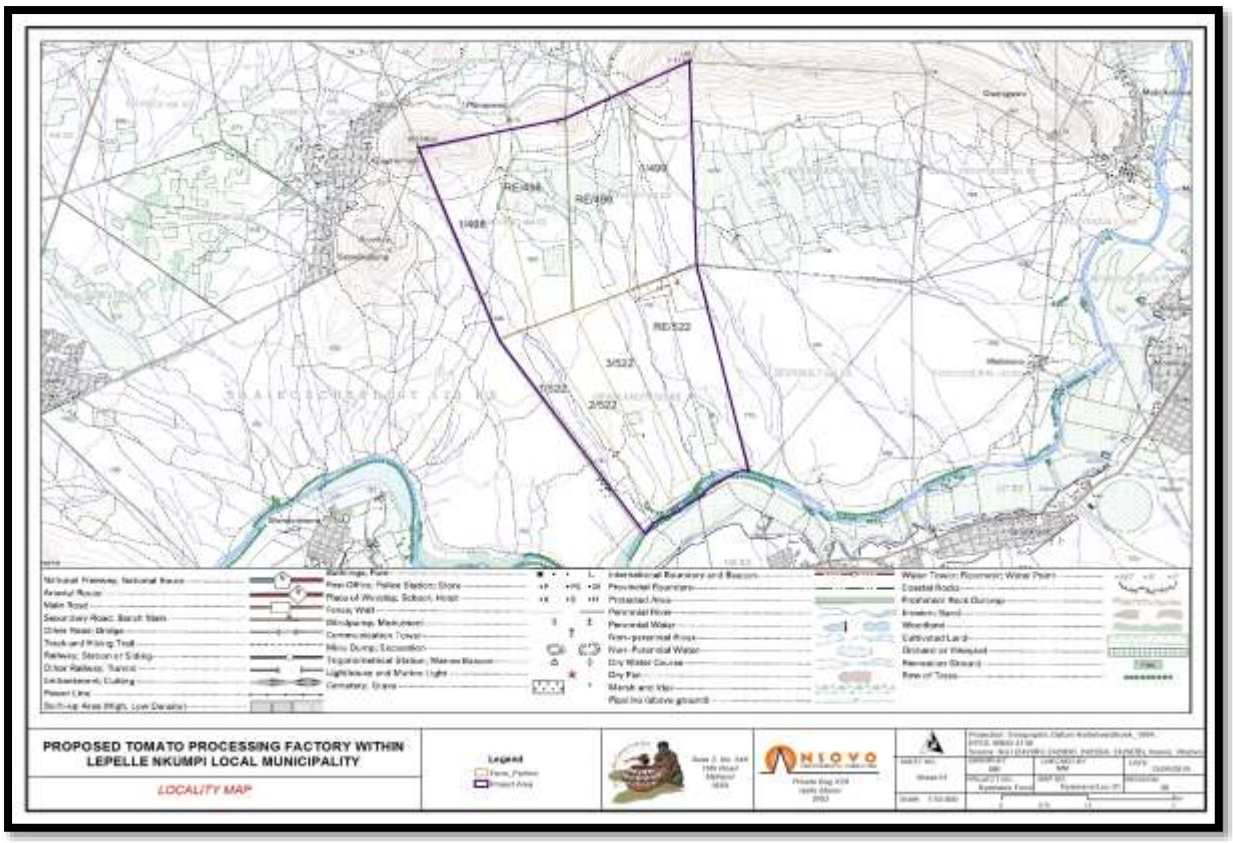

Figure 1: An overview of the Topographical map of the proposed area.

Figure 2: An overview of the area that will be affected by the proposed development.

Figure 3: An overview of the eastern section of the area proposed for development.

Figure 4: View of some of the access roads in the area proposed development.

Figure 5: View of some of the area that had been affected by erosion, this area were searched for any sign of archaeological signature.

Figure 6: An overview of some of the area that indicate farming.

Figure 7: View of some of the areas that forms part of the proposed area.

