



**ULIPAC (PTY) LTD: WALLMANNSTHAL FLUORSPAR MINE,
WALLMANNSTHAL 278 JR PORTION 4, GAUTENG PROVINCE**
Archaeological Impact Assessment Report

November 2013

Document version 7.0 Final
Compiled by N. Kruger



Proudly Supporting
TOUCHING AFRICA



Prepared by





ARCHAEOLOGICAL IMPACT ASSESSMENT ON PORTION 4 OF THE FARM WALLMANNSTHAL 278 JR FOR THE WALLMANNSTHAL FLUORSPAR MINE, GAUTENG PROVINCE

November 2013

Document Version 7 (Final)

Conducted on behalf of:

Ulipac (Pty) Ltd.
AGES Gauteng

Compiled by:

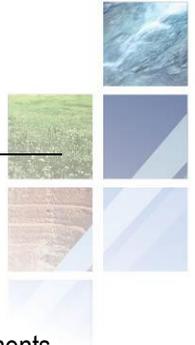
Nelius Kruger (BA, BA Hons. Archaeology Pret.)

Reviewed by:

Catherine De Camara (AGES)

GAUTENG PROVINCE: The Village Office Park (Block E), 309 Glenwood Road, Pretoria 0081, Postnet no 74, Private Bag X07, Arcadia, 0007 Tel: +27-12 751 2160 Fax: +27 (0) 86 607 2406 www.ages-group.com

*Offices: Eastern Cape Gauteng Limpopo Province Namibia North-West Province Western Cape Zimbabwe
AGES Board of Directors: SJ Pretorius JA Myburgh JJP Vivier JH Botha H Pretorius THG Ngoepe SM Haasbroek R Crosby
JC Vivier FN de Jager CJH Smit AS Potgieter AGES Gauteng Directors: JJP Vivier JC Vivier E van Zyl M Grobler*



Although AGES (Pty) Ltd exercises due care and diligence in rendering services and preparing documents, AGES (Pty) Ltd accepts no liability, and the client, by receiving this document, indemnifies Africa Geo-Environmental Services (Pty) Ltd and its directors, managers, agents and employees against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, directly or indirectly by AGES (Pty) Ltd and by the use of the information contained in this document.

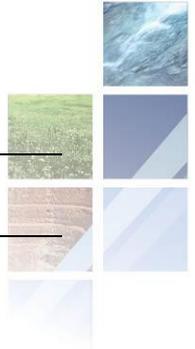


This document contains confidential and proprietary information equally shared between AGES (Pty) Ltd and Ulipac (Pty) Ltd., and is protected by copyright in favour of these companies and may not be reproduced, or used without the written consent of these companies, which has been obtained beforehand. This document is prepared exclusively for Ulipac (Pty) Ltd. and is subject to all confidentiality, copyright and trade secrets, rules, intellectual property law and practices of South Africa.



AGES (Pty) Ltd promotes the conservation of sensitive archaeological and heritage resources and therefore uncompromisingly adheres to relevant Heritage Legislation (National Heritage Resources Act no. 25 of 1999, Human Tissue Act 65 of 1983 as amended, Removal of Graves and Dead Bodies Ordinance no. 7 of 1925, Excavations Ordinance no. 12 of 1980). In order to ensure best practices and ethics in the examination, conservation and mitigation of archaeological and heritage resources, AGES (Pty) follows the Minimum Standards: Archaeological and Palaeontological Components of Impact Assessment as set out by the South African Heritage Resources Agency (SAHRA) and the CRM section of the Association for South African Professional Archaeologists (ASAPA).

DECLARATION



I, Nelius Le Roux Kruger, declare that –

- I act as the independent specialist;
- I am conducting any work and activity relating to the proposed Ulipac (Pty) Ltd. Wallmannsthal Fluorspar Mine Project in an objective manner, even if this results in views and findings that are not favourable to the client;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the relevant Heritage Legislation (National Heritage Resources Act no. 25 of 1999, Human Tissue Act 65 of 1983 as amended, Removal of Graves and Dead Bodies Ordinance no. 7 of 1925, Excavations Ordinance no. 12 of 1980), the Minimum Standards: Archaeological and Palaeontological Components of Impact Assessment (SAHRA and the CRM section of ASAPA), regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have not, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this declaration are true and correct.

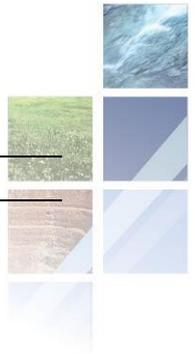
SIGNATURE OF SPECIALIST

Company: AGES Gauteng (Pty) Ltd.

Date: 24 November 2013

AGES (PTY) LTD

NOTATIONS AND TERMS

**Absolute dating:**

Absolute dating provides specific dates or range of dates expressed in years.

Archaeology:

The study of the human past through its material remains.

Archaeological record:

The archaeological record minimally includes all the material remains documented by archaeologists. More comprehensive definitions also include the record of culture history and everything written about the past by archaeologists.

Artefact:

Entities whose characteristics result or partially result from human activity. The shape and other characteristics of the artifact are not altered by removal of the surroundings in which they are discovered. In the southern African context examples of artefacts include potsherds, iron objects, stone tools, beads and hut remains.

Assemblage:

A group of artefacts recurring together at a particular time and place, and representing the sum of human activities.

¹⁴C or radiocarbon dating:

The ¹⁴C method determines the absolute age of organic material by studying the radioactivity of carbon. It is reliable for objects not older 70 000 years by means of isotopic enrichment. The method becomes increasingly inaccurate for samples younger than ±250 years.

Ceramic Facies:

In terms of the cultural representation of ceramics, a facies is denoted by a specific branch of a larger ceramic tradition. A number of ceramic facies thus constitute a ceramic tradition.

Ceramic Tradition:

In terms of the cultural representation of ceramics, a series of ceramic units constitutes as ceramic tradition.

Context:

An artefact's context usually consists of its immediate *matrix*, its *provenience* and its *association* with other artefacts. When found in *primary context*, the original artefact or structure was undisturbed by natural or human factors until excavation and if in *secondary context*, disturbance or displacement by later ecological action or human activities occurred.

Culture:

A contested term, "culture" could minimally be defined as the learned and shared things that people have, do and think.

Cultural Heritage Resource:

The broad generic term *Cultural Heritage Resources* refers to any physical and spiritual property associated with past and present human use or occupation of the environment, cultural activities and history. The term includes sites, structures, places, natural features and material of palaeontological, archaeological, historical, aesthetic, scientific, architectural, religious, symbolic or traditional importance to specific individuals or groups, traditional systems of cultural practice, belief or social interaction.

Cultural landscape:

A cultural landscape refers to a distinctive geographic area with cultural significance.

Cultural Resource Management (CRM):

A system of measures for safeguarding the archaeological heritage of a given area, generally applied within the framework of legislation designed to safeguard the past.

Ecofact:

Non artifactual material remains that has cultural relevance which provides information about past human activities. Examples would include remains or evidence of domesticated animals or plant species.



Excavation:

The principal method of data acquisition in archaeology, involving the systematic uncovering of archaeological remains through the removal of the deposits of soil and the other material covering and accompanying it.

Feature:

Non-portable artifacts, in other words artifacts that cannot be removed from their surroundings without destroying or altering their original form. Hearths, roads, and storage pits are examples of archaeological features

GIS:

Geographic Information Systems are computer software that allows layering of various types of data to produce complex maps; useful for predicting site location and for representing the analysis of collected data within sites and across regions.

Historical archaeology:

Primarily that aspect of archaeology which is complementary to history based on the study of written sources. In the South African context it concerns the recovery and interpretation of relics left in the ground in the course of Europe's discovery of South Africa, as well as the movements of the indigenous groups during, and after the "Great Scattering" of Bantu-speaking groups – known as the *mfecane* or *difaqane*.

Impact: A description of the effect of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time and space.

Iron Age:

Also known as "Farmer Period", the "Iron Age" is an archaeological term used to define a period associated with domesticated livestock and grains, metal working and ceramic manufacture.

Lithic:

Stone tools or waste from stone tool manufacturing found in on archaeological sites.

Management / Management Actions: Actions – including planning and design changes - that enhance benefits associated with a proposed development, or that avoid, mitigate, restore, rehabilitate or compensate for the negative impacts.

Matrix:

The material in which an artefact is situated (sediments such as sand, ashy soil, mud, water, etcetera). The matrix may be of natural origin or human-made.

Megalith:

A large stone, often found in association with others and forming an alignment or monument, such as large stone statues.

Midden:

Refuse that accumulates in a concentrated heap.

Microlith:

A small stone tool, typically knapped of flint or chert, usually about three centimetres long or less.

Monolith:

A geological feature such as a large rock, consisting of a single massive stone or rock, or a single piece of rock placed as, or within, a monument or site.

Oral Histories:

The historical narratives, stories and traditions passed from generation to generation by word of mouth.

Phase 1 CRM Assessment:

An Impact Assessment which identifies archaeological and heritage sites, assesses their significance and comments on the impact of a given development on the sites. Recommendations for site mitigation or conservation are also made during this phase.

Phase 2 CRM Study:

In-depth studies which could include major archaeological excavations, detailed site surveys and mapping / plans of sites, including historical / architectural structures and features. Alternatively, the sampling of sites by collecting material, small test pit excavations or auger sampling is required. Mitigation / Rescue involves planning the protection of significant sites or sampling through excavation or

collection (in terms of a permit) at sites that may be lost as a result of a given development.

Phase 3 CRM Measure:

A Heritage Site Management Plan (for heritage conservation), is required in rare cases where the site is so important that development will not be allowed and sometimes developers are encouraged to enhance the value of the sites retained on their properties with appropriate interpretive material or displays.

Prehistoric archaeology:

That aspect of archaeology which concerns itself with the development of humans and their culture before the invention of writing. In South Africa, prehistoric archaeology comprises the study of the Early Stone Age, the Middle Stone Age and the greater part of the Later Stone Age and the Iron Age.

Probabilistic Sampling:

A sampling strategy that is not biased by any person's judgment or opinion. Also known as statistical sampling, it includes systematic, random and stratified sampling strategies.

Provenience

Provenience is the three-dimensional (horizontal and vertical) position in which artefacts are found. Fundamental to ascertaining the provenience of an artefact is *association*, the co-occurrence of an artefact with other archaeological remains; and *superposition*, the principle whereby artefacts in lower levels of a matrix were deposited before the artefacts found in the layers above them, and are therefore older.

Random Sampling:

A probabilistic sampling strategy whereby randomly selected sample blocks in an area are surveyed. These are fixed by drawing coordinates of the sample blocks from a table of random numbers.

Relative dating:

The process whereby the relative antiquity of sites and objects are determined by putting them in sequential order but not assigning specific dates.

Remote Sensing:

The small or large-scale acquisition of information of an object or phenomenon, by the use of either recording or real-time sensing device(s) that is not in physical or intimate contact with the object (such as by way of aircraft, spacecraft or satellite). Here, ground-based geophysical methods such as Ground Penetrating Radar and Magnetometry are often used for archaeological imaging.

Rock Art Research:

Rock art can be "decoded" in order to inform about cultural attributes of prehistoric societies, such as dress-code, hunting and food gathering, social behaviour, religious practice, gender issues and political issues.

Scoping Assessment: The process of determining the spatial and temporal boundaries (i.e. extent) and key issues to be addressed in an impact assessment. The main purpose is to focus the impact assessment on a manageable number of important questions on which decision making is expected to focus and to ensure that only key issues and reasonable alternatives are examined. The outcome of the scoping process is a Scoping Report that includes issues raised during the scoping process, appropriate responses and, where required, terms of reference for specialist involvement.

Sensitive:

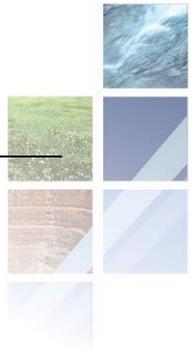
Often refers to graves and burial sites although not necessarily a heritage place, as well as ideologically significant sites such as ritual / religious places. *Sensitive* may also refer to an entire landscape / area known for its significant heritage remains.

Site (Archaeological):

A distinct spatial clustering of artefacts, features, structures, and organic and environmental remains, as the residue of human activity. These include surface sites, caves and rock shelters, larger open-air sites, sealed sites (deposits) and river deposits. Common functions of archaeological sites include living or habitation sites, kill sites, ceremonial sites, burial sites, trading, quarry, and art sites,

Slag:

The material residue of smelting processes from metalworking.



Stone Age:

An archaeological term used to define a period of stone tool use and manufacture.

Stratigraphy:

This principle examines and describes the observable layers of sediments and the arrangement of strata in deposits

Stratified Sampling:

A probabilistic sampling strategy whereby a study area is divided into appropriate zones – often based on the probable location of archaeological areas, after which each zone is sampled at random.

Systematic Sampling:

A probabilistic sampling strategy whereby a grid of sample blocks is set up over the survey area and each of these blocks is equally spaced and searched.

Tradition:

Artefact types, assemblages of tools, architectural styles, economic practices or art styles that last longer than a phase and even a horizon are describe by the term *tradition*. A common example of this is the early Iron Age tradition of Southern Africa that originated ± 200 AD and came to an end at about 900 AD.

Trigger: A particular characteristic of either the receiving environment or the proposed project which indicates that there is likely to be an *issue* and/or potentially significant *impact* associated with that proposed development that may require specialist input. Legal requirements of existing and future legislation may also trigger the need for specialist involvement.

Tuyère:

A ceramic blow-tube used in the process of iron smelting / reduction.

LIST OF ABBREVIATIONS

Abbreviation	Description
ASAPA	Association for South African Professional Archaeologists
AIA	Archaeological Impact Assessment
BP	Before Present
BCE	Before Common Era
EIA	Early Iron Age (also Early Farmer Period)
EIA	Environmental Impact Assessment
EFP	Early Farmer Period (also Early Iron Age)
ESA	Earlier Stone Age
GIS	Geographic Information Systems
HIA	Heritage Impact Assessment
K2/Map	K2/Mapungubwe Period
LFP	Later Farmer Period (also Later Iron Age)
LIA	Later Iron Age (also Later Farmer Period)
LSA	Later Stone Age
MIA	Middle Iron Age (also Early later Farmer Period)
MRA	Mining Rights Application
MSA	Middle Stone Age
NHRA	National Heritage Resources Act No.25 of 1999, Section 35
SAHRA	South African Heritage Resources Association
YCE	Years before Common Era (Present)

TABLE OF CONTENTS

1 EXECUTIVE SUMMARY	8
2 BACKGROUND.....	11
2.1 SCOPE AND MOTIVATION.....	11
2.2 PROJECT DIRECTION.....	11
2.3 PROJECT DESCRIPTION.....	11
2.4 TERMS OF REFERENCE	11
2.5 CRM: LEGISLATION, CONSERVATION AND HERITAGE MANAGEMENT	12
2.5.1 <i>Legislation regarding archaeology and heritage sites</i>	12
2.5.2 <i>Background to HIA and AIA Studies</i>	14
3 REGIONAL CONTEXT	16
3.1 AREA LOCATION.....	16
3.2 AREA DESCRIPTION: RECEIVING ENVIRONMENT	17
3.3 SITE DESCRIPTION.....	17
4 METHOD OF ENQUIRY	20
4.1 SOURCES OF INFORMATION.....	20
4.1.1 <i>Desktop Study</i>	20
4.1.2 <i>Aerial Representations and Survey</i>	20
4.1.3 <i>Field Survey</i>	21
4.1.4 <i>General Public Liaison</i>	22
4.2 LIMITATIONS	22
4.2.1 <i>Access</i>	22
4.2.2 <i>Visibility</i>	22
4.2.3 <i>Limitations and Constraints</i>	26
5 RESULTS: ARCHAEOLOGICAL SURVEY	27
5.1 PALAEOLOGY.....	28
5.2 THE STONE AGE	28
5.3 THE IRON AGE (FARMER PERIOD).....	28
5.4 HISTORICAL / COLONIAL PERIOD AND RECENT TIMES	28
5.5 GRAVES	34
5.6 OTHER: MINING / QUARRY	38
6 ARCHAEO-HISTORICAL CONTEXT.....	39
6.1 THE ARCHAEOLOGY OF SOUTHERN AFRICA.....	39
6.1.1 <i>Palaeontology</i>	40
6.1.2 <i>The Stone Ages</i>	40
6.1.3 <i>The Iron Age (Farmer Period)</i>	40