3. Nature of the Proposed Project

The proposal will entail establishment of a tomato farming and processing therein. The proposal will be further described below:

Farming Activities

The following will be the infrastructure requirements for the farm:

- Clearing of an initial 500ha of the current site for the plantation of tomatoes. This will include bush clearing, tilling and fertilisation for the first crop;
- Clearing of an additional 600ha per year for two years for the planting of tomatoes. This will include bush clearing, tilling and fertilisation of the second and third crop;
- In total 1700 ha will be cleared for the planting of tomatoes at the beginning of the third year. It is assumed that in more than 20ha of indigenous vegetation will be cleared for the farming activities up to 1700 ha;

- Construction of roads to and in between the tomato fields. These roads will not be surfaced;
- Construction of water abstraction works for irrigation. This will consist of a weir across or extraction chamber next to the Olifants River or a similar solution;
- Construction of a pump station for pumping water from the water abstraction works at the Olifants River;
- Construction of irrigation water storage pond(s) on the project site (i.e. earth dams with lining). Installation of pipelines from the Olifants River pump station to the irrigation water storage pond(s). Installation of irrigation lines from the irrigation water storage pond(s) to the tomato fields, for drip irrigation; and
- Construction of a Propagation unit, including; a nursery to establish seedlings for the farm. This may however only be constructed at a later stage. In the case of the later seedlings will be sourced from commercial nurseries.

Tomato Processing Facility

The following will be the infrastructure requirements for the tomato processing facility:

- An area of approximately 4ha will be required for the proposed Tomato Processing Facility;
- Process equipment to wash raw tomatoes, chop and juice tomatoes, remove skins and seeds, then extract water from juice to make paste;
- The heat for the condensators will be produced by a boiler, which will be either coal-fired or gas;
- The seeds and skins which will be produced as waste will be sold for animal feed;
- Other waste which will be produced during the process includes the mud from the tomato washing process. In addition, there will be emissions from the boiler;
- Water recycling plant so that the process plant will strive to be "water neutral";
- Construction of a Warehouse to store packing materials as well as the finished product;
- Construction of Ancillary Structures and parking;
- Construction of a surfaced road from the entrance to the site to the processing facility, less than 1000m in distance;
- No more than approximately 6600 litres (3 x 2200 diesel storage tanks) of fuel (namely Diesel) will be stored on site. The fuel storage area(s) will be bunded;

- Construction of a Washbay for equipment which will consist of an oil water separator. It is understood that only minor routine servicing will be undertaken on site, while major services will be done off site; and
- A borehole will be sunk for domestic water in order to support approximately 90 people. Bulk Electrical upgrade from Eskom to provide electricity.

4. Purpose of the Cultural Heritage Study

The purpose of this Archaeological and Cultural Heritage study was to entirely identify and document archaeological sites, cultural resources, sites associated with oral histories, graves, cultural landscapes, and any structure of historical significance that may be affected by the proposed farming, these will in turn assist the developer in ensuring proper conservation measure in line with the National Heritage Resource Act, 1999 (Act 25 of 1999). Impact assessments highlight many issues facing sites in terms of their management, conservation, monitoring and maintenance, and the environment in and around the site. Therefore, this study involves the following:

- Identification and recording of heritage resources that maybe affected by the proposed farming;
- Providing recommendations on how best to appropriately safeguard identified heritage sites. Mitigation is an important aspect of any development on areas where heritage sites have been identified.

5. Methodology and Approach

5.1 Background study introduction

The methodological approach is informed by the 2012 SAHRA Policy Guidelines for impact assessment. As part of this study, the following tasks were conducted:

1) Literature review;

2) Consultations with community members;

3) Completion of a field survey; and

4) Documentations and analysis of the acquired data, leading to the production of this report.

5.1.1 Literature Review

The desktop study was undertaken through SAHRIS for previous Cultural Heritage Impact Assessments conducted in the region of the proposed development, and also for researches that have been carried out in the area over the past years, as well as historical aerial maps located in the Deeds Office. These literature were used to screen the proposed area and to understand the baseline of heritage sensitivities.

5.1.2 Oral interview

Oral interview was initiated with Community members, this aimed to understand the cultural landscapes and/ or intangible heritage of the area.

5.1.3 Physical survey

The field survey was undertaken on the 17th and 18th of August 2019. An archaeologist from Vhubvo conducted the survey.

5.1.4 Documentation

The general project area was documented. This documentation included taking photographs using cameras a 10.1 mega-pixel Sony Cybershort Digital Camera. Plotting of finds was done by a Garmin etrex Venture HC.

5.2 Restrictions and Assumptions

This HIA did not assess intangible heritage that may be associated with the project area. Based on the desktop studies conducted, the following archaeological and heritage resources are anticipated to occur within the proposed area:

- Iron Age ceramics and stone settlements;
- Graves and burial ground;
- Ash middens;
- Historic monuments;
- Stone Age material such as LSA, MSA or ESA

It is assumed that the Public Participation Process might also result in the identification of sites, features and objects, including sites of intangible heritage potential in the area and that these then will also have to be considered in the final report.

6. Applicable Heritage Legislation

Several legislations provide the legal basis for the protection and preservation of both cultural and natural resources. These include the National Environment Management Act (No. 107 of 1998); Mineral Amendment Act (No 103 of 1993); Tourism Act (No. 72 of 1993); Cultural Institution Act (No. 119 of 1998), and the National Heritage Resources Act (Act 25 of 1999). Section 38 (1) of the National Heritage Resources Act requires that where relevant, an Impact Assessment is undertaken in case where a listed activity is triggered. Such activities include:

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
(b) the construction of a bridge or similar structure exceeding 50 m in length; and
(c) any development or other activity which will change the character of an area of land, or water -
- *(i) exceeding 5 000 m² in extent;*
- *(ii) involving three or more existing erven or subdivisions thereof; or*
- *(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or*
- *(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a Provincial Heritage Resources Authority;*

(d) the re-zoning of a site exceeding 10 000 m2 in extent; or
(e) any other category of development provided for in regulations by SAHRA or a Provincial Heritage Resources Authority, 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 3 of the National Heritage Resources Act (25 of 1999) lists a wide range of national resources protected under the act as they are deemed to be national estate. When conducting a Heritage Impact Assessment (HIA) the following heritage resources have to be identified:

(a) Places, buildings structures and equipment of cultural significance
(b) Places to which oral traditions are attached or which are associated with living heritage
(c) Historical settlements and townscapes
(d) Landscapes and natural features of cultural significance
(e) Geological sites of scientific or cultural importance
(f) Archaeological and paleontological sites
(g) Graves and burial grounds including-
- *(i) ancestral graves*
- *(ii) royal graves and graves of traditional leaders*
- *(iii) graves of victims of conflict*
- *(iv) graves of individuals designated by the Minister by notice in the Gazette*
- *(v) historical graves and cemeteries; and*
- *(vi) other human remains which are not covered by in terms of the Human Tissue Act,1983 (Act No. 65 of 1983)*

(h) Sites of significance relating to the history of slavery in South Africa
(i) moveable objects, including -
- *(i) objects recovered from the soil or waters of South Africa, including archaeological and paleontological objects and material, meteorites and rare geological specimens*
- *(ii) objects to which oral traditions are attached or which are associated with living heritage*
- *(iii) ethnographic art and objects*

(iv) military objects
(v) objects of decorative or fine art
(vi) objects of scientific or technological interest; and
(vii) books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1 of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

Other sections of the Act with a direct relevance to the AIA are the following:
Section 34(1) *No person may alter or demolish any structure or part of a structure, which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.*

Section 35(4) *No person may, without a permit issued by the responsible heritage resources authority:*

- *destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite*

Section 36 (3) *No person may, without a permit issued by SAHRA or a provincial heritage resources authority:*

- *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 formal cemetery administered by a local authority; or*
- *bring onto or use at a burial ground or grave any excavation equipment, or any equipment which assists in detection or recovery of metals.*

7. Discussion of (Pre-) History of the of South Africa

South Africa has one of the longest sequences of human development in the world. The prehistory and history of South Africa span the entire known life span of human on earth. It is thus difficult to determine exactly where tobegin; a possible choice could be the development of genus *Homo* millions of years ago. South African scientists have been actively involved in the study of human origins since 1925 when Raymond Dart identified the Taung child as an infant halfway between apes and humans. Dart called the remains *Australopithecus africanus*, southern ape-man, and his work ultimately changed the focus of human evolution from Europe and Asia to Africa, and it is now widely accepted that humankind originated in Africa (Robbins *et al.* 1998). In many ways this discovery marked the birth of palaeoanthropology as a discipline. Nonetheless, the earliest form of culture known in South Africa is the Stone Age. Theseprehistoric period during which humans widely used stone for tool-making, stone tools were made from a variety of different sorts of stone. For example, flint and chert were shaped for use as cutting tools and weapons, while basalt and sandstone were used for ground stone. Stone Age can be divided into Early, Middle and Late, it is argued that there are two transitional period. Noteworthy that the time frame used for Stone Age

period is an approximate and differ from researcher to researcher (see Korsman and Meyer 1999, Mitchell 2002, Robbins *et al.* 1998).