6.1.4	<i>Historical and Colonial Times and Recent History</i>	42
6.1.5	<i>Bantu Speaking Groups in the South African interior:</i>	42
6.2	DISCUSSION: AN ARCHAEO-HISTORICAL BACKGROUND OF THE WALLMANNSTHAL AREA	42
6.2.1	<i>The Stone Age Period</i>	43
6.2.2	<i>Iron Age / Farmer Period Sites</i>	43
6.2.3	<i>Ethno-history of the area</i>	43
6.2.4	<i>Later History: Historical archaeology and living heritage</i>	44
6.2.5	<i>The Anglo-Boer War</i>	44
6.2.6	<i>Wallmannsthal: Missions, Land Claims and Land Conflicts</i>	45
7	RESULTS: STATEMENT OF SIGNIFICANCE AND IMPACT RATING	45
7.1	HERITAGE RESOURCES MANAGEMENT AND CONSERVATION	45
7.2	CATEGORIES OF SIGNIFICANCE	46
7.3	POTENTIAL IMPACTS AND SIGNIFICANCE RATINGS	48
7.3.1	<i>General assessment of impacts on resources</i>	48
7.3.2	<i>Direct impact rating</i>	49
7.3.3	<i>Management actions</i>	50
7.3.4	<i>Site significance and impact rating</i>	51
7.4	DISCUSSION: EVALUATION OF RESULTS AND IMPACTS	69
8	RECOMMENDATIONS	72
9	GENERAL COMMENTS AND CONDITIONS	73
10	BIBLIOGRAPHY	75

LIST OF FIGURES

Figure 3-1: 1:50 00 Map representation of the location of the proposed Wallmannsthal Fluorspar Mine (2528CB).....	16
Figure 3-2: Map indicating the study area and agricultural portions of the farm Wallmannsthal as well as infrastructure placement for the Ulipac Fluorspar Mine.	18
Figure 3-3: Map indicating the location and extent of the resource at Wallmannsthal.	19
Figure 4-1: Aerial representation of the landscape at Wallmannsthal. Arrows indicate the remains of structures and larger historical agriculture areas are indicated in yellow.	20
Figure 4-2: Captured screen contents of real time mobile aerial orientation representations employed during the field survey, current field location indicated by blue marker.....	21
Figure 4-3: View of general surroundings in the north-western portion of the study area, looking west.....	22
Figure 4-4: View of general surroundings in the northern portion of the study area, looking north.....	23
Figure 4-5: View of general surroundings in the eastern portion of the study area, looking west.....	23
Figure 4-6: View of general surroundings in the disturbed southern portion of the study area, looking west.....	24
Figure 4-7: View of general surroundings in the central portion of the study area, looking west.....	24
Figure 4-8: View of general surroundings in the western portion of the study area near the N1, looking east.....	25
Figure 4-9: View of dense vegetation cover in the western portion of the study area near the N1.....	25
Figure 5-1: Map indicating the locations of archaeological and historical occurrences discussed in the text.....	27
Figure 5-2: Detail on aerial photo of historical agricultural areas. Note the clear visibility of stone wall structures and homesteads.....	29
Figure 5-3: Detail on aerial photo of historical agricultural areas and disused crop fields.....	29
Figure 5-4: Ruined homestead, typically found across the Wallmannsthal site.....	30
Figure 5-5: Remains of a small building at the old Wallmannsthal School.....	31
Figure 5-6: Remains of the main building at the old Wallmannsthal School.....	31
Figure 5-7: The dilapidated remains of the house structure at HP01.....	32
Figure 5-8: Unique features of the house at HP01 that remain partially intact include sandstone foundations, mud brick walls and a concrete fireplace.....	32
Figure 5-9: The remains of concrete, stone and clay structures.....	33
Figure 5-10: The remains of concrete, stone and clay structures.....	33
Figure 5-11: The remains of concrete, stone and clay structures. Note stone cattle kraal enclosure (left).....	34
Figure 5-12: The remains of concrete, stone and clay structures.....	34
Figure 5-13: View of the large cemetery at Site BP01.....	35
Figure 5-14: Detail of graves at the cemetery (Site BP01).....	35
Figure 5-15: Detail of graves at the cemetery (Site BP01).....	36
Figure 5-16: Informal cemetery at Site BP02.....	36
Figure 5-17: Single grave at at Site BP03.....	37
Figure 5-18: Two possible graves at Site BP04.....	38
Figure 5-19: View of the large open air quarry at site MQ01.....	39
Figure 6-1: Historical drawing by Dr Wangemann of the Wallmannsthal Mission Station (Unisa Archives).....	45
Figure 7-1: Heritage sensitivity map for the Wallmannsthal Fluorspar Mine Project Area.....	69

LIST OF TABLES

Table 1 Chronological Periods across southern Africa.....	39
Table 2: Heritage Site Significance Ratings.....	47
Table 3: Impact Assessment Criteria.....	48
Table 4: Direct Impact Assessment Criteria.....	49
Table 5: Management and Mitigation Actions.....	50
Table 6: Site HP01.....	51
Table 7: Site HP02.....	53
Table 8: Site HP03, Site HP04.....	55
Table 9: Site BP01.....	57
Table 10: Site BP02.....	60
Table 11: Site BP03.....	62
Table 12: Site BP04.....	64
Table 13: Site MQ01.....	66
Table 14: Impact assessment matrix for proposed footprint areas of mining development during the Pre-Construction, Construction, Operation and Closure Phases.....	71

1 EXECUTIVE SUMMARY

This report details the results of an Archaeological Impact Assessment (AIA) Study as part of the scoping phase subject to a mining right application (MRA) for the proposed Ulipac (Pty) Ltd. Wallmannsthal Fluorspar Mine, north of Pretoria in the Gauteng Province. The report includes background information on the area's archaeology, its representation in southern Africa, and the history of the larger area under investigation, survey methodology and results as well as heritage legislation and conservation policies. A copy of the report will be supplied to the South African Heritage Resources Agency (SAHRA) and recommendations contained in this document will be reviewed in order to consider the conservation priority of sites located in the area.

A number of academic archaeological and historical studies have been conducted in this section of Gauteng and these studies all infer a diverse archaeological and historical landscape, representative of most phases of human and cultural development in southern Africa. Similarly, a number of areas of archaeological and heritage potential were located during the AIA survey which focused around areas of heritage potential on the farm Wallmannsthal 278JR, covering a surface area of approximately 100ha.

Palaeontology:

Since the palaeontological sensitivity of rock units within the study area appeared to be potentially high, a Palaeontological Impact Assessment was conducted by a professional palaeontologist. The study concluded that only the south-eastern corner of the study area could be fossiliferous since it consists of shales and sandstones of the Ecca Group. The specialist recommended that the proposed development continue, subject to the his recommendation that any material from the potentially sensitive south eastern corner of the study area be dumped in spoil heaps on the property which will make it accessible to palaeontologists visiting the area.

Stone Age:

No Stone Age remains were observed in the survey area.

Iron Age (Farmer Period):

No Iron Age (Farmer Period) occurrences were observed in the survey area.

Historical/ Colonial Period:

The Wallmannsthal area north of Pretoria has a long and extensive Colonial Period settlement history. From around the first half of the 19th century, the area was frequented by explorers, missionaries and farmers who all contributed to a recent history of contact and conflict which ultimately amounted to the repatriation of the area back to the Wallmannsthal community. The remnants of these histories are scattered across Wallmannsthal with a large number of Colonial Period and recent sites occurring in the study area. The remains of the old Wallmannsthal school buildings occur within proposed infrastructure options and will probably be impacted on by the proposed development. The site is of importance in terms of the regional history of the area and it is recommended that the site be documented and a destruction permit be obtained from the relevant heritage resources authority (SAHRA). In addition, a moderately preserved house structure in the study area is of significance in terms of its architectural value. The structure occurs away from proposed alternatives and will probably not be impacted on. However, it is recommended that the structure be carefully documented and its provenance be established if the building is to be impacted upon by the development. A destruction permit

should be obtained from the relevant heritage resources authority (SAHRA) prior to any alteration of the site. A large number of poorly preserved brick, concrete and mud structures, stone wall enclosures and middens are scattered across the Wallmannsthal area and in areas proposed as alternatives for infrastructure for the mine. These structures are of medium-low significance and site monitoring of these structures are recommended when development commences, **as graves are likely to occur around the structures**. If the sites were to be impacted on by the mining development, destruction permits should be obtained from the relevant heritage resources authority (SAHRA). Generally, it is recommended that the sites and the general surroundings be closely monitored when the mining development commences.

Other: Mining / Quarry

A large open-air quarry occurs to the west of the Wallmanstal Agricultural Holdings adjacent to the N1 highway where surface cover soil was stripped and removed, possibly for the construction of the N1 during the second part of the 20th century. The site is of low significance and no heritage management action is required.

Graves:

Four graveyards and/ or burial places were recorded at the Wallmannsthal site. The burial places hold various numbers of marked and unmarked graves, many of which are possibly older than 60 years. In some instances, burial locations in this area follow a general pattern where graves occur around historical house structures and homestead complexes. All cemeteries and burials are of high significance and since they are structurally stable, the resources will require site management - or careful mitigation if impact cannot be avoided. Two burial sites specifically occur in association with ruined homesteads. The first site is a community graveyard containing a large number of marked and unmarked graves on the northern periphery of the study area. The second site towards the southern extremity of the study area holds 2 burials demarcated by stone cairns. In addition, other 2 burials sites, one consisting of at least 8 stone cairns and the other a single stone heap burial, occur in the study area. All burials occur away from areas proposed for infrastructure placement for the mine. However, it is recommended that a conservation buffer zone of at least 20m around graves and cemeteries be maintained and that all graves and cemeteries be fenced off and access to these areas controlled. The burials should also be monitored in order to avoid any impact on the resources. Should impact on the resources transpire during any stage of development or operation, full grave relocations are recommended for affected burials. This measure should be undertaken by a qualified archaeologist, and in accordance with relevant legislation and subject to any local and regional provisions and laws and by-laws pertaining to human remains. A full social consultation process should occur in conjunction with the mitigation of cemeteries and burials and a concerted effort must also be made to identify all buried individuals and to contact their relatives and descendants. Other legislative measures which may be of relevance include the Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925), the Human Tissues Act (Act no. 65 of 1983, as amended), the Ordinance on Excavations (Ordinance no. 12 of 1980) as well as any local and regional provisions, laws and by-laws that may be in place. **It should be noted that burial locations in this area follow a general pattern where graves occur around historical house structures and homestead complexes. It is therefore probable that further undetected burials might occur in the study area and utmost care should be taken not to disturb such resources.**

It is essential that cognisance be taken of the larger archaeological landscape of the area in order to avoid the destruction of previously undetected heritage sites. Here, care should be taken around rock faces and outcrops in the larger landscape, as rock art is known to occur on these outcrops. Water sources such as drainage lines and rivers should also be regarded as potentially sensitive in terms of possible Stone Age and Iron Age deposits.

Wallmannsthal Fluorspar Mine: Archaeological Impact Assessment Report

The possible existence of Historical Period resources deriving from the area's more recent history should also be considered. Graves and cemeteries generally occur around homesteads and utmost care should be taken not to disturb these high risk heritage resources as they involve complex intrinsic social and ritual attributes within the community. This report details the methodology, limitations and recommendations relevant to these heritage areas, as well as areas of proposed development. It should be noted that mitigation measures are valid for the duration of the development process, and mitigation measures might have to be implemented on additional features of heritage importance not detected during this Phase 1 assessment (e.g. uncovered during the construction process).

2 BACKGROUND

2.1 Scope and Motivation

AGES was appointed by Ulipac (Pty) Ltd. to conduct an Archaeological Impact Assessment (AIA) Study on the farm Wallmannsthal 278JR north of Pretoria in the Gauteng Province. The study was requested subject to the scoping phase for the Mining Right application of the proposed Wallmannsthal Fluorspar Mine. The rationale of the study was to determine the presence of heritage resources such as archaeological and historical sites and features, graves and places of religious and cultural significance; to consider the impact of the proposed project on such heritage resources, and to submit appropriate recommendations with regard to the cultural resources management measures that may be required at affected sites / features.

2.2 Project Direction

AGES's expertise ensures that all projects be conducted to the highest international ethical and professional standards. As archaeological specialist for AGES, Mr Neels Kruger acted as field director for the project; responsible for the assimilation of all information, the compilation of the final AIA report and recommendations in terms of heritage resources on the demarcated project areas. Mr Kruger is an accredited archaeologist and Culture Resources Management (CRM) practitioner with the Association of South African Professional Archaeologists (ASAPA), a member of the Society for Africanist Archaeologists (SAFA) and the Pan African Archaeological Association (PAA) as well as a Master's Degree candidate in archaeology at the University of Pretoria.

2.3 Project Description

In 1968 a reconnaissance core drilling programme was undertaken at the Wallmannsthal project site. The exploration drilling indicated that an oval pipe-like intrusive body surrounded by felsites of the Rooiberg series exists on the farm Wallmannsthal. The intrusion has an approximate surface dimension of 76m x 260m with an estimated depth of 152m. It is estimated that the ore body will deliver approximately 2.2 million tons of high grade- and 2.7 million tons of low grade Fluorspar ore. To recover the fluorspar, ore will be extracted from an open pit through conventional free dig and drill, and blast operations. A truck and loader fleet will carry material to ore stockpiles located in close proximity to the crushing plant located at Wallmannsthal, with waste material transported to waste dumps located adjacent to the pit. Crushed and screened ore will be transported to Sephaku Nokeng Fluorspar mine where it will be further processed. It is estimated that the open pit will have twelve 6m benches which will result in a total depth of 72m. The waste dump is expected to have no more than three 6m benches to a total height of 18m. The Life-of-Mine is expected to be 5-10 years depending on the production rate. The mining production rate is expected to be 100ktpm. In total 5Mt ore and 20Mt waste will be mined over the life of the project. The proposed total mining area is 100ha.

2.4 Terms of Reference

Heritage specialist input in Environmental Impact Assessment (EIA) processes is essential to ensure that through the management of change, development conserves our heritage. Heritage specialist input in EIA processes can play a positive role in the development process by enriching an understanding of the past and its contribution to the present. It is also a legal requirement for certain categories of development defined in the relevant heritage legislation, which may have an impact on heritage resources.

Thus, EIAs should, in all cases, include the assessment of Heritage Resources. The heritage component of the EIA is provided for in the **National Environmental Management Act, (Act 107 of 1998)** and endorsed by section 38 of the **National Heritage Resources Act (NHRA - Act 25 of 1999)**. In addition, the NHRA protects all structures and features older than 60 years (see Section 34), archaeological sites and material (see Section 35) and graves as well as burial sites (see Section 36). The objective of this legislation is to enable and to facilitate developers to employ measures to limit the potentially negative effects that the development could have on heritage resources.

Based hereon, this project functioned according to the following **terms of reference** for heritage specialist input:

- *Provide a detailed description of all archaeological artefacts, structures (including graves) and settlements which may be affected, if any.*
- *Assess the nature and degree of significance of such resources within the area.*
- *Establish heritage informants/constraints to guide the development process through establishing thresholds of impact significance.*
- *Assess any possible impact on the archaeological and historical remains within the area emanating from the proposed development activities.*
- *Propose possible heritage management measures provided that such action is necessitated by the development.*
- *Liaise and consult with the South African Heritage Resources Agency (SAHRA).*

2.5 CRM: Legislation, Conservation and Heritage Management

The broad generic term *Cultural Heritage Resources* refers to any physical and spiritual property associated with past and present human use or occupation of the environment, cultural activities and history. The term includes sites, structures, places, natural features and material of palaeontological, archaeological, historical, aesthetic, scientific, architectural, religious, symbolic or traditional importance to specific individuals or groups, traditional systems of cultural practice, belief or social interaction.

2.5.1 Legislation regarding archaeology and heritage sites

The South African Heritage Resources Agency (SAHRA) and their provincial offices aim to conserve and control the management, research, alteration and destruction of cultural resources of South Africa. It is therefore vitally important to adhere to heritage resource legislation at all times.

- *National Heritage Resources Act No 25 of 1999, section 35*

According to the National Heritage Resources Act of 1999 a historical site is “any identifiable building or part thereof, marker, milestone, gravestone, landmark or tell older than 60 years.” This clause is commonly known as the “60-years clause”. Buildings are amongst the most enduring features of human occupation, and this definition therefore includes all buildings older than 60 years, modern architecture as well as ruins, fortifications and Iron Age settlements. “Tell” refers to the evidence of human existence which is no longer above ground level, such as building foundations and buried remains of settlements (including artefacts).