Stone Age

Although a long history of research on the Early Stone Age period of southern Africa has been conducted (Mason 1962, Sampson 1974, Klein 2000, Chazan 2003), it still remains a period were little is known about. These may be due to many factors which includes, though not limited to retrieval techniques used, reliance on secondary, at times unknown sources, and the fact that few fauna from this period has been analysed (Chazan 2003). According to Robbins *et al.* (1998) the Stone Age is the period in human history when stone was mainly used to produce tools. This period began approximately 2.5 million years ago and ended around 200 000 years ago. During this period human beings became the creators of culture and were basically hunters and gatherers, large stone artefacts identify this era.

The Middle Stone Age overlap with the EIA and possibly began around 100 000 to about 200 000 years ago and extends up to around 35 000 years ago. Smaller tools than in ESA mark this period. MSA people made a wide range of stone tools from both coarse – and fine-grained rock types. Sometimes the rocks used for tools were transported considerable distances, presumably in bags or other containers; as such tool assemblages from some MSA sites tend to lack some of the preliminary cores and contain predominantly finished products like flakes and retouched pieces.

Microlithic Later Stone Age period began around 35 000 and extend to the later 1800 AD. According to Deacon (1984), LSA is a period when human being refined small blade tools, conversely abandoning the prepared-core technique. Thus, refined artefacts such as convex-edge scrapers, borers and segments are associated with this period. Moreover, large quantity of art and ornaments were made during this period. This area is home to all three known phases of the Stone Age. Early to Middle Stone Age sites are uncommon in this area, however rock-art sites and Late Stone Age sites are much bettter known. The Late Stone Age of this area is known to contain sites with rock art from the San and Khoi San cultural groups.

Iron Age

The Iron Age is the name given to the period of human history when metal was mainly used to produce artefacts. Recently, they have been a debate about the use of the name. Other archaeologist have argued that the word "Iron Age" is problematic and does not precisely explain the event of what happen in southern Africa, as such, the word farming communities has been proposed (Segobye 1998). Nonetheless, in South Africa this period can be divided into two phases. Early (200 - 1000 A.D) and Late Iron Age (1000 - 1850 A.D). Huffman (2007) has indicated that a Middle Iron Age (900 - 1300 A.D) should be included. According to Huffman (2007:361), until the 1960s and 1970s most archaeologists had not yet recognised a Middle Iron age. Instead they began the Late Iron Age at AD 1000. The Middle Iron Age (AD 900–1300) is characterised by extensive trade between the Limpopo Confluence and the East Coast of Africa. This has been debated, with other researchers, arguing that the period should be restricted to Shashe-Limpopo Confluence.

Before the arrival of Europeans, the area was the home to Bantu-speaking peoples such as the Sotho-Tswana. During the Late Iron Age, farming was of significance in the region. These farming communities built numerous stone walled settlements throughout the Free State from the 17th century onwards. These sites are associated with the predecessors of the Sotho-Tswana, and are linked with the so-called N-, V-, R- and Z-Type of settlements which are respectively associated with Fokeng, Kwena, Kgatla and Rolong clans.

8. Discussion of (Pre-) History of the Area

Limpopo Province is one of the few South African provinces with a multi-layered archaeological record, documenting the existence of the Stone Age people, Iron Age farmers and the Colonial settlers of the province is a complex task. Although Stone Age sites are found in abundance throughout the province, it is one of the richest provinces in Iron Age, and several archaeologicalresearches had been conducted producing diverse Iron Age sites. The archaeology of the province can be divided into the Stone Age, Iron Age and Historical timeframe.