The Act identifies heritage objects as:

- objects recovered from the soil or waters of South Africa including archaeological and palaeontological objects, meteorites and rare geological specimens
- visual art objects
- military objects
- numismatic objects
- objects of cultural and historical significance
- objects to which oral traditions are attached and which are associated with living heritage
- objects of scientific or technological interest
- any other prescribed category

With regards to activities and work on archaeological and heritage sites this Act states that:

“No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit by the relevant provincial heritage resources authority.” (34. [1] 1999:58)

and

“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 in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites. (35. [4] 1999:58).”*

And:

“No person may, without a permit issued by SAHRA or a provincial heritage resources agency-

- (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;*
- (c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) and excavation equipment, or any equipment which assists in the detection or recovery of metals (36. [3] 1999:60).”*

- 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 MEC as well as the relevant Local Authorities.

2.5.2 Background to HIA and AIA Studies

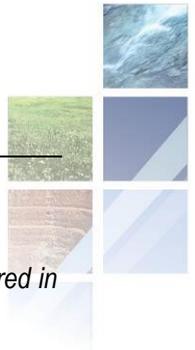
South Africa's unique and non-renewable archaeological and palaeontological heritage sites are 'Generally' protected in terms of the National Heritage Resources Act (Act No 25 of 1999, section 35) and may not be disturbed at all without a permit from the relevant heritage resources authority. Heritage sites are frequently threatened by development projects and both the environmental and heritage legislation require impact assessments (HIAs & AIAs) that identify all heritage resources in areas to be developed. Particularly, these assessments are required to make recommendations for protection or mitigation of the impact of the sites. HIAs and AIAs should be done by qualified professionals with adequate knowledge to (a) identify all heritage resources including archaeological and palaeontological sites that might occur in areas of developed and (b) make recommendations for protection or mitigation of the impact on the sites.

The National Heritage Resources Act (Act No. 25 of 1999, section 38) provides guidelines for Cultural Resources Management and prospective developments:

“38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as:

- (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 50m in length;*
- (c) any development or other activity which will change the character of a site:*
 - (i) exceeding 5 000 m² in extent; or*
 - (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.”



And:

“The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): Provided that the following must be included:

- (a) The identification and mapping of all heritage resources in the area affected;*
- (b) an assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7;*
- (c) an assessment of the impact of the development on such heritage resources;*
- (d) an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;*
- (e) the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;*
- (f) if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and*
- (g) plans for mitigation of any adverse effects during and after the completion of the proposed development (38. [3] 1999:64).”*

Consequently, section 35 of the Act requires Heritage Impact Assessments (HIAs) or Archaeological Impact Assessments (AIAs) to be done for such developments in order for all heritage resources, that is, all places or objects of aesthetics, architectural, historic, scientific, social, spiritual, linguistic or technological value or significance to be protected. Thus any assessment should make provision for the protection of all these heritage components, including archaeology, shipwrecks, battlefields, graves, and structures older than 60 years, living heritage, historical settlements, landscapes, geological sites, palaeontological sites and objects.

3 REGIONAL CONTEXT

3.1 Area Location

The Wallmannsthal study area is situated approximately 40km north of Pretoria, directly east of the N1 highway connecting Gauteng with the north. The site for the proposed Wallmannsthal Fluorspar Mine is located in Ward 73 of the City of Tshwane Metropolitan Municipality in the Gauteng Province. The South African National Defence Force owns large tracts of land in the Wallmannsthal area, which is used for a defence force base. Large parts of this land falls inside the demarcated Dinokeng Game Reserve Area.

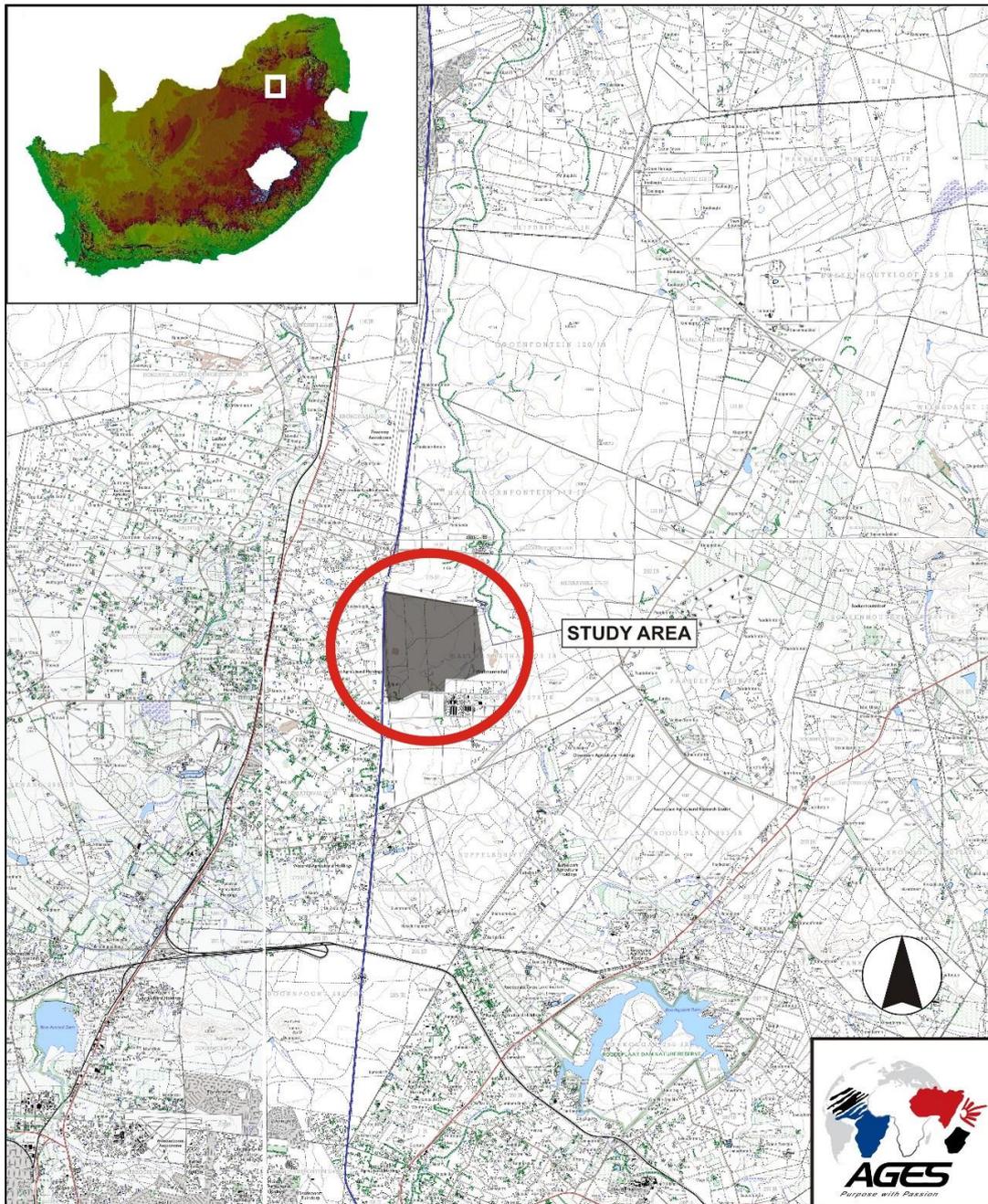


Figure 3-1: 1:50 00 Map representation of the location of the proposed Wallmannsthal Fluorspar Mine (2528CB)

3.2 Area Description: Receiving Environment

The Study Area lies within the Savanna biome which is the largest biome in Southern Africa. Although the site itself falls within the Savanna Biome, it is more representative of a transitional zone between the Savanna and the Grassland Biomes, with the woodland components representing the Savanna Biome and the grassveld areas representing the Grassland Biome. The most recent classification of the area by Mucina & Rutherford (2006) is the mixed woodland areas forming part of the Central Sandy Bushveld, with the grasslands more representative of the grassland biome due to the rocky and shallow nature of the soils preventing the growth of woody species. The major geological feature of this catchment is the large area of volcanic intrusive rock referred to as the Bushveld Igneous Complex. Formations in this complex are extremely rich in minerals. Previous prospecting of the area done during 1968 indicated an oval pipe-like intrusive body surrounded by felsites of the Rooiberg series.

3.3 Site Description

Ulipac (Pty) Ltd. has prospecting rights on agricultural holdings that form part of Portion 4 of the farm Wallmannsthal 278 JR. The total mining area for the proposed Wallmannsthal Fluoride mine is 240ha. Large portions of the study area have been altered by historical occupation and farming activities and large sections of the area bear clear evidence of deserted crop lands and agriculture fields.

Three alternative options for infrastructure are considered for the project (see Figure 3-4). In all alternatives, the following infrastructure components will be constructed for the project:

- Opencast pit;
- Waste rock dump;
- Haul and access roads;
- Topsoil dumps;
- Weighbridge;
- Crushing and screening plant;
- Workshops and administrative facilities.

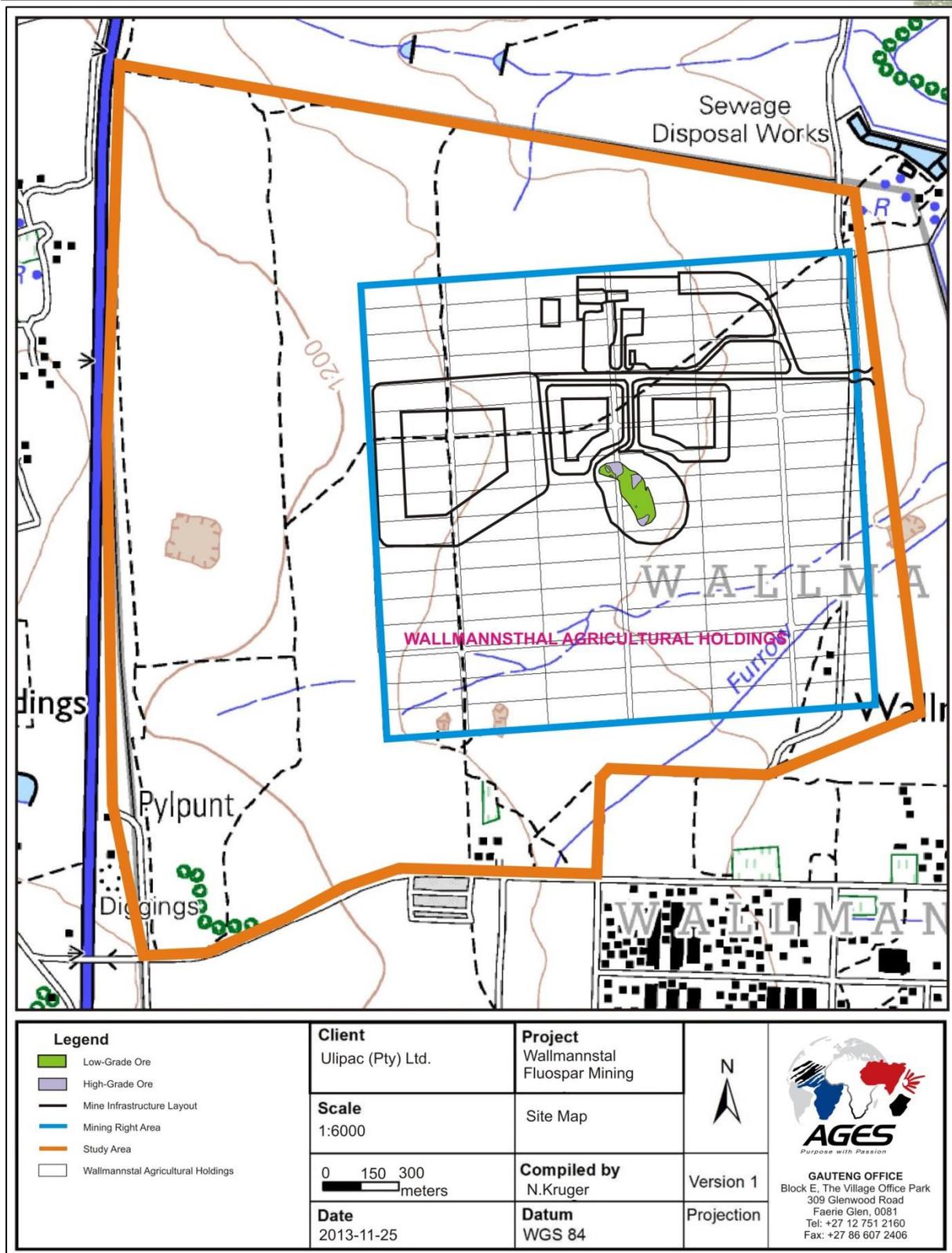


Figure 3-2: Map indicating the study area and agricultural portions of the farm Wallmannsthal as well as infrastructure placement for the Ulipac Fluorspar Mine.

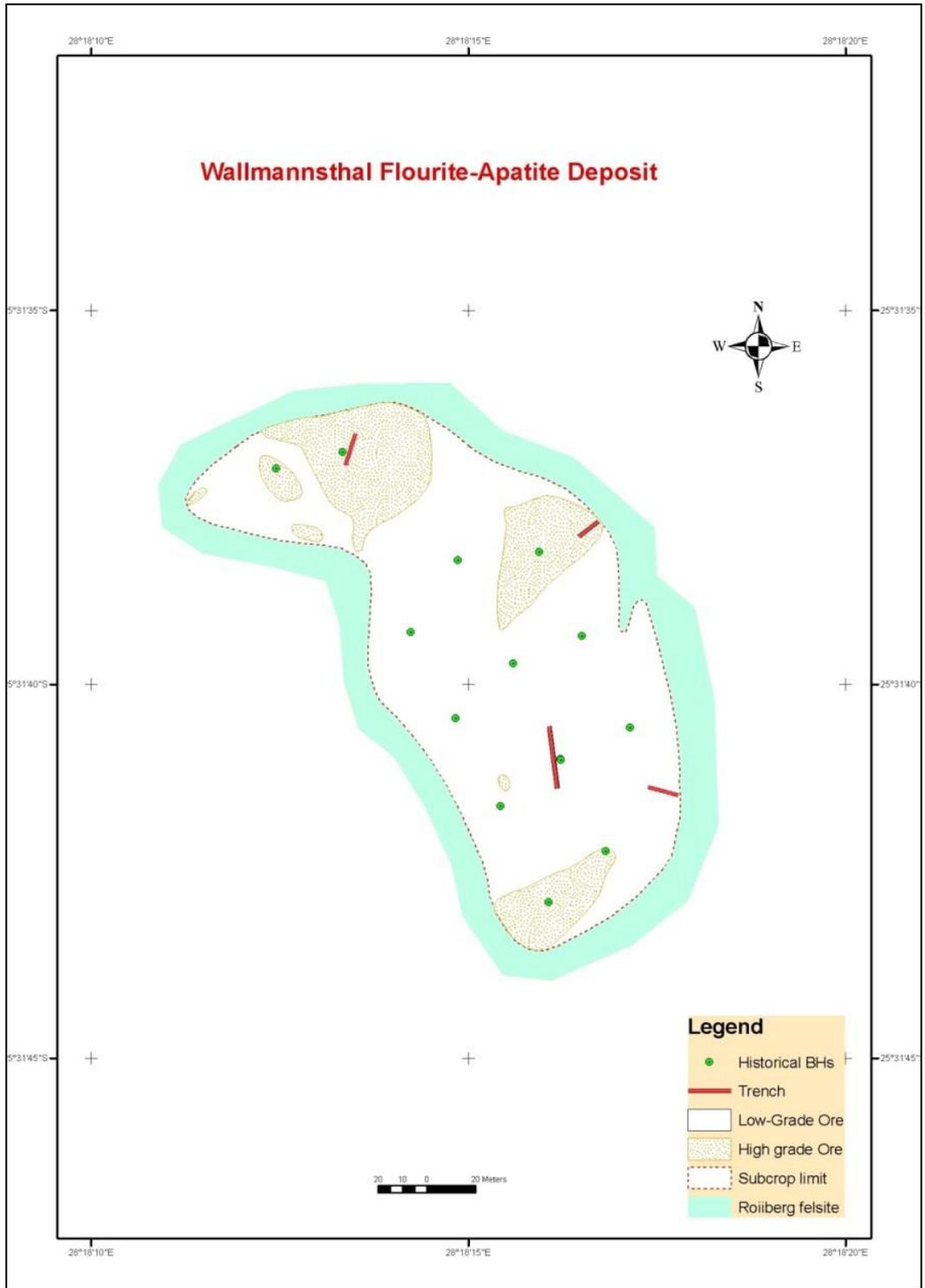
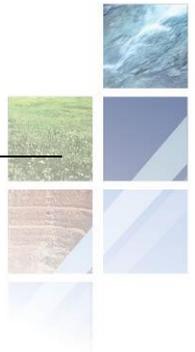


Figure 3-3: Map indicating the location and extent of the resource at Wallmannsthal.