Stone Age

Limpopo Province is known for the existence of several Stone Age sites that conform to the generic South African periodization spilt into the Early Stone Age (ESA), Middle Stone Age (MSA) and Late Stone Age (LSA) (van der Walt 2012). It is well known for the World Heritage Site

Makapans Caves which yields evidence of hominid occupation by "*Australopithecus africanus"* from approximately 3.3 million years ago (Bergh 1999; van der Walt 2012). The Caves of Hearths is considered to be one of the two known in the world to have yielded an unbroken sequence showing evidence and artefacts of occupation of the caves through ESA, MSA, LSA, and right up to the Iron Age; and it is one of the few rock shelters to present Acheulian assemblages in Southern Africa(Mitchell 2002). Most of the LSA sites in the region are well documented and preserved. LSA in the region is well represented by sites that had been discovered in the Waterberg which is known for its many rock art sites including those containing shaded painting such as at Haakdoorndraai (Eastwood et al., 2002). Other rock art site can be found at Makgabeng plateau which has over 460-recorded rock art sites (Pager 1973; Eastwood et al., 2002). Rock art paintings have also been documented at Blouberg Mountains and Soutpansberg Mountains (Blundell & Eastwood, 2001; Eastwood, 2003; Hall & Smith, 2000; Louw 1969).

LSA is represented in the south west of the project area, presence of rock art paintings and engravings are found in abundance in the Mohlapitse River valley in the Wolkberg, Steelpoort valley and Olifants River (Bergh 1999; Changuion 2008). Studies in the Kruger National Park to the east have documented numerous Middle and Late Stone Age sites and it can be expected that all phases of the Stone Age are represented in the area (Pistorius 2007). However, the specific affected project-receiving area environment has low potential for Stone Age sites. It is noteworthy that very little habitation of the highveld area took place during Stone Age times. Tools dating to the Early Stone Age period are mostly found in the vicinity of larger watercourses, e.g. the Steelpoort River and Olifants River. During MSA times, people became more mobile, occupying areas formerly avoided. However,open sites were still preferred near watercourses.

Iron Age

Limpopo Province is one of the provinces with the most extensive research done on Iron Age (Huffman 2007). Many of the Limpopo Province Iron Age sites are located near flood plains, along and near some of the major rivers, hill slopes and/or mountain areas (Hall & Smith 2000; Huffman 2007; van Schalkwyk 2007) The Iron Age of Limpopo Province region dates back to the 5th century AD when the Early Iron Age proto-Bantu-speaking farming communities began arriving in the area, which was then occupied by Stone Age people. The region is well known for the famous golden rhino that was recovered from Iron Age settlement site of Mapungubwe in the Limpopo Shashi Valley, now a UNESCO World Heritage Site.

The Early Iron Age (EIA) in the wider area of Limpopo Province is represented by sites such Schroda in the Limpopo Valley, KommandoKop and Pont Drift. The EIA of the area of study is significantly represented by the site at Silver Leaves a few kilometres south of Tzaneen which has provided the oldest evidence for grain cultivation in southern Africa and represents the earliest phase of the Kwale Branch in South Africa (Klapwijk& Huffman 1996). Huffman proposed Middle Iron Age for the period between 900 and 1300 AD in the Shashe-Limpopo area (2007: 361). Some researchers still do not agree with Huffman's proposal. Limpopo Middle Iron Age (MIA) includes the well-known Mapungubwe a World Heritage site, K2, Kommandokop and Shroda in the Limpopo Valley (AD 900-1000) (Bergh 1999; Huffman, 2005). Late Iron Age (LIA) sites are found in abundance throughout the Limpopo Province and are usually located on the foot or against slope hills for defensive purposes, an example would be the LIA Zimbabwe tradition sites such as Thulamela and Dzata found in the Soutpansberg. Despite the Lowveld region poor environmental conditions, this area of study holds a significant history of Middle and Late Iron Age settlements which has been ascribed to its mineral wealth and the attraction of metal working communities (Evers 1975; Evers & Van Der Merwe 1987). Research has shown that the area of Phalaborwa was a major metal producing centre of copper and iron from the 10th century with tin-bronze and brass appearing from the 17th century onwards; approximately 53 metal working sites have been recorded (Miller et al. 2001; Friede et. al. 1975; Pistorius 2007; Van der Merwe &Scully 1971).

Sites dating to this period were recently excavated in the Steelpoort River valley (Van Schalkwyk 2009). It is becoming clear that sites dating to this period can be divided into two categories:

i. Those with quite high walls and are conventionally linked with the Koni-group of people that have been settled in the region since the 1600s;

ii. Those that although they have stone walling,they are much less developed, in many cases making them difficult to detect. This latter group of sites probably date to a later period and can also be linked to the Ndebele and Swazi speakers in the region**.**

Historical era

Historically the people in the wider vicinity of the study area include the Pedi people, Shangaan/Tsonga and Lobedu (Krige 1938). The first Europeans arrived in the area around 1838, with the second group arriving in 1844. They were not able to settle permanently due to tsetse fly. During the 1840's and 1850's there was a great explosion in the trading and exploring activity in

the area due to the abundance of game in this region (http://www.kruger2canyons.org/tribal_history.html).