4 METHOD OF ENQUIRY

4.1 Sources of Information

Data from detailed desktop, aerial and field studies were employed in order to sample surface areas systematically and to ensure a high probability of heritage site recording.

4.1.1 Desktop Study

A desktop study was prepared in order to contextualize the proposed project within a larger historical milieu. The study focused on relevant previous studies, archaeological and archival sources, Heritage Impact Assessment Reports, aerial photographs, historical maps and local histories, all pertaining to the larger landscape of this section of Gauteng.

4.1.2 Aerial Representations and Survey

Aerial photography is often employed to locate and study archaeological sites, particularly where larger scale area surveys are performed. This method was applied to great success in the pedestrian and vehicular survey at Wallmannsthal, where contour lines of elevations, depressions, variation in vegetation, soil marks and landmarks were examined.

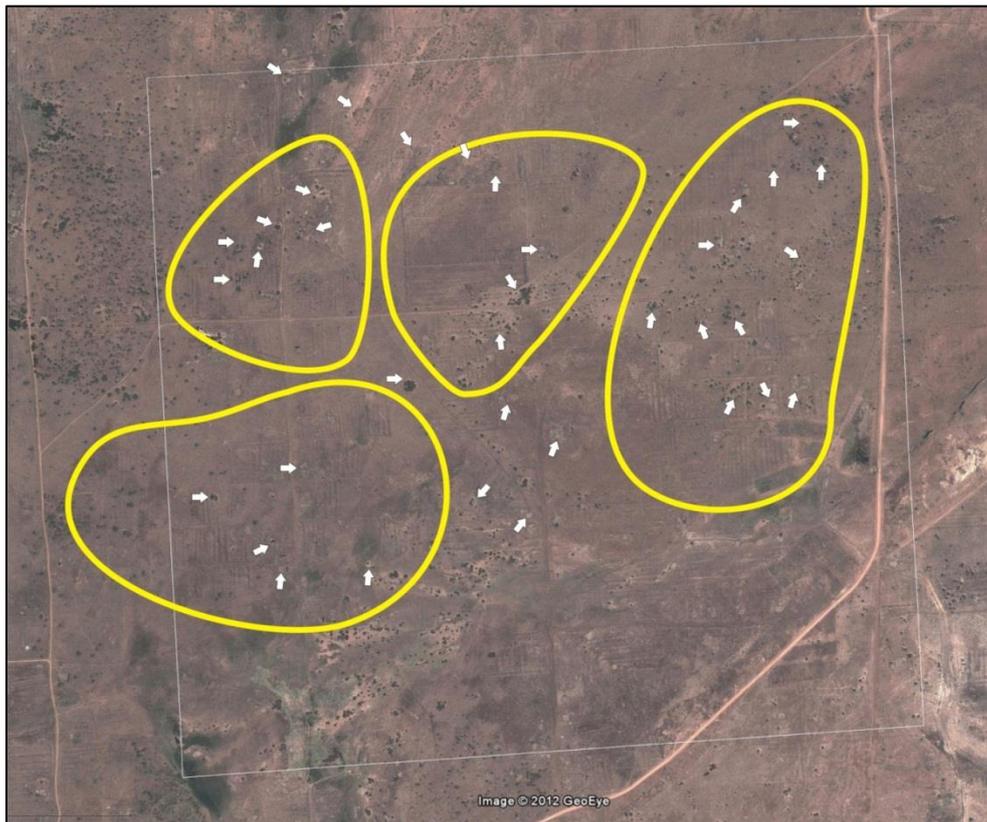


Figure 4-1: Aerial representation of the landscape at Wallmannsthal. Arrows indicate the remains of structures and larger historical agriculture areas are indicated in yellow.

Specific attention was given to shadow sites (shadows of walls or earthworks which are visible early or late in the day), crop mark sites (crop mark sites are visible because disturbances beneath crops cause variations in their

height, vigour and type) and soil marks (e.g. differently coloured or textured soil (soil marks) might indicate ploughed-out burial mounds). Attention was also given to moisture differences, as prolonged dampening of soil as a result of precipitation frequently occurs over walls or embankments. By superimposing high frequency aerial photographs with images generated with Google Earth, potential sensitive areas were subsequently identified, geo-referenced and transferred to a handheld GPS device. In addition, based on existing knowledge of the local heritage landscape, the farms were divided into smaller survey zones centred around areas of higher site catchment probability (where human activity was likely to occur in prehistoric and historic times e.g. around water sources, near soils fit for agriculture, on ridges). These survey zones were then transferred to a handheld GPS device. These areas served as referenced points from where further vehicular and pedestrian surveys were carried out

4.1.3 Field Survey

Archaeological survey implies the systematic procedure of the identification of archaeological sites. An archaeological survey of areas to be impacted by the proposed Wallmannsthal Fluorspar Mine was conducted on 4 and 18 September 2012, and 4 December 2012. The process encompassed a systematic field survey in accordance with standard archaeological practice by which heritage resources are observed and documented. In order to sample surface areas systematically and to ensure a high probability of site recording the farms were systematically surveyed, GPS reference points were visited and random spot checks were made (see detail in previous section). Using a Garmin E-trex Legend GPS objects and structures of archaeological / heritage value were recorded and photographed with a Canon 450D Digital camera. Real time aerial orientation, by means of a mobile Google Earth application was also employed to investigate possible disturbed areas during the survey.

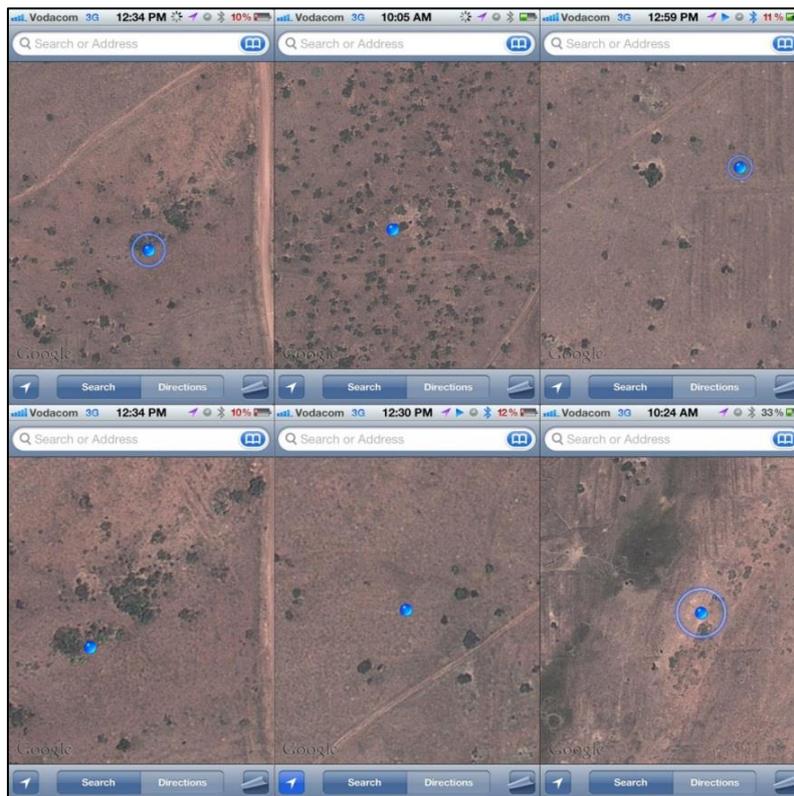


Figure 4-2: Captured screen contents of real time mobile aerial orientation representations employed during the field survey, current field location indicated by blue marker.

As most archaeological material occur in single or multiple stratified layers beneath the soil surface, special attention was given to disturbances, both man-made such as roads and clearings, as well as those made by natural agents such as burrowing animals and erosion.

4.1.4 General Public Liaison

At Wallmannsthal, consultation with local residents and representatives of the Wallmannsthal Communal Property Association (CPA) (see Section 6.2.6) provided information on the general history of the area, possible locations of heritage resources and brief commentaries on the recent history of the area.

4.2 Limitations

4.2.1 Access

The farm Wallmannsthal is accessed via a dirt road connecting to the N1 to rural areas around the Wallmannsthal area. A network of smaller dirt roads provide access to most areas on the property. No access restrictions were encountered.

4.2.2 Visibility

The surrounding vegetation in the Wallmannsthal area is mostly constituted out of a combination of scattered bush, trees and grasslands. The general visibility at the time of the field survey (September 2012 & December 2012) ranged between high visibility in disturbed areas and agriculture fields, moderate visibility in flatter more pristine areas and low visibility in grasslands. In single cases during the survey sub-surface inspection was possible.



Figure 4-3: View of general surroundings in the north-western portion of the study area, looking west.

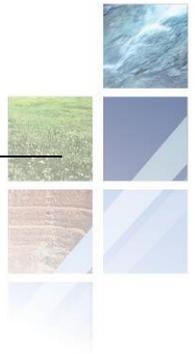


Figure 4-4: View of general surroundings in the northern portion of the study area, looking north.



Figure 4-5: View of general surroundings in the eastern portion of the study area, looking west.

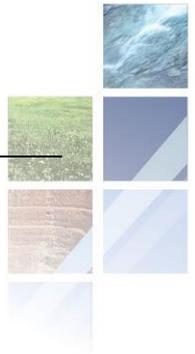


Figure 4-6: View of general surroundings in the disturbed southern portion of the study area, looking west.



Figure 4-7: View of general surroundings in the central portion of the study area, looking west.

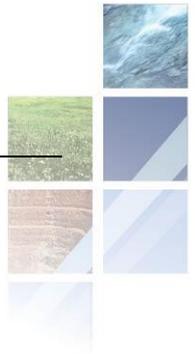


Figure 4-8: View of general surroundings in the western portion of the study area near the N1, looking east.



Figure 4-9: View of dense vegetation cover in the western portion of the study area near the N1.

4.2.3 Limitations and Constraints

The pedestrian and vehicular survey of the Wallmannsthal site primarily focused around areas tentatively identified as sensitive and of high heritage probability (i.e. those noted during the aerial survey) as well as areas of high human settlement catchment. However, the following constraints were encountered:

- **Visibility:** Visibility proved to be a constraint in more pristine grassland areas where documented sites proved to be densely overgrown and obstructed by surface vegetation.

Thus, even though it might be assumed that survey findings are representative of the heritage landscape of Wallmannsthal, it should be stated that the possibility exists that individual sites could be missed due to the localised nature of some heritage remains as well as the possible presence of sub-surface archaeology. Therefore, maintaining due cognisance of the integrity and accuracy of the archaeological survey, it should be stated that the heritage resources identified during the study do not necessarily represent *all* the heritage resources present on the property. The subterranean nature of some archaeological sites, dense vegetation cover and visibility constraints sometimes distort heritage representations and any additional heritage resources located during consequent development phases must be reported to the Heritage Resources Authority or an archaeological specialist.

5 RESULTS: ARCHAEOLOGICAL SURVEY

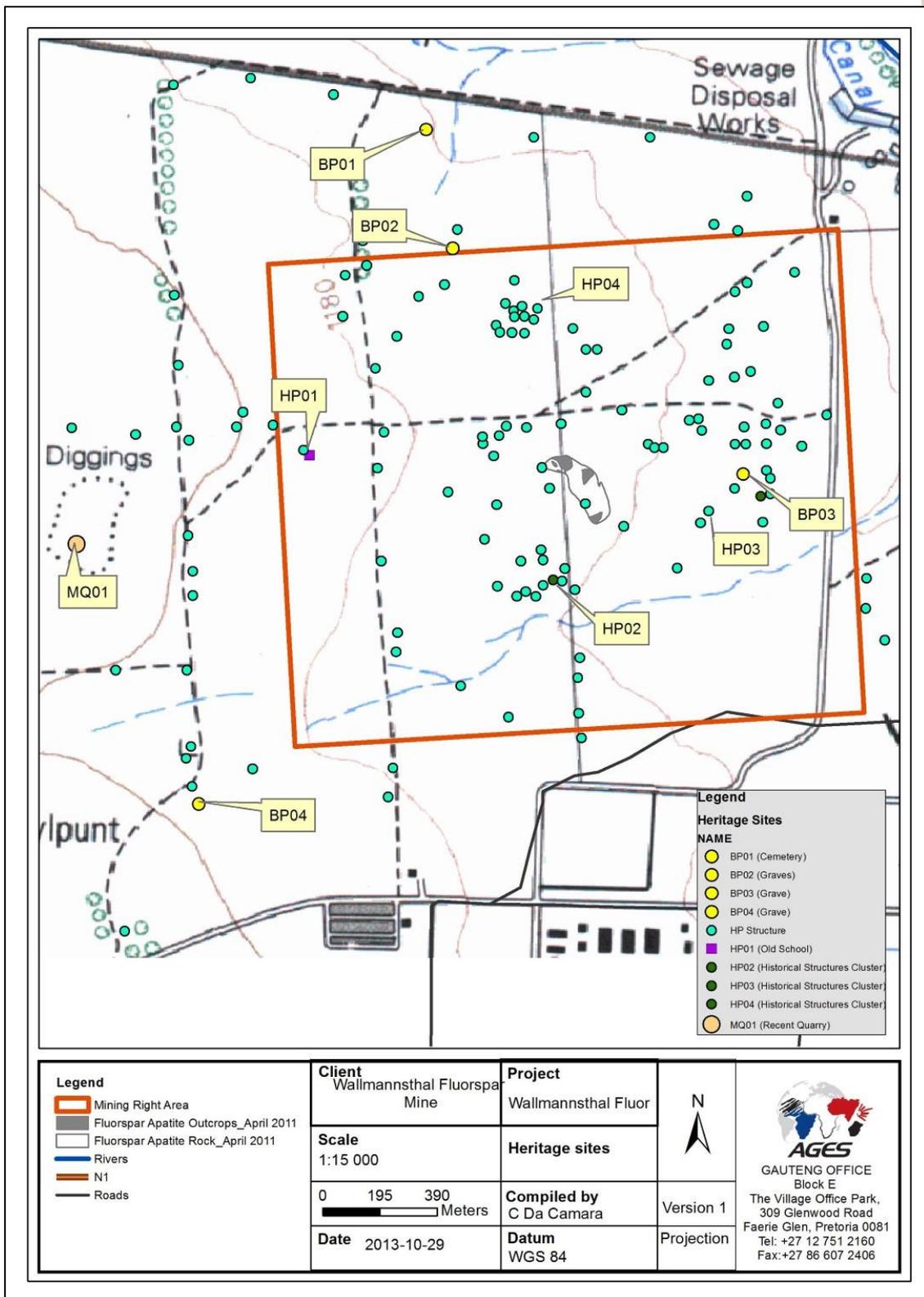


Figure 5-1: Map indicating the locations of archaeological and historical occurrences discussed in the text.

5.1 Palaeontology

A Palaeontological Scoping Study¹ of the study area indicates that the region is dominated by sedimentary and igneous rocks that have been metamorphosed, probably through hydrothermal action caused by the nearby intrusion of the magma of the Bushveld Igneous Complex. This unique environment which consists of trachyte, trachyandesite, tuff, breccia, agglomerate and carbonatite is rich in minerals since sediments of the Karoo Supergroup were set down on top of the older Mogolian age sediments and the Bushveld Igneous Complex. The Karoo Supergroup sediments consist of shale, shaly sandstone, sandstone, grit, conglomerate, and coal and this Supergroup, found in the study area is represented by the sedimentary rocks of the Eccca Group which may be fossiliferous. However, only the south-eastern corner of the study area consists of shales and sandstones of the Eccca Group which are known to be fossiliferous.

5.2 The Stone Age

No Stone Age remains were observed in the survey area. However, it is likely that Stone Age material might occur in the area, specifically along drainage lines and where source rock material occurs in the landscape.

5.3 The Iron Age (Farmer Period)

No Iron Age (Farmer Period) occurrences were observed in the survey area. Since large portions of the Wallmannsthal site have been altered by past farming activities, it is likely that Iron Age remnants possibly occurring in the landscape might have been destroyed by farming and agriculture in the 20th century.

5.4 Historical / Colonial Period and recent times

Pretoria and its surroundings have a long and extensive Colonial Period settlement history. From around the first half of the 19th century, the area was frequented by explorers, missionaries and farmers who all contributed to a recent history of contact and conflict. The remnants of recent occupation and movement at Wallmannsthal are scattered across the property, with a large number of ruined Colonial Period / Recent homestead structures documented here. For the purposes of this report, three areas were demarcated based on density of structural remains, and preservation of structures.

¹ Durand, F. 2013. Scoping Report Palaeontology: Proposed development of a Fluorspar mine at Wallmannsthal, north of Pretoria

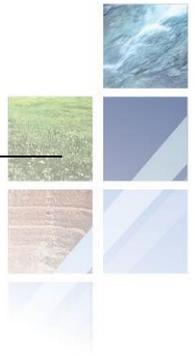


Figure 5-2: Detail on aerial photo of historical agricultural areas. Note the clear visibility of stone wall structures and homesteads.



Figure 5-3: Detail on aerial photo of historical agricultural areas and disused crop fields.



Figure 5-4: Ruined homestead, typically found across the Wallmannsthal site.

- **Site HP01: S25°31'37.16" E28°17'41.62"**

The remains of the old Wallmannsthal combined school occurs along the Western section of the study area. The site consists out of a 2 room building in dilapidated state, the foundation structures of numerous classrooms and the ruined remains of ablution facilities. The school complex was built in the early 20th century to serve the neighbouring Wallmannsthal community. The site is of importance in terms of the regional architectural history and sense of place of the Wallmannsthal recent historical landscape.

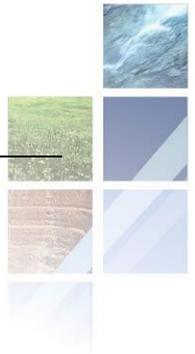


Figure 5-5: Remains of a small building at the old Wallmannsthal School.



Figure 5-6: Remains of the main building at the old Wallmannsthal School.

- Site HP02: S25°31'50.50" E28°18'10.52"

The dilapidated remains of a large brick and sandstone house occur more or less in the centre of the study area. The building had at least 5 rooms, a veranda and hallways situated on a large farmstead. The structure, along with a large number of homestead ruins in the area is linked the 20th century occupation of Wallmannsthal. Certain unique features of the building have been preserved and might provide a valuable example of architectural styles and features in the building patterns of Wallmannsthal community during the 20th century. These features include sandstone foundation structures and veranda walls, stone decorations and a partially intact fireplace which would have been situated in the lounge of the house. Therefore, this specific structure might be of research value.



Figure 5-7: The dilapidated remains of the house structure at HP01.



Figure 5-8: Unique features of the house at HP01 that remain partially intact include sandstone foundations, mud brick walls and a concrete fireplace.

- Site HP03: S25°31'41.35" E28°18'29.08"
- Site HP04: S25°31'24.22" E28°18'04.50"

A large number of poorly preserved brick, mud and concrete structures, stone wall enclosures and middens are scattered across the Wallmannsthal site. The houses, generally built with clay bricks or stone in square or circular shapes, probably belonged to members of the Wallmannsthal community who resided in the area in the mid-20th century. In addition, material in middens such as glass, metal, enamel, plastic and wood indicate a more recent age for the structures. The sites are probably of limited significance due to the poor preservation of structures, and the apparent recent age of some of the features.



Figure 5-9: The remains of concrete, stone and clay structures.



Figure 5-10: The remains of concrete, stone and clay structures.



Figure 5-11: The remains of concrete, stone and clay structures. Note stone cattle kraal enclosure (left).



Figure 5-12: The remains of concrete, stone and clay structures.

- **Possible other Historical / Colonial Period Remains**

It is highly likely that further historical period remains will be present around crop lands and existing remains at Wallmannsthal.

5.5 Graves

Four graveyards and/ or burial places were recorded at the Wallmannsthal site. The burial places hold various numbers of marked and unmarked graves, many of which are possibly older than 60 years. In some instances, burial locations in this area follow a general pattern where graves occur around historical house structures and homestead complexes.

- **Site BP01: S25°31'03.85" E28°17'56.14"**

A large cemetery was recorded north of the study area along the border of the Wallmannsthal farm. The site consists of a graveyard containing a large number of marked and unmarked graves (in excess of 100). Most of the graves have an east–west orientation with headstones placed on the western side. Where headstones do not occur, graves are demarcated by packed rocks. Burial offerings and grave dressing were recorded on several of the graves which confirm existing social ties to the graves. The cemetery is further linked to the Wallmannsthal community who resided in the area, the remains of which are evident in the landscape.

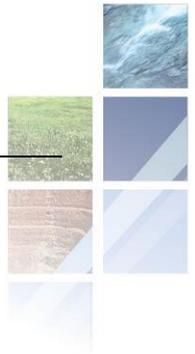


Figure 5-13: View of the large cemetery at Site BP01.



Figure 5-14: Detail of graves at the cemetery (Site BP01).



Figure 5-15: Detail of graves at the cemetery (Site BP01).

- Site BP02: S25°31'14.57" E28°17'57.71"

A small burial site was located on the northern periphery of the survey area. The site consists of at least 8 stone cairns, resembling graves. No offerings or grave dressing were recorded on the graves.



Figure 5-16: Informal cemetery at Site BP02.

- **Site BP03: S25°31'34.74" E28°18'25.56"**

A possible burial site was located in association with a large cluster of 20th century homestead ruins at Site HP03, along the eastern portion of the study area. The site consists of an elongated stone cairn with a monolith paved on one side. No offerings or grave dressing were recorded on the graves.



Figure 5-17: Single grave at at Site BP03.

- **Site BP04: S25°32'15.90" E28°17'30.36"**

A further possible burial site was located in association with 20th century homestead ruins in the south-western portion of the study area towards the N1 and the Pylpunt road. The site consists of two elongated stone cairns next to the homestead ruins. No offerings or grave dressing were recorded on the graves.



Figure 5-18: Two possible graves at Site BP04.

- **Possible other Burial Sites**

In this area, graves and family cemeteries are generally to be found in association with homesteads, crop fields and historical buildings and burials will, in all probability occur around these locations.

5.6 Other: Mining / Quarry

- **Site MQ01: S25°31'46.16" E28°17'16.97"**

A large open-air quarry occurs to the west of the Wallmanstal Agricultural Holdings adjacent to the N1 highway. Surface cover soil was stripped and removed over a large area at the site. Although a direct context for the site is not known, it probably acted as burrow pit for the construction of the N1 during the second part of the 20th century.



Figure 5-19: View of the large open air quarry at site MQ01

6 ARCHAEO-HISTORICAL CONTEXT

6.1 The archaeology of Southern Africa

Archaeology in southern Africa is typically divided into two main fields of study, the **Stone Age** and the **Iron Age** or **Farmer Period**. The following table provides a concise outline of the chronological sequence of periods, events, cultural groups and material expressions in Southern African pre-history and history.

Table 1 Chronological Periods across southern Africa

Period	Epoch	Associated cultural groups	Typical Material Expressions
Early Stone Age 2.5m – 250 000 YCE	Pleistocene	Early Hominins: <i>Australopithecines</i> <i>Homo habilis</i> <i>Homo erectus</i>	Typically large stone tools such as hand axes, choppers and cleavers.
Middle Stone Age 250 000 – 25 000 YCE	Pleistocene	First <i>Homo sapiens</i> species	Typically smaller stone tools such as scrapers, blades and points.
Late Stone Age 20 000 BC – present	Pleistocene / Holocene	<i>Homo sapiens sapiens</i> including San people	Typically small to minute stone tools such as arrow heads, points and bladelets.
Early Iron Age / Early Farmer Period 300 – 900 AD	Holocene	First Bantu-speaking groups	Typically distinct ceramics, bead ware, iron objects, grinding stones.
Middle Iron Age (Mapungubwe / K2) / early Later Farmer Period 900 – 1350 AD	Holocene	Bantu-speaking groups, ancestors of present-day groups	Typically distinct ceramics, bead ware and iron / gold / copper objects, trade goods and grinding stones.
Late Iron Age / Later Farmer Period 1400 AD -1850 AD	Holocene	Various Bantu-speaking groups including Venda, Thonga, Sotho-Tswana and Zulu	Distinct ceramics, grinding stones, iron objects, trade objects, remains of iron smelting activities including iron smelting furnace, iron slag and residue as well as iron ore.
Historical / Colonial Period ±1850 AD – present	Holocene	Various Bantu-speaking groups as well as European farmers, settlers and explorers	Remains of historical structures e.g. homesteads, missionary schools etc. as well as, glass, porcelain, metal and ceramics.

6.1.1 Palaeontology

The region around Pretoria is relatively fossil rich and fossils have been found on the farms and the mines in the Wallmannsthal area. The fossils of the region are mostly that of plant leaf imprints but silicified and coalified wood may also be found. The study area falls within the Eccca and Dwyka Groups of the Karoo Supergroup. The Eccca Group is renowned for its fossil content. The Eccca Group is characterized by shale, mudstone, sandstone and seams of coal. 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 of course mines.

The Eccca Group of the Karoo Supergroup contains vast amounts of Permian leaf imprints of plants such as Glossopteris in places. 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, Witbank and Vereeniging and the ferromanganese mine at Ryedale. Fossilised leaf imprints are not found ubiquitously throughout the Eccca Group, but in pockets 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.

6.1.2 The Stone Ages

- The Earlier Stone Age (ESA)

Earlier Stone Age deposits typically occur on the flood-plains of perennial rivers and may date to between 2 million and 250 000 years ago. These ESA open sites sometimes contain stone tool scatters and manufacturing debris ranging from pebble tool choppers to core tools such as handaxes and cleavers. These stone tools were made by the earliest hominins. These groups seldom actively hunted and relied heavily on the opportunistic scavenging of meat from carnivore kill sites.

- The Middle Stone Age (MSA)

The majority of Middle Stone Age (MSA) sites occur on flood plains and sometimes in caves and rock shelters. Sites usually consist of large concentrations of knapped stone flakes such as scrapers, points and blades and associated manufacturing debris. Tools may have been hafted but organic materials, such as those used in hafting, seldom remain preserved in the archaeological record. Limited drive-hunting activities are also associated with the MSA.

- The Later Stone Age (LSA)

Sites dating to the Later Stone Age (LSA) are better preserved in rock shelters, although open sites with scatters of mainly stone tools can occur. Well-protected deposits in shelters allow for stable conditions that result in the preservation of organic materials such as wood, bone, hearths, ostrich eggshell beads and even bedding material. By using San (Bushman) ethnographic data a better understanding of this period is possible. South African rock art is also associated with the LSA.

6.1.3 The Iron Age (Farmer Period)

- **Early Iron Age (Early Farming Communities)**

The Early Iron Age (also Early Farmer Period) marks the movement of Bantu speaking farming communities into South Africa at around 200 A.D. These groups were agro-pastoralists that settled in the vicinity of water in order to provide subsistence for their cattle and crops. Artefact evidence from Early Farmer Period sites is mostly found in the form of ceramic assemblages and the origins and archaeological identities of this period are largely based upon ceramic typologies and sequences, where diagnostic pottery assemblages can be used to infer group identities and to trace movements across the landscape. Early Farmer Period ceramic traditions are classified by some scholars into different “streams” or trends in pot types and decoration that, over time emerged in southern Africa. These “streams” are identified as the Kwale Branch (east), the Nkope Branch (central) and the Kalundu Branch (west). More specifically, in the northern regions of South Africa at least three settlement phases have been distinguished for prehistoric Bantu-speaking agropastoralists. The first phase of the Early Iron Age, known as Happy Rest (named after the site where the ceramics were first identified), is representative of the Western Stream of migrations, and dates to AD 400 - AD 600. The second phase of Diamant is dated to AD 600 - AD 900 and was first recognized at the eponymous site of Diamant in the western Waterberg. The third phase, characterised by herringbone-decorated pottery of the Eiland tradition, is regarded as the final expression of the Early Iron Age (EIA) and occurs over large parts of the North West Province, Northern Province, Gauteng and Mpumalanga. This phase has been dated to about AD 900 - AD 1200. Early Farmer Period ceramics typically display features such as large and prominent inverted rims, large neck areas and fine elaborate decorations. The Early Iron Age continued up to the end of the first millennium AD.

- **Middle Iron Age / K2 Mapungubwe Period (early Later Farming Communities)**

The onset of the middle Iron Age dates back to ±900 AD, a period more commonly known as the Mapungubwe / K2 phase. These names refer to the well known archaeological sites that are today the pinnacle of South Africa’s Iron Age heritage. The inhabitants of K2 and Mapungubwe, situated on the banks of the Limpopo, were agriculturalists and pastoralists and were engaged in extensive trade activities with local and foreign traders. Although the identity of this Bantu-speaking group remains a point of contestation, the Mapungubwe people were the first state-organized society southern Africa has known. A considerable amount of golden objects, ivory, beads (glass and gold), trade goods and clay figurines as well as large amounts of potsherds were found at these sites and also appear in sites dating back to this phase of the Iron Age. Ceramics of this tradition take the form of beakers with upright sides and decorations around the base (K2) and shallow-shouldered bowls with decorations as well as globular pots with long necks. (Mapungubwe). The site of Mapungubwe was deserted at around 1250 AD and this also marks the relative conclusion of this phase of the Iron Age.

- **Later Iron Age (Later Farming Communities)**

The late Iron Age of southern Africa marks the grouping of Bantu speaking groups into different cultural units. It also signals one of the most influential events of the second millennium AD in southern Africa, the difaqane. The difaqane (also known as “the scattering”) brought about a dramatic and sudden ending to centuries of stable society in southern Africa. Reasons for this change was essentially the first penetration of the southern African interior by Portuguese traders, military conquests by various Bantu speaking groups primarily the ambitious Zulu King Shaka and the beginning of industrial developments in South Africa. Different cultural groups were scattered over large areas of the interior. These groups conveyed with them their customs that in the archaeological record manifest in ceramics, beads and other artefacts. This means that distinct pottery typologies can be found in the different late Iron Age groups of South Africa.

6.1.4 Historical and Colonial Times and Recent History

The Historical period in southern Africa encompass the course of Europe's discovery of South Africa and the spreading of European settlements along the East Coast and subsequently into the interior. In addition, the formation stages of this period are marked by the large scale movements of various Bantu-speaking groups in the interior of South Africa, which profoundly influenced the course of European settlement. Finally, the final retreat of the San and Khoekhoen groups into their present-day living areas also occurred in the Historical period in southern Africa.

6.1.5 Bantu Speaking Groups in the South African interior:

It should be noted that terms such as "Nguni", "Sotho", "Venda" and others refer to broad and comprehensive language groups that demonstrated similarities in their origins and language. It does not imply that these Nguni / Sotho groups were homogeneous and static; they rather moved through the landscape and influenced each other in continuous processes marked by cultural fluidity.

Ethnographers generally divide major Bantu-speaking groups of southern Africa into two broad linguistic groups, the Nguni and the Sotho with smaller subdivisions under these two main groups. Nguni groups were found in the eastern parts of the interior of South Africa and can be divided into the northern Nguni and the southern Nguni. The various Zulu and Swazi groups were generally associated with the northern Nguni whereas the southern Nguni comprised the Xhosa, Mpondo, Thembu and Mpondomise groups. The same geographically based divisions exist among Sotho groups where, under the western Sotho (or Tswana), groups such as the Rolong, Hurutshe, Kwena, Fokeng and Kgatla are found. The northern Sotho included the Pedi, and an amalgamation of smaller groups united to become the southern Sotho group or the Basutho. Other smaller language groups such as the Venda, Lemba and Tshonga Shangana transpired outside these major entities but as time progressed they were, however to lesser or greater extend influenced and absorbed by neighbouring groups.

During the last 500 years, the Highveld areas of Gauteng, Mpumalanga and the Limpopo Province were occupied mainly by Ndebele and Pedi groups. These Ndebele groups originated from the Hlubi, a small split group that moved to the north-eastern parts of the Transvaal where they became known as the Transvaal Ndebele (not to be confused with the Ndebele of Mzilikazi). Ndebele groups settled in areas surrounding present-day Pretoria, at Kwa Maza near present-day Stoffberg, at Polokwane and Modimole and across large parts of Mpumalanga. The Kgatla, a Pedi group was established at the end of the 15th century by chief Mokgatla, who broke away from the Hurutshe group to settle in the Witwatersrand area. The Kgatla resided in an expansive area that included present-day Pretoria, the surroundings of the Magaliesberg and areas around present-day Brits, Rustenburg, Modimolle and Bela-Bela (Warmbaths) as well as the Pilansberg area. Isolated Kgatla communities also settled in the surroundings of Lydenburg, Middelburg, Bronkhorstspuit and the Soutpansberg.

6.2 Discussion: An archaeo-historical background of the Wallmannsthal Area

A number of academic archaeological and historical studies have been conducted in this section of Gauteng and these studies all infer a rich and diverse archaeological landscape, representative of most phases of human and cultural development in southern Africa. The cultural landscape of the northern and eastern sections of present-day Gauteng area encompasses a period of time that spans millions of years, covering human cultural development from the Stone Ages up to recent times. It depicts the interaction between the first humans and their adaptation and utilization to the environment, the migration of people, technological advances, warfare and

contact and conflict. Contained in its archaeology are traces of conquests by Bantu-speakers, Europeans and British imperialism encompassing the struggle for land, resources and political power.