The wider area is famous for the residence of the Modjadji Rain Queen of the Balobedu people who settled in the area since the 1600s (Krige&Krige 1943; Joubert 2011). Their origin has been traced to the Rozwi states Karanga. During the early 20th Century modern mining of gold and copper began in the area, it was only during early 1950s with the establishment of Foskor; mining for phosphates, that large scale mining became a feature of the area and precipitated the establishment of the modern town of Phalaborwa (Alpers 1970; Mashale 2009; Pistorius 2007).

9. Degree of Significance

This category requires a broad, but detailed knowledge of the various disciplines that might be involved. It must be borne in mind that the significance of a site from an archaeological perspective does not necessarily depend on the size of the site but more on the uniqueness of the site within a region. The following table is used to grade heritage resources.

Table 1: Grading systems for identified heritage resources in terms of National HeritageResources Act (Act 25 of 1999).

Level	Significance	Possible action
National (Grade I)	Site of National Value	Nominated to be declared by SAHRA
Provincial (Grade II)	Site of Provincial Value	Nominated to be declared by PHRA
Local Grade (IIIA)	Site of High Value Locally	Retained as heritage
Local Grade (IIIB)	Site of High Value Locally	Mitigated and part retained as heritage
General Protected Area A	Site of High to Medium	Mitigation necessary before destruction
General Protected Area B	Medium Value	Recording before destruction
General Protected Area C	Low Value	No action required before destruction

Significance rating of sites

(i) High (ii) Medium (iii) Low

These categories relate to the actual artefact or site in terms of its actual value as it is found today, and refers more specifically to the condition that the item is in. For example, an archaeological site may be the only one of its kind in the region, and will thus be considered to be of high regional

significance, however; should there be heavy erosion of the greater part of the site, its significance rating would be medium to low. The following are guidelines for the nature of the mitigation that must take place as Phase 2 of the project.

High

- This is a 'do not touch' situation, alternative must be sought for the project, examples would be natural and cultural landscapes like the Mapungubwe Cultural Landscape World Heritage Site, or the house in which John Langalibalele resided.
- Certain sites, or features may be exceptionally important, but do not warrant leaving entirely alone. In such cases, detailed mapping of the site and all its features is imperative, as is the collection of diagnostic artefactual material on the surface of the site. Extensive excavations must be done to retrieve as much information as possible before destruction. Such excavations might cover more than half the site and would be mandatory; it would also be advisable to negotiate with the client to see what mutual agreement in writing could be reached, whereby part of the site is left for future research.

Medium

- Sites of medium significance require detailed mapping of all the features and the collection of diagnostic artefactual material from the surface of the site. A series of test trenches and test pits should be excavated to retrieve basic information before destruction.

Low

- These sites require minimum or no mitigation. Minimum mitigation recommended could be a collection of all surface materials and/ or detailed site mapping and documentation. No excavations would be considered to be necessary.

In all the above scenarios, permits will be required from the South African Heritage Resources Agency (SAHRA) or the appropriate PHRA as per the legislation (the National Heritage Resources Act, no. 25 of 1999). Destruction of any heritage site may only take place when the appropriate heritage authority has issued a permit. The following table is used to determine rating system on the receiving environment.

Table 2: Rating and evaluating criteriaof impact assessment

Status of Impact	
The impacts are assessed as either having a: Negative effect (i.e. at a `cost' to the environment), Positive effect (i.e. a `benefit' to the environment), or Neutral effect on the environment.	
Extent of the Impact	
1	Site (site only),
2	Local (site boundary and immediate surrounds),
3	Regional,
4	National, or
5	International.
Duration of the Impact	
The length that the impact will last for is described as either:	
1	Immediate (<1 year)
2	Short term (1-5 years),
3	Medium term (5-15 years),
4	Long term (ceases after the operational life span of the project),
5	Permanent.
Magnitude of the Impact	
The intensity or severity of the impacts is indicated as either:	
0	None,
2	Minor,
4	Low,
6	Moderate (environmental functions altered but continue),
8	High (environmental functions temporarily cease), or
10	Very high / unsure (environmental functions permanently cease).
Probability of Occurrence	
The likelihood of the impact actually occurring is indicated as either:	
0	None (the impact will not occur),
1	Improbable (probability very low due to design or experience)
2	Low probability (unlikely to occur),

3	Medium probability (distinct probability that the impact will occur),
4	High probability (most likely to occur), or
Significance of the Impact	
Based on the information contained in the points above, the potential impacts are assigned a significance rating (S). This rating is formulated by adding the sum of the numbers assigned to extent (E), duration (D) and magnitude (M) and multiplying this sum by the probability (P) of the impact. S= (E+D+M) P	
The significance ratings are given below	
(<30) low (i.e. where this impact would not have a direct influence on the decision to develop in the area), (30-60) medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated), (>60) high (i.e. where the impact must have an influence on the decision process to develop in the area)	

10. Findings and Discussions

The main aim of the survey was to evaluate potential heritage resources that would occur within the boundaries of the proposed area (s), as well as to determine if there is any hamartia that may prevent the proposed development from taking place in any of the proposed study area. The Phase I Archaeological and Cultural-Heritage Impact Assessment for the proposed tomato farming and processing facilities revealed three (3) grave sites within the area proposed for development (See Figure 3). Some of the noted graves are over 60 years of age and thus protected against any form of alteration by the National Heritage Resources Act (Act 25 of 1999), while others appears to be unknown and will thus be viewed as those that are over 60 years of age. There are six different types of graves in South Africa, namely:

- ancestral graves;
- royal graves and graves of traditional leaders;
- graves of victims of conflict;
- graves of individuals designated by the Minister by notice in the Gazette;
- historical graves and cemeteries; and
- other human remains which are not covered by in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983)

Burial sites and its contents are accorded the highest heritage accolades in South Africa, and elsewhere, principally by their relation with human being. Burial sites are often the focus of emotional and ethical sentiments to people. Dealing with human remains thus requires the highest ethical standards, Section 36 of the National Heritage Resources Act (3) states that, no person may, without a permit issued by SAHRA or a provincial heritage resources authority: 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. If the grave is less than 60 years of age, it is protected against any damage, altering or exhumation by the Human Tissue Act (Act 65 of 1983) and to local regulations.

Figure 8: View of the sensitivity map of the area proposed for development.

The World Archaeological Congress (WAC) has set international ethical standards for the treatment of human remains, these includes:

- Respect for the mortal remains of the dead shall be accorded to all, irrespective of origin, race, religion, nationality, custom and tradition;

- Respect for the wishes of the dead concerning disposition shall be accorded whenever possible, reasonable and lawful, when they are known or can be reasonably inferred;
- Respect for the wishes of the local community and of relatives or guardians of the dead shall be accorded whenever possible, reasonable and lawful;
- Respect for the scientific research value of skeletal, mummified and other human remains (including fossil hominids) shall be accorded when such value is demonstrated to exist;
- Agreement on the disposition of fossil, skeletal, mummified and other remains shall be reached by negotiation on the basis of mutual respect for the legitimate concerns of communities for the proper disposition of their ancestors, as well as the legitimate concerns of science and education;
- The express recognition that the concerns of various ethnic groups, as well as those of science are legitimate and to be respected, will permit acceptable agreements to be reached and honoured.

Table 3: Findings in the proposed area

Recorded Number	GPS	Description
Dr1	s24 24 49.6 e29 38 01.3	A grave site with approximately 10 graves were noted. Some of these graves has a brick headstone with inscriptions, while others are demarcated by stones (See Figure 9).
Significance: High		**Mitigation:** This grave site must be avoided, however, a Heritage Management Plan is recommended.
Dr2	s24 25 05.4 e29 37 50.0	Two graves with headstones were noted in the area proposed for development (See Figure 10).
Significance: High		**Mitigation:** These two graves may be avoided, however, a Heritage Management Plan is recommended.
Dr3	s24 25 08.1 e29 37 53.7	A single grave was noted in approximate area from the access road. This grave has a granite headstone and is inscribed (See Figure 11).
Significance: High		**Mitigation:** A Heritage Management Plan is recommended.

Figure 9: An overview of the area where about 10 graves where noted.

Figure 10: An overview of the area with two graves.

Figure 21: An overview of one grave.