6.2.1 The Stone Age Period

The Highveld areas of Gauteng were inhabited by humans since the Earlier Stone Age (ESA) times and stone tools dating to this period, typically found in the vicinity of watercourses, are abundantly scattered in the landscape. A significant ESA site has been documented on the farm Kaalfontein near the Willem Prinsloo Agricultural Museum where an ESA habitation site occurs about 1m sub-surface. The site yielded some of the oldest and largest Stone Age implements found in South Africa. The Middle Stone Age (MSA) marked the occupation of formerly unoccupied areas on the Highveld near water sources and tools belonging to this period occur mostly in the open or in erosion dongas. Later Stone Age (LSA) people displayed advanced technologies and therefore occupied larger and more diverse environments. Most LSA sites are found in association with rock shelters and caves with material found across the Magaliesberg, to the north and east of Mamelodi and scattered throughout Pretoria's surroundings. A few stone tools, mostly dating to the Middle Stone Age, are known to have been found in the area close to the banks of the Pienaars River.

6.2.2 Iron Age / Farmer Period Sites

Because of their specific technology and economy, Iron Age people preferred to settle on the alluvial soils near rivers for agricultural purposes and other resources. Remains of Early Iron Age occupation on the Highveld is scarce, with isolated sites occurring in the Magaliesberg, e.g. at Broederstroom. Large scale occupation of the larger Gauteng area by Bantu speaking farming communities occurred only in the second millennium AD. The 16th century was marked by a warmer and wetter climate, providing conditions favourable for Later Iron Age (LIA) farmer occupation in areas in the Witwatersrand, the Free State and the Mpumalanga escarpment. This, in turn resulted in increased food production with expanding populations on the central Highveld by the 19th century. Due to ever expanding territories and resulting conflict situations these LIA farmers preferred protective mountain slopes close to areas fit for cattle grazing. A number of LIA stone-walled archaeological sites, conventionally associated with Tswana and Ndebele speakers occur, in amongst other areas, across the Pienaars River around Wallmannsthal, Roodeplaat dam and southwards across the N4 Highway. Large concentrations of LIA sites in the larger landscape have been documented on the farms Downbern 494JR, Elandshoek 337JR, Leeuwkloof 258 JR, the Windybrow Game Farm and Buffelskloof 281JR. During the early 1990s a Late Iron Age site was excavated by Wits University on the banks of the Pienaars Rivier between the R101 and the N1, north-west of Wallmannsthal.

6.2.3 Ethno-history of the area.

It is virtually impossible to correlate any living group of people to Early Iron Age communities, it is possible, by using ethnographic evidence, to identify some of the groups of people that entered the region in pre-colonial times (i.e. the LIA) and are currently settled in the larger region. Tswana speaking people today live mainly to the west and north of the Dinokeng area. A reliable and accurate source for so-called ethnic distribution across South Africa in the early 20th century is N J van Warmelo's "A Preliminary Survey of the Bantu Tribes of South Africa". He notes that the Kôpa occupied areas to the east of Cullinan and north-west the Pulana. From Hammanskraal northwards lived mainly baKgatla-ba-Motsha with a number of smaller groups of Pedi in between. In contrast to the Tswana speaking people the Ndebele history has been very well documented. On the 23 April 1869, the Berlin Mission Society bought a farm on which they developed Wallmannsthal Mission Station. A Manala Ndebele leader Selamba had asked permission to settle on the farm after a white farmer, Erasmus, had

annexed their traditional land on the farm Mooiplaas 367JR in 1870. When the mission secretary, Dr Wangemann visited the mission station in 1884 Selamba was still living on the farm at a site called KoMjekejeke. Selamba became a prominent Ndebele leader. He had 12 wives, 20 sons and 9 daughters. His eldest son, Buthi, succeeded Selamba. He reigned only for four years and died in 1896. Buthi was succeeded by one of his younger brothers Nyumba who died in 1905. Nyumba's half brother Mbhongo (II) was appointed regent. He left Wallmannsthal in 1915 to settle to the east at Jakkalsdans. In 1919 he moved to Klipspruit and Van Dykspruit. In 1926 the Ndebele who stayed behind at Wallmannsthal left to settle at Jakkalsdans. The Manala Ndebele of Selamba thus stayed for 53 years (1873-1926) at KoMjekejeke near Wallmannsthal. This site is an important site to the Ndebele as 5 of their chiefs were buried here. A portion of the KoMjekejeke site has recently been bought by the Selamba trust for the Manala Ndebele.

6.2.4 Later History: Historical archaeology and living heritage

During Mzilikazi's short stay in the Pretoria region (1822-1825) the Manala Ndebele who lived to the east of Pretoria were raided on a regular basis. Sibindi (Manala) and Magodongo (Ndzundza) planned a joint attack on Mzilikazi, but lost the battle and scattered throughout the area. Many Manala soldiers were forcefully integrated into Mzilikazi's army. Sibindi was taken as a prisoner of war and killed. The Manala power was destroyed which made the Magaliesburg region an easy settlement area for white farmers who arrived there in the mid-19th century. The Dinokeng area north of the N4 was ideal farmland because of its water richness. Things were set to change drastically during the early part of the 19th century. Not only was it a time of population movement resulting from events to the south and east, but it was also the arrival of the first white settlers in the area. Lucas Bronkhorst and the Erasmus brothers took up farms surrounding the area that were later to become Pretoria. The first farmers started settling in the area in the 1840's and by 1850 the first farms were registered. The original farms were very large (+/- 6 000 morgen). These farms were laid out according to water sources and arable land. The farmer would decide where he would erect his house only after he had determined where his water furrow would be constructed and thus, the water furrow was the determining factor for farm layout. This practice continued well into the 10th century. On the lower lying land next to the water furrow a vegetable and fruit garden would be developed, mostly enclosed by a stone wall. Originally farmers practiced mixed farming. Most farmers in the region had at least two farms: a Highveld (summer) and a Bushveld (winter) farm. The farmers would move their cattle and other animals between winter and summer grazing. This practice continued until the 1940s. This practice eventually found its way into place names like Rust de Winter, and Winterfelt. In summer crops were planted, winter was the time for hunting. The hamlet of Pienaars Rivier near Wallmannsthal was formally established in 1908, although is served as a "outspan" for many years before that. A shop and hotel was set up for people stopping over at the river on their way north, developed.

6.2.5 The Anglo-Boer War

The various battles and skirmishes resulting from the conflict during the Anglo-Boer War (1899-1902) had a huge impact on heritage resources in the area, as many farms were burned down. Conversely, it also left a legacy of heritage sites scattered across the veld: fortifications and war cemeteries occur all over. Although most of the conflict centred on the railway line to Lorenzo Marques (Maputo), incidents also took place in other areas, e.g. Donkerhoek/Diamond Hill. The last conventional battle of the Anglo-Boer War took place at Diamond Hill. The Boer forces had retreated from Pretoria and made a last stand at the Magaliesberg mountain range to the east and south of Mamelodi. Boer fortifications were erected all along the Magaliesberg, the majority of which remain in the farm Pienaarspoort area.

6.2.6 Wallmannsthal: Missions, Land Claims and Land Conflicts

As noted previously, the Berlin Mission Society established the Wallmannsthal Mission Station in 1869. The first missionary at the station was Grünberger. Knothe succeeded him in 1870. The Wallmannsthal mission station became an important meeting place for displaced Tswana and Ndebele groups, where strong emphasis was on education.



Figure 6-1: Historical drawing by Dr Wangemann of the Wallmannsthal Mission Station (Unisa Archives)

The inhabitants of Wallmannsthal and Rust de Winter also became victims of forced removal in 1970, during one of the largest forced removal actions during the Apartheid era. The site had to be evacuated for the establishment of an army training ground. The historic buildings and church were used for mortar practice by the SA Defence Force. This was reversed partially in 1985 when the land was expropriated from white farmers to settle black farmers on the farms. In 1997, the Wallmannsthal Action Group (WAC) regained ownership of much of its land under the land restitution programme of the Department of Land Affairs and a CPA (Communal Property Association) was established to manage land portions and distribution.

7 RESULTS: STATEMENT OF SIGNIFICANCE AND IMPACT RATING

7.1 Heritage resources management and conservation

Archaeological sites, as previously defined in the National Heritage Resources Act (Act 25 of 1999) are places in the landscape where people have 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 on a daily basis through development for housing, roads and infrastructure and once archaeological sites are damaged, they cannot be re-created as site integrity and authenticity is permanently lost. Archaeological sites have the

potential to contribute to our understanding of the history of the region and of our country and continent. By preserving links with our past, we may not be able to revive lost cultural traditions, but it enables us to appreciate the role they have played in the history of our country.

7.2 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.

- *Historic 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 take into account 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 provincial HRA.
- Grade 3 of local heritage sites.



Generally protected sites:

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

With reference to the evaluation of sites, 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.

Table 2: Heritage Site Significance Ratings

Significance	Rating Action
No significance: sites that do not require mitigation.	None
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, augering), 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 reinterment [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.

A fundamental aspect in assessing the significance and protection status of a heritage resource is often whether or not 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.

7.3 Potential Impacts and Significance Ratings²

The following section provides a background to the identification and assessment of possible impacts and alternatives, as well as a range of risk situations and scenarios commonly associated with heritage resources management. The section ultimately provides a guideline (Section 7.3.1, Section 7.3.2 & Section 7.3.3) for the rating of impacts and recommendation of management actions for sites of heritage potential in the Ulipac (Pty) Ltd. Wallmannsthal Fluorspar Mine Project area, as supplied in section 7.3.4.

7.3.1 General assessment of impacts on resources

Generally, the value and significance of archaeological and other heritage sites might be impacted on by any activity that would result immediately or in the future in the destruction, damage, excavation, alteration, removal or collection from its original position, any archaeological material or object (as indicated in the National Heritage Resources Act (No 25 of 1999)). Thus, the destructive impacts that are possible in terms of heritage resources would tend to be direct, once-off events occurring during the initial construction period. However, in the long run, the proximity of operations in any given area could result in secondary indirect impacts. The EIA process therefore specifies impact assessment criteria which can be utilised from the perspective of a heritage specialist study which elucidates the overall extent of impacts.

Table 3: Impact Assessment Criteria

Significance of the heritage resource

This is a statement of the nature and degree of significance of the heritage resource being affected by the activity. From a heritage management perspective it is useful to distinguish between whether the significance is embedded in the physical fabric or in associations with events or persons or in the experience of a place; i.e. its visual and non-visual qualities. This statement is a primary informant to the nature and degree of significance of an impact and thus needs to be thoroughly considered. Consideration needs to be given to the significance of a heritage resource at different scales (i.e. sitespecific, local, regional, national or international) and the relationship between the heritage resource, its setting and its associations.

Nature of the impact

This is an assessment of the nature of the impact of the activity on a heritage resource, with some indication of its positive and/or negative effect/s. It is strongly informed by the statement of resource significance. In other words, the nature of the impact may be historical, aesthetic, social, scientific, linguistic or architectural, intrinsic, associational or contextual (visual or non-visual). In many cases, the nature of the impact will include more than one value.

Extent

Here it should be indicated whether the impact will be experienced:

- On a site scale, i.e. extend only as far as the activity;
- Within the immediate context of a heritage resource;
- On a local scale, e.g. town or suburb
- On a metropolitan or regional scale; or
- On a national/international scale.

Duration

Here it should be indicated whether the lifespan of the impact will be:

- Short term, (needs to be defined in context)
- Medium term, (needs to be defined in context)
- Long term where the impact will persist indefinitely, possibly beyond the operational life of the activity, either because of natural processes or by human intervention; or
- Permanent where mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient.

Of relevance to the duration of an impact are the following considerations:

- Reversibility of the impact; and
- Renewability of the heritage resource.

Intensity

² Based on: W inter, S. & Baumann, N. 2005. *Guideline for involving heritage specialists in EIA processes: Edition 1.*

Here it should be established whether the impact should be indicated as:

- Low, where the impact affects the resource in such a way that its heritage value is not affected;
- Medium, where the affected resource is altered but its heritage value continues to exist albeit in a modified way; and
- High, where heritage value is altered to the extent that it will temporarily or permanently be damaged or destroyed.

Probability

This should describe the likelihood of the impact actually occurring indicated as:

- Improbable, where the possibility of the impact to materialize is very low either because of design or historic experience;
- Probable, where there is a distinct possibility that the impact will occur;
- Highly probable, where it is most likely that the impact will occur; or
- Definite, where the impact will definitely occur regardless of any mitigation measures

Confidence

This should relate to the level of confidence that the specialist has in establishing the nature and degree of impacts. It relates to the level and reliability of information, the nature and degree of consultation with I&AP's and the dynamic of the broader socio-political context.

- High, where the information is comprehensive and accurate, where there has been a high degree of consultation and the socio-political context is relatively stable.
- Medium, where the information is sufficient but is based mainly on secondary sources, where there has been a limited targeted consultation and socio-political context is fluid.
- Low, where the information is poor, a high degree of contestation is evident and there is a state of socio-political flux.

Impact Significance

The significance of impacts can be determined through a synthesis of the aspects produced in terms of the nature and degree of heritage significance and the nature, duration, intensity, extent, probability and confidence of impacts and can be described as:

- Low; where it would have a negligible effect on heritage and on the decision
- Medium, where it would have a moderate effect on heritage and should influence the decision.
- High, where it would have, or there would be a high risk of, a big effect on heritage. Impacts of high significance should have a major influence on the decision;
- Very high, where it would have, or there would be high risk of, an irreversible and possibly irreplaceable negative impact on heritage. Impacts of very high significance should be a central factor in decision-making.

7.3.2 Direct impact rating

Direct or primary effects on heritage resources occur at the same time and in the same space as the activity, e.g. loss of historical fabric through demolition work. **Indirect effects or secondary effects** on heritage resources occur later in time or at a different place from the causal activity, or as a result of a complex pathway, e.g. restriction of access to a heritage resource resulting in the gradual erosion of its significance, which is dependent on ritual patterns of access. The following table provides an outline as to the relationship between the significance of a heritage context, the intensity of development and the significance of heritage impacts to be expected.

Table 4: Direct Impact Assessment Criteria

HERITAGE CONTEXT	TYPE OF DEVELOPMENT			
	CATEGORY A	CATEGORY B	CATEGORY C	CATEGORY D
CONTEXT 1 High heritage Value	Moderate heritage impact expected	High heritage impact expected	Very high heritage impact expected	Very high heritage impact expected
CONTEXT 2 Medium to high heritage value	Minimal heritage impact expected	Moderate heritage impact expected	High heritage impact expected	Very high heritage impact expected
CONTEXT 3 Medium to low heritage value	Little or no heritage impact expected	Minimal heritage impact expected	Moderate heritage impact expected	High heritage impact expected
CONTEXT 4 Low to no heritage value	Little or no heritage impact expected	Little or no heritage impact expected	Minimal heritage value expected	Moderate heritage impact expected

NOTE: A DEFAULT "LITTLE OR NO HERITAGE IMPACT EXPECTED" VALUE APPLIES WHERE A HERITAGE RESOURCE OCCURS OUTSIDE THE IMPACT ZONE OF THE DEVELOPMENT.	
HERITAGE CONTEXTS	CATEGORIES OF DEVELOPMENT
<p>Context 1: Of high intrinsic, associational and contextual heritage value within a national, provincial and local context, i.e. formally declared or potential Grade 1, 2 or 3A heritage resources</p> <p>Context 2: Of moderate to high intrinsic, associational and contextual value within a local context, i.e. potential Grade 3B heritage resources.</p> <p>Context 3: Of medium to low intrinsic, associational or contextual heritage value within a national, provincial and local context, i.e. potential Grade 3C heritage resources</p> <p>Context 4: Of little or no intrinsic, associational or contextual heritage value due to disturbed, degraded conditions or extent of irreversible damage.</p>	<p>Category A: Minimal intensity development</p> <ul style="list-style-type: none"> - No rezoning involved; within existing use rights. - No subdivision involved. - Upgrading of existing infrastructure within existing envelopes - Minor internal changes to existing structures - New building footprints limited to less than 1000m2. <p>Category B: Low-key intensity development</p> <ul style="list-style-type: none"> - Spot rezoning with no change to overall zoning of a site. - Linear development less than 100m - Building footprints between 1000m2-2000m2 - Minor changes to external envelop of existing structures (less than 25%) - Minor changes in relation to bulk and height of immediately adjacent structures (less than 25%). <p>Category C: Moderate intensity development</p> <ul style="list-style-type: none"> - Rezoning of a site between 5000m2-10 000m2. - Linear development between 100m and 300m. - Building footprints between 2000m2 and 5000m2 - Substantial changes to external envelop of existing structures (more than 50%) - Substantial increase in bulk and height in relation to immediately adjacent buildings (more than 50%) <p>Category D: High intensity development</p> <ul style="list-style-type: none"> - Rezoning of a site in excess of 10 000m2 - Linear development in excess of 300m. - Any development changing the character of a site exceeding 5000m2 or involving the subdivision of a site into three or more erven. - Substantial increase in bulk and height in relation to immediately adjacent buildings (more than 100%)

7.3.3 Management actions

Recommendations for relevant heritage resources management actions are vital to the conservation of heritage resources. Recommended management actions may include the following:

Table 5: Management and Mitigation Actions

<p>No further action / Monitoring</p> <p>Where no heritage resources have been documented, heritage resources occur well outside the impact zone of any development or the primary context of the surroundings at a development footprint has been largely destroyed or altered, no further immediate action is required. Site monitoring during development, by an ECO or the heritage specialist are often added to this recommendation in order to ensure that no undetected heritage remains are destroyed.</p> <p>Avoidance</p> <p>This is appropriate where any type of development occurs within a formally protected or significant or sensitive heritage context and is likely to have a high negative impact. Mitigation is not acceptable or not possible. This measure often includes the change / alteration of development planning and therefore impact zones in order not to impact on resources.</p> <p>Mitigation</p> <p>This is appropriate where development occurs in a context of heritage significance and where the impact is such that it can be mitigated to a degree of medium to low significance, e.g. the high to medium impact of a development on an archaeological site could be mitigated through sampling/excavation of the remains. Not all negative impacts can be mitigated.</p> <p>Compensation</p> <p>Compensation is generally not an appropriate heritage management action. The main function of management actions should be to conserve the resource for the benefit of future generations. Once lost it cannot be renewed. The circumstances around the potential public or heritage benefits would need to be exceptional to warrant this type of action, especially in the case of where the impact was high.</p> <p>Rehabilitation</p>
--

Wallmannsthal Fluorspar Mine: Archaeological Impact Assessment Report

Rehabilitation is considered in heritage management terms as a intervention typically involving the adding of a new heritage layer to enable a new sustainable use. It is not appropriate when the process necessitates the removal of previous historical layers, i.e. restoration of a building or place to the previous state/period. It is an appropriate heritage management action in the following cases:

- The heritage resource is degraded or in the process of degradation and would benefit from rehabilitation.
- Where rehabilitation implies appropriate conservation interventions, i.e. adaptive reuse, repair and maintenance, consolidation and minimal loss of historical fabric.
- Where the rehabilitation process will not result in a negative impact on the intrinsic value of the resource.

Enhancement

Enhancement is appropriate where the overall heritage significance and its public appreciation value are improved. It does not imply creation of a condition that might never have occurred during the evolution of a place, e.g. the tendency to sanitize the past. This management action might result from the removal of previous layers where these layers are culturally of low significance and detract from the significance of the resource. It would be appropriate in a range of heritage contexts and applicable to a range of resources. In the case of formally protected or significant resources, appropriate enhancement action should be encouraged. Care should, however, be taken to ensure that the process does not have a negative impact on the character and context of the resource. It would thus have to be carefully monitored.

7.3.4 Site significance and impact rating

Refer to Section 7.3.1, Section 7.3.2 & Section 7.3.3 for background on the rating of impacts and recommendation of management actions for sites of heritage potential. Impact thresholds and management measures for the sites are further discussed in section 7.3.5.

Table 6: Site HP01

1. SITE DESCRIPTION : Historical Period Structures							
1.1 General Site Description							
The old Wallmannsthal School Complex							
1.2 Site features / artefacts / Other							
Site Location							
Province / District	Gauteng Province			Map Number	2528CB		
Farm Name	Wallmannsthal 278JR			Co-ordinates	S25°31'37.16"	E28°17'41.62"	
Site Type							
Surface sites	X			Caves and rock shelters			
Larger open-air sites				Sealed sites (deposits			
River deposits				Other			
Site Function							
Living / habitation	X			Kill			
Ceremonial				Burial			
Trading / Barter				Art			
Quarry / Mining / Smelting				Other			
Site Placement							
Valley floor		Hill top		Vlei/swamp		River Mouth	
Dam		River Bank		Slope		Plains	X
Other / Comments							
Vegetation							
Riverine forest		Bushveld		Savannah		Mountain forest	
Thornveld	X	Grassland	X	Cultivated	X	Other	
Age Classification							
Stone Age		Early Iron Age		Middle Iron Age		Later Iron Age	

Wallmannsthal Fluorspar Mine: Archaeological Impact Assessment Report

Historical	X	Other	X - recent
Material Culture			
Midden		House Remains	X
Granary		Grinding Stone (L)	
Metal	X	Ceramics (Potter)	
Metal slag		Tuyere	
Bead (OES / Shell)		Glass	X
Other: X – concrete structures		Other:	

1.3 Site Condition

The site integrity has been severely compromised by the impact of natural elements and the structure is not maintained.

2. SITE EVALUATION

2.1 Heritage Value (NHRA, section 2 [3])

	High	Medium	Low
It has importance to the community or pattern of South Africa's history or pre-colonial history.		X	
It possesses unique, uncommon, rare or endangered aspects of South Africa's natural or cultural heritage.		X	
It has potential to yield information that will contribute to an understanding of South Africa's natural and cultural heritage.		X	
It is of importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects.		X	
It has importance in exhibiting particular aesthetic characteristics valued by a particular community or cultural group.		X	
It has importance in demonstrating a high degree of creative or technical achievement at a particular period.		X	
It has marked or special association with a particular community or cultural group for social, cultural or spiritual reasons (sense of place).		X	
It has strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.		X	
It has significance through contributing towards the promotion of a local sociocultural identity and can be developed as a tourist destination.			X
It has significance relating to the history of slavery in South Africa.			X
It has importance to the wider understanding of temporal changes within cultural landscapes, settlement patterns and human occupation.		X	

2.2 Field Register Rating

National/Grade 1 [should be registered, retained]	
Provincial/Grade 2 [should be registered, retained]	
Local/Grade 3A [should be registered, mitigation not advised]	
Local/Grade 3B [High significance; mitigation, partly retained]	
Generally Protected A [High/Medium significance, mitigation]	X
Generally protected B [Medium significance, to be recorded]	
Generally Protected C [Low significance, no further action]	

2.3 Sphere of Significance

	High	Medium	Low
International			
National			
Provincial			
Local		X	
Specific community			

3. IMPACT RATING AND MITIGATION

3.1 Impact assessment

APPROXIMATE DISTANCE FROM DEVELOPMENT: 0 – 100 METERS

Wallmannsthal Fluorspar Mine: Archaeological Impact Assessment Report

NATURE OF IMPACT: HISTORICAL, AESTHETIC, SOCIAL, SCIENTIFIC, ARCHITECTURAL & VISUAL.

EXTENT OF IMPACT: Local

SPECIALIST LEVEL OF CONFIDENCE IN DEGREE OF IMPACT AND SEVERITY: High

3.2 Impact Significance and Severity

		Without Management*	With Management*
General assessment of impacts on resource (Refer to Section 7.3.1)	Duration	Permanent: Medium	Permanent: Low
	Intensity	High	Medium
	Probability	Definite	Highly Probable
	Impact Significance	Medium	Negligible

3.3 Direct Impact Rating

Direct impact on resource	None (the potential development does not adversely or positively affect the heritage resource)	
	Peripheral / Indirect (the heritage resource or its setting is located in proximity to the footprint of the potential development)	
	Destruction / Direct (the heritage resource or site is physically located within the footprint of the potential development)	X

Direct impact rating (Refer to Section 7.3.2)

Note that a default "no impact expected" value applies where a heritage resource occurs outside the impact matrix or applicable conservation buffers of the development.

Very High heritage impact expected.

3.4 Recommended Management* (refer to section 7.3.3)

Mitigation

Comments on recommended management

It is necessary that the site be mitigated if impact occurs, or is envisaged at any stage of development and operation The following will be required:

- Documentation of sites.
- Further desktop study and community consultation to more accurately ascertain context of sites.
- Relevant Permitting from Heritage Resources Authority where applicable. .

4. APPLICABLE LEGISLATION AND LEGAL REQUIREMENTS

- National Heritage Resources Act (Act no. 25 of 1999)
- Local and regional provisions, laws and by-laws

Table 7: Site HP02

1. SITE DESCRIPTION : Historical Period Structures							
1.1 General Site Description							
The dilapidated remains of a sandstone, brick and concrete houses.							
1.2 Site features / artefacts / Other							
Site Location							
Province / District	Gauteng Province			Map Number	2528CB		
Farm Name	Wallmannsthal 278JR			Co-ordinates	S25°31'50.50"	E28°18'10.52"	
Site Type							
Surface sites	X			Caves and rock shelters			
Larger open-air sites				Sealed sites (deposits			
River deposits				Other			
Site Function							
Living / habitation	X			Kill			
Ceremonial				Burial			
Trading / Barter				Art			
Quarry / Mining / Smelting				Other			
Site Placement							
Valley floor		Hill top		Vlei/swamp		River Mouth	
Dam		River Bank		Slope		Plains	X

Wallmannsthal Fluorspar Mine: Archaeological Impact Assessment Report

Other / Comments							
Vegetation							
Riverine forest		Bushveld		Savannah		Mountain forest	
Thornveld	X	Grassland	X	Cultivated	X	Other	
Age Classification							
Stone Age		Early Iron Age		Middle Iron Age		Later Iron Age	
Historical	X	Other	X - recent				
Material Culture							
Midden	X	House Remains	X	Stone Walling	X	Stone Structures	X
Granary		Grinding Stone (L)		Grinding Stone (U)		Granary Stand	
Metal	X	Ceramics (Potter)		Ceramics (Porcelain)	X	Stone (non-lithic)	X
Metal slag		Tuyere		Fauna	X	Bead (Glass)	
Bead (OES / Shell)		Glass	X	Lithics		Smelting Residues	
Other: X - Plastic				Other: X - concrete			
1.3 Site Condition							
The site integrity has been severely compromised and structures have almost completely collapsed.							
2. SITE EVALUATION							
2.1 Heritage Value (NHRA, section 2 [3])					High	Medium	Low
It has importance to the community or pattern of South Africa's history or pre-colonial history.						X	
It possesses unique, uncommon, rare or endangered aspects of South Africa's natural or cultural heritage.						X	
It has potential to yield information that will contribute to an understanding of South Africa's natural and cultural heritage.						X	
It is of importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects.						X	
It has importance in exhibiting particular aesthetic characteristics valued by a particular community or cultural group.						X	
It has importance in demonstrating a high degree of creative or technical achievement at a particular period.						X	
It has marked or special association with a particular community or cultural group for social, cultural or spiritual reasons (sense of place).						X	
It has strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.						X	
It has significance through contributing towards the promotion of a local sociocultural identity and can be developed as a tourist destination.							X
It has significance relating to the history of slavery in South Africa.							X
It has importance to the wider understanding of temporal changes within cultural landscapes, settlement patterns and human occupation.						X	
2.2 Field Register Rating							
National/Grade 1 [should be registered, retained]							
Provincial/Grade 2 [should be registered, retained]							
Local/Grade 3A [should be registered, mitigation not advised]							
Local/Grade 3B [High significance; mitigation, partly retained]							
Generally Protected A [High/Medium significance, mitigation]							X
Generally protected B [Medium significance, to be recorded]							
Generally Protected C [Low significance, no further action]							
2.3 Sphere of Significance					High	Medium	Low
International							

Wallmannsthal Fluorspar Mine: Archaeological Impact Assessment Report

National			
Provincial			
Local		X	
Specific community			
3. IMPACT RATING AND MITIGATION			
3.1 Impact assessment			
APPROXIMATE DISTANCE FROM DEVELOPMENT: 100 - 500 METERS			
NATURE OF IMPACT: HISTORICAL, AESTHETIC, SOCIAL, SCIENTIFIC, ARCHITECTURAL & VISUAL.			
EXTENT OF IMPACT: Local			
SPECIALIST LEVEL OF CONFIDENCE IN DEGREE OF IMPACT AND SEVERITY: High			
3.2 Impact Significance and Severity			
General assessment of impacts on resource (Refer to Section 7.3.1)		Without Management*	With Management*
	Duration	Permanent: Low	Permanent: Low
	Intensity	Low	Low
	Probability	Improbable	Improbable
	Impact Significance	Low	Negligible
3.3 Direct Impact Rating			
Direct impact on resource	None (the potential development does not adversely or positively affect the heritage resource)		X
	Peripheral / Indirect (the heritage resource or its setting is located in proximity to the footprint of the potential development)		
	Destruction / Direct (the heritage resource or site is physically located within the footprint of the potential development)		
Direct impact rating (Refer to Section 7.3.2) Note that a default "no impact expected" value applies where a heritage resource occurs outside the impact matrix or applicable conservation buffers of the development.		No impact expected.	
3.4 Recommended Management* (refer to section 7.3.3)			
Monitoring: Ensure that sites are not impacted on.			
Comments on recommended management			
<p>It is necessary that the sites be monitored to ensure that heritage resources are not impacted on. If further impact occurs, or is envisaged at any stage of development and operation the following will be required:</p> <ul style="list-style-type: none"> - Documentation of sites. - Further desktop study and community consultation to more accurately ascertain context of sites. - Relevant Permitting from Heritage Resources Authority where applicable. . 			
4. APPLICABLE LEGISLATION AND LEGAL REQUIREMENTS			
<ul style="list-style-type: none"> - National Heritage Resources Act (Act no. 25 of 1999) - Local and regional provisions, laws and by-laws - 			

Table 8: Site HP03, Site HP04

1. SITE DESCRIPTION : Ruins of brick and mud structures				
1.1 General Site Description				
A large number of poorly preserved brick and mud structures, stone wall enclosures and middens.				
1.2 Site features / artefacts / Other				
Site Location				
Province / District	Gauteng Province	Map Number	2528CB	
Farm Name	Wallmannsthal 278JR	Co-ordinates	S25°31'41.35" S25°31'24.22"	E28°18'29.08" E28°18'04.50"
Site Type				
Surface sites	X	Caves and rock shelters		
Larger open-air sites		Sealed sites (deposits)		
River deposits		Other		

Wallmannsthal Fluorspar Mine: Archaeological Impact Assessment Report

Site Function							
Living / habitation	X			Kill			
Ceremonial				Burial			
Trading / Barter				Art			
Quarry / Mining / Smelting				Other			
Site Placement							
Valley floor		Hill top		Vlei/swamp		River Mouth	
Dam		River Bank		Slope	X	Plains	X
Other / Comments							
Vegetation							
Riverine forest		Bushveld		Savannah		Mountain forest	
Thornveld	X	Grassland	X	Cultivated	X	Other	
Age Classification							
Stone Age		Early Iron Age		Middle Iron Age		Later Iron Age	
Historical	X	Other	X - recent				
Material Culture							
Midden	X	House Remains	X	Stone Walling	X	Stone Structures	X
Granary		Grinding Stone (L)		Grinding Stone (U)		Granary Stand	
Metal	X	Ceramics (Potter)		Ceramics (Porcelain)	X	Stone (non-lithic)	X
Metal slag		Tuyere		Fauna	X	Bead (Glass)	
Bead (OES / Shell)		Glass	X	Lithics		Smelting Residues	
Other: X - concrete				Other:			
1.3 Site Condition							
The site integrity has been severely compromised as sites have been ruined almost entirely.							
2. SITE EVALUATION							
2.1 Heritage Value (NHRA, section 2 [3])				High	Medium	Low	
It has importance to the community or pattern of South Africa's history or pre-colonial history.						X	
It possesses unique, uncommon, rare or endangered aspects of South Africa's natural or cultural heritage.					X		
It has potential to yield information that will contribute to an understanding of South Africa's natural and cultural heritage.						X	
It is of importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects.					X		
It has importance in exhibiting particular aesthetic characteristics valued by a particular community or cultural group.						X	
It has importance in demonstrating a high degree of creative or technical achievement at a particular period.						X	
It has marked or special association with a particular community or cultural group for social, cultural or spiritual reasons (sense of place).					X		
It has strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.						X	
It has significance through contributing towards the promotion of a local sociocultural identity and can be developed as a tourist destination.						X	
It has significance relating to the history of slavery in South Africa.						X	
It has importance to the wider understanding of temporal changes within cultural landscapes, settlement patterns and human occupation.					X		
2.2 Field Register Rating							
National/Grade 1 [should be registered, retained]							