10.1 Impact Assessment

Below is a description of the related impact ratings. These ratings are for cultural heritage sites known to exist in the proposed area. Note that these impacts are assessed as per Table 2 above:

Proposed Site

The site is currently largely vacant with trees, scrubs and bushes (See Figure 2 – 5). Section of the proposed area appears to have been used for farming purposes in the past (See Figure 6).

Table 4: Anticipated impact rating.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Graves and Burial Grounds	No	Negative	2	5	8	4	60 High
Corrective Actions	All graves sites must be avoided at all costs						

11. Recommendations

Burial grounds and Graves are directly associated with human being and are thus accorded a high value (Local Grade III B). This means they must be protected and properly conserved to ensure longevity. However, they can be mitigated if serious need arise. There are two possibilities on how graves can be mitigated. Firstly and mostly preferred is to compile a heritage management plan (HMP) which will ensure their continuous conservation. This HMP should be completed by a heritage specialist, and is done when graves are not in direct jeopardy of the proposed development. The second option is a Phase-2 mitigation (relocation of graves), this should always be considered as a last option. This procedure entails social consultation, and application of permits for those older than 60 years and unknown graves, while those less than 60 years of age, only authorization is required. Taking all the above information into account, I, as an independent archaeologist due recommend the following:

- A heritage practitioner should be assigned during bush clearing to further assess the area; and
- A Heritage Management Plan must be devised to ensure that all graves in the area are protected and preserved. The management plan is an open document meaning that it should be adapted and reassessed from time to time.

No major heritage flaws which can hamper the success of this project where noted in the area. It must be noted that the noted graves are family graves and the respective families are known.

Despite that no archaeological objects were observed during the survey, the client is reminded that unavailability of archaeological material does not mean absentee, archaeological material might be hidden underground. It is thus the responsibility of the developer to notify contractors and workers about archaeological material (e.g., pottery, stone tools, remnants of stone-walling, graves, etc) and fossils that may be located underground. Furthermore, the client is reminded to take precautions during construction.

Pre-construction education and awareness training

Prior to construction, contractors should be given training on how to identify and protect archaeological remains that may be discovered during the project. The pre-construction training should include some limited site recognition training for the types of archaeological sites that may occur in the construction areas. Below are some of the indicators of archaeological site that may be found during construction:

- Flaked stone tools, bone tools and loose pieces of flaked stone;
- Ash and charcoal;
- Bones and shell fragments;
- Artefacts (e.g., beads or hearths);
- Packed stones which might be uncounted underground, and might indicate a grave or collapse stone walling.

In the event that any of the above are unearthed, all construction within a radius of at least 10m of such indicator should cease and the area be demarcated by a danger tape. Accordingly, a professional archaeologist or LIHRA officer should be contacted immediately. In the meantime, it is the responsibility of the contractor to protect the site from publicity (i.e., media) until a mutual agreement is reached. Noteworthy that any measures to cover up the suspected archaeological material or to collect any resources 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 LIHRA.

12. Conclusions

A thorough background study and survey of the proposed development was conducted and findings were recorded in line with SAHRA guidelines. It is recommended that the developmentproceed subject to the recommendations given above.

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Data bases

Chief Surveyor General

Environmental Potential Atlas, Department of Environmental Affairs and Tourism. Heritage Atlas Database, Pretoria.

National Archives of South Africa

APPENDIX 1: SITE SIGNIFICANCE

The following guidelines for determining site *significance*were developed by SAHRA in 2003. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation

of any site is done with reference to any number of these.

(a) Historic value

- Is it important in the community, or pattern of history?
- Does it have strong or special association with the life or work of a person, group or organization of importance in history?
- Does it have significance relating to the history of slavery?

(b) Aesthetic value

- Is it important in exhibiting particular aesthetic characteristics valued by a community or cultural group?

(c) Scientific value

- Does it have potential to yield information that will contribute to an understanding of natural or cultural heritage?
- Is it important in demonstrating a high degree of creative or technical achievement at a particular period?

(d) Social value

- Does it have strong or special association with a particular community or cultural group for social, cultural or spiritual reasons?

(e) Rarity

- Does it possess uncommon, rare or endangered aspects of natural or cultural heritage?

(f) Representivity

- Is it important in demonstrating the principal characteristics of a particular class of natural or cultural places or objects?
- What is the importance in demonstrating the principal characteristics of a range of landscapes or environments, the attributes of which identify it as being characteristic of its class?
- Is it important in demonstrating the principal characteristics of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, province, region or locality?