Wallmannsthal Fluorspar Mine: Archaeological Impact Assessment Report

Provincial/Grade 2 [should be registered, retained]			
Local/Grade 3A [should be registered, mitigation not advised]			
Local/Grade 3B [High significance; mitigation, partly retained]			
Generally Protected A [High/Medium significance, mitigation]			
Generally protected B [Medium significance, to be recorded]			X
Generally Protected C [Low significance, no further action]			
2.3 Sphere of Significance			
	High	Medium	Low
International			
National			
Provincial			
Local			X
Specific community			
3. IMPACT RATING AND MITIGATION			
3.1 Impact assessment			
APPROXIMATE DISTANCE FROM DEVELOPMENT: 0 – 100 METERS			
NATURE OF IMPACT: HISTORICAL, SOCIAL, INTRINSIC, ASSOCIATIONAL			
EXTENT OF IMPACT: Local			
SPECIALIST LEVEL OF CONFIDENCE IN DEGREE OF IMPACT AND SEVERITY: High			
3.2 Impact Significance and Severity			
General assessment of impacts on resource (Refer to Section 7.3.1)		Without Management*	With Management*
	Duration	Permanent: Medium	Permanent: Low
	Intensity	High	Low
	Probability	Definite	Highly Probable
	Impact Significance	Medium	Negligible
3.3 Direct Impact Rating			
Direct impact on resource	None (the potential development does not adversely or positively affect the heritage resource)		
	Peripheral / Indirect (the heritage resource or its setting is located in proximity to the footprint of the potential development)		
	Destruction / Direct (the heritage resource or site is physically located within the footprint of the potential development)		X
Direct impact rating (Refer to Section 7.3.2) Note that a default "no impact expected" value applies where a heritage resource occurs outside the impact matrix or applicable conservation buffers of the development.		High heritage impact expected.	
3.4 Recommended Management* (refer to section 7.3.3)			
Mitigation			
Comments on recommended management			
It is necessary that the sites be mitigated if impact occurs, or is envisaged at any stage of development and operation The following will be required:			
<ul style="list-style-type: none"> - Documentation of sites. - Further desktop study and community consultation to more accurately ascertain context of sites. - Relevant Permitting from Heritage Resources Authority where applicable. . 			
4. APPLICABLE LEGISLATION AND LEGAL REQUIREMENTS			
<ul style="list-style-type: none"> - National Heritage Resources Act (Act no. 25 of 1999) - Local and regional provisions, laws and by-laws 			

Table 9: Site BP01

1. SITE DESCRIPTION: Large cemetery.
1.1 General Site Description
Large historical and recent community cemetery.
1.2 Site features / artefacts / Other
Site Location

Wallmannsthal Fluorspar Mine: Archaeological Impact Assessment Report

Province / District	Gauteng Province		Map Number	2528CB		
Farm Name	Wallmannsthal 278JR		Co-ordinates	S25°31'03.85"	E28°17'56.14"	
Site Type						
Surface sites	X		Caves and rock shelters			
Larger open-air sites			Sealed sites (deposits)			
River deposits			Other			
Site Function						
Living / habitation			Kill			
Ceremonial			Burial	X		
Trading / Barter			Art			
Quarry / Mining / Smelting			Other			
Site Placement						
Valley floor		Hill top		Vlei/swamp		
Dam		River Bank		Slope		
				River Mouth		
				Plains	X	
Other / Comments						
Vegetation						
Riverine forest		Bushveld		Savannah		
Thornveld	X	Grassland	X	Cultivated	X	
				Other		
Age Classification						
Stone Age		Early Iron Age		Middle Iron Age		
Historical	X – Recent.	Other		X – Recent.		
Material Culture						
Midden		House Remains		Stone Walling		
Granary		Grinding Stone (L)		Grinding Stone (U)		
Metal		Ceramics (Pottery)		Ceramics (Porcelain)		
Metal slag		Tuyere		Fauna		
Bead (OES / Shell)		Glass		Lithics		
				Bead (Glass)		
				Smelting Residues		
Other: X – grave dressing			Other: X – funeral goods			
1.3 Site Condition						
The site integrity is fair to good as the burials are of recent age.						
2. SITE EVALUATION						
2.1 Heritage Value (NHRA, section 2 [3])				High	Medium	Low
It has importance to the community or pattern of South Africa's history or pre-colonial history.					X	
It possesses unique, uncommon, rare or endangered aspects of South Africa's natural or cultural heritage.				X		
It has potential to yield information that will contribute to an understanding of South Africa's natural and cultural heritage.					X	
It is of importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects.				X		
It has importance in exhibiting particular aesthetic characteristics valued by a particular community or cultural group.						X
It has importance in demonstrating a high degree of creative or technical achievement at a particular period.						X
It has marked or special association with a particular community or cultural group for social, cultural or spiritual reasons (sense of place).				X		
It has strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.						X

Wallmannsthal Fluorspar Mine: Archaeological Impact Assessment Report

It has significance through contributing towards the promotion of a local sociocultural identity and can be developed as a tourist destination.			X
It has significance relating to the history of slavery in South Africa.			X
It has importance to the wider understanding of temporal changes within cultural landscapes, settlement patterns and human occupation.		X	
2.2 Field Register Rating			
National/Grade 1 [should be registered, retained]			
Provincial/Grade 2 [should be registered, retained]			
Local/Grade 3A [should be registered, mitigation not advised]			X
Local/Grade 3B [High significance; mitigation, partly retained]			
Generally Protected A [High/Medium significance, mitigation]			
Generally protected B [Medium significance, to be recorded]			
Generally Protected C [Low significance, no further action]			
2.3 Sphere of Significance	High	Medium	Low
International			
National			
Provincial			
Local	X		
Specific community			
3. IMPACT RATING AND MITIGATION			
3.1 Impact assessment			
APPROXIMATE DISTANCE FROM DEVELOPMENT: 100 - 500 METERS			
NATURE OF IMPACT: HISTORICAL, AESTHETIC, SOCIAL, SCIENTIFIC, , INTRINSIC, ASSOCIATIONAL & CONTEXTUAL			
EXTENT OF IMPACT: Local			
SPECIALIST LEVEL OF CONFIDENCE IN DEGREE OF IMPACT AND SEVERITY: High			
3.2 Impact Significance and Severity			
General assessment of impacts on resource (Refer to Section 7.3.1)		Without Management*	With Management*
	Duration	Permanent: Low	Permanent: Low
	Intensity	Low	Low
	Probability	Improbable	Improbable
	Impact Significance	Low	Negligible
3.3 Direct Impact Rating			
Direct impact on resource	None (the potential development does not adversely or positively affect the heritage resource)		X
	Peripheral / Indirect (the heritage resource or its setting is located in proximity to the footprint of the potential development)		
	Destruction / Direct (the heritage resource or site is physically located within the footprint of the potential development)		
Direct impact rating (Refer to Section 7.3.2) Note that a default "no impact expected" value applies where a heritage resource occurs outside the impact matrix or applicable conservation buffers of the development.		No impact expected.	
3.4 Recommended Management* (refer to section 7.3.3)			
Monitoring: Ensure that burials are not impacted on.			
Comments on recommended management			
<p>It is essential that the site be monitored to ensure that burials are not impacted on. If further impact occurs, or is envisaged at any stage of development and operation the following will be required:</p> <ul style="list-style-type: none"> - Documentation of site. - Exhumation and reburial - Full social consultation. - Possible conservation management and protection measures. - Relevant Permitting from Heritage Resources Authority. 			

4. APPLICABLE LEGISLATION AND LEGAL REQUIREMENTS

- Human Tissue Act (Act 65 of 1983 as amended).
- Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925)
- Ordinance on Excavations (Ordinance no. 12 of 1980)
- Local and regional provisions, laws and by-laws
- National Heritage Resources Act (Act no. 25 of 1999)
- Permit from SAHRA for removal

Table 10: Site BP02

1. SITE DESCRIPTION: Informal Burial Place							
1.1 General Site Description							
Informal burial places in the form of stone heaps / cairns.							
1.2 Site features / artefacts / Other							
Site Location							
Province / District	Gauteng Province			Map Number	2528CB		
Farm Name	Wallmannsthal 278JR			Co-ordinates	S25°31'14.57"	E28°17'57.71"	
Site Type							
Surface sites	X			Caves and rock shelters			
Larger open-air sites				Sealed sites (deposits)			
River deposits				Other			
Site Function							
Living / habitation				Kill			
Ceremonial				Burial	X		
Trading / Barter				Art			
Quarry / Mining / Smelting				Other			
Site Placement							
Valley floor		Hill top		Vlei/swamp		River Mouth	
Dam		River Bank		Slope		Plains	X
Other / Comments							
Vegetation							
Riverine forest		Bushveld		Savannah		Mountain forest	
Thornveld	X	Grassland	X	Cultivated	X	Other	
Age Classification							
Stone Age		Early Iron Age		Middle Iron Age		Later Iron Age	
Historical	X	Other	X – Recent.				
Material Culture							
Midden		House Remains		Stone Walling		Stone Structures	X
Granary		Grinding Stone (L)		Grinding Stone (U)		Granary Stand	
Metal		Ceramics (Pottery)		Ceramics (Porcelain)		Stone (non-lithic)	
Metal slag		Tuyere		Fauna		Bead (Glass)	
Bead (OES / Shell)		Glass		Lithics		Smelting Residues	
Other:				Other:			
1.3 Site Condition							
The site integrity is fair.							
2. SITE EVALUATION							
2.1 Heritage Value (NHRA, section 2 [3])					High	Medium	Low
It has importance to the community or pattern of South Africa's history or pre-colonial history.						X	

Wallmannsthal Fluorspar Mine: Archaeological Impact Assessment Report

It possesses unique, uncommon, rare or endangered aspects of South Africa's natural or cultural heritage.	X		
It has potential to yield information that will contribute to an understanding of South Africa's natural and cultural heritage.		X	
It is of importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects.	X		
It has importance in exhibiting particular aesthetic characteristics valued by a particular community or cultural group.			X
It has importance in demonstrating a high degree of creative or technical achievement at a particular period.			X
It has marked or special association with a particular community or cultural group for social, cultural or spiritual reasons (sense of place).	X		
It has strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.			X
It has significance through contributing towards the promotion of a local sociocultural identity and can be developed as a tourist destination.			X
It has significance relating to the history of slavery in South Africa.			X
It has importance to the wider understanding of temporal changes within cultural landscapes, settlement patterns and human occupation.		X	

2.2 Field Register Rating

National/Grade 1 [should be registered, retained]	
Provincial/Grade 2 [should be registered, retained]	
Local/Grade 3A [should be registered, mitigation not advised]	
Local/Grade 3B [High significance; mitigation, partly retained]	X
Generally Protected A [High/Medium significance, mitigation]	
Generally protected B [Medium significance, to be recorded]	
Generally Protected C [Low significance, no further action]	

2.3 Sphere of Significance

	High	Medium	Low
International			
National			
Provincial			
Local	X		
Specific community			

3. IMPACT RATING AND MITIGATION

3.1 Impact assessment

APPROXIMATE DISTANCE FROM DEVELOPMENT: 200+ METERS

NATURE OF IMPACT: Historical, Aesthetic, Social, Scientific, Intrinsic, Associational & Contextual

EXTENT OF IMPACT: Local

SPECIALIST LEVEL OF CONFIDENCE IN DEGREE OF IMPACT AND SEVERITY: High

3.2 Impact Significance and Severity

		Without Management*	With Management*
General assessment of impacts on resource (Refer to Section 7.3.1)	Duration	Permanent: High	Permanent: Low
	Intensity	High	Low
	Probability	Improbable	Improbable
	Impact Significance	High	Low

3.3 Direct Impact Rating

Direct impact on resource	None (the potential development does not adversely or positively affect the heritage resource)	X
	Peripheral / Indirect (the heritage resource or its setting is located in proximity to the footprint of the potential development)	
	Destruction / Direct (the heritage resource or site is physically located within the footprint of the potential development)	

Wallmannsthal Fluorspar Mine: Archaeological Impact Assessment Report

Direct impact rating (Refer to Section 7.3.2) Note that a default "no impact expected" value applies where a heritage resource occurs outside the impact matrix or applicable conservation buffers of the development.	No impact expected
3.4 Recommended Management* (refer to section 7.3.3)	
Monitoring: Ensure that burials are not impacted on.	
Comments on recommended management	
It is essential that the site be monitored to ensure that burials are not impacted on. If further impact occurs, or is envisaged at any stage of development and operation the following will be required: <ul style="list-style-type: none"> - Documentation of site. - Exhumation and reburial - Full social consultation. - Possible conservation management and protection measures. - Relevant Permitting from Heritage Resources Authority. 	
4. APPLICABLE LEGISLATION AND LEGAL REQUIREMENTS	
<ul style="list-style-type: none"> - Human Tissue Act (Act 65 of 1983 as amended). - Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925) - Ordinance on Excavations (Ordinance no. 12 of 1980) - Local and regional provisions, laws and by-laws - National Heritage Resources Act (Act no. 25 of 1999) - Permit from SAHRA for removal 	

Table 11: Site BP03

1. SITE DESCRIPTION: Informal Burial Place							
1.1 General Site Description							
Informal burial place in the form of stone heap.							
1.2 Site features / artefacts / Other							
Site Location							
Province / District	Gauteng Province			Map Number	2528CB		
Farm Name	Wallmannsthal 278JR			Co-ordinates	S25°31'34.74"	E28°18'25.56"	
Site Type							
Surface sites	X			Caves and rock shelters			
Larger open-air sites				Sealed sites (deposits)			
River deposits				Other			
Site Function							
Living / habitation				Kill			
Ceremonial				Burial	X		
Trading / Barter				Art			
Quarry / Mining / Smelting				Other			
Site Placement							
Valley floor		Hill top		Vlei/swamp		River Mouth	
Dam		River Bank		Slope	X	Plains	X
Other / Comments							
Vegetation							
Riverine forest		Bushveld		Savannah		Mountain forest	
Thornveld	X	Grassland	X	Cultivated	X	Other	
Age Classification							
Stone Age		Early Iron Age		Middle Iron Age		Later Iron Age	
Historical	X	Other	X – Recent.				
Material Culture							

Wallmannsthal Fluorspar Mine: Archaeological Impact Assessment Report

Midden		House Remains		Stone Walling		Stone Structures	X
Granary		Grinding Stone (L)		Grinding Stone (U)		Granary Stand	
Metal		Ceramics (Pottery)		Ceramics (Porcelain)		Stone (non-lithic)	
Metal slag		Tuyere		Fauna		Bead (Glass)	
Bead (OES / Shell)		Glass		Lithics		Smelting Residues	
Other:				Other:			

1.3 Site Condition

The site integrity is fair.

2. SITE EVALUATION

2.1 Heritage Value (NHRA, section 2 [3])

	High	Medium	Low
It has importance to the community or pattern of South Africa's history or pre-colonial history.		X	
It possesses unique, uncommon, rare or endangered aspects of South Africa's natural or cultural heritage.	X		
It has potential to yield information that will contribute to an understanding of South Africa's natural and cultural heritage.		X	
It is of importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects.	X		
It has importance in exhibiting particular aesthetic characteristics valued by a particular community or cultural group.			X
It has importance in demonstrating a high degree of creative or technical achievement at a particular period.			X
It has marked or special association with a particular community or cultural group for social, cultural or spiritual reasons (sense of place).	X		
It has strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.			X
It has significance through contributing towards the promotion of a local sociocultural identity and can be developed as a tourist destination.			X
It has significance relating to the history of slavery in South Africa.			X
It has importance to the wider understanding of temporal changes within cultural landscapes, settlement patterns and human occupation.		X	

2.2 Field Register Rating

National/Grade 1 [should be registered, retained]	
Provincial/Grade 2 [should be registered, retained]	
Local/Grade 3A [should be registered, mitigation not advised]	
Local/Grade 3B [High significance; mitigation, partly retained]	X
Generally Protected A [High/Medium significance, mitigation]	
Generally protected B [Medium significance, to be recorded]	
Generally Protected C [Low significance, no further action]	

2.3 Sphere of Significance

	High	Medium	Low
International			
National			
Provincial			
Local	X		
Specific community			

3. IMPACT RATING AND MITIGATION

3.1 Impact assessment

APPROXIMATE DISTANCE FROM DEVELOPMENT: 100+ METERS

NATURE OF IMPACT: Historical, Aesthetic, Social, Scientific, Intrinsic, Associational & Contextual

EXTENT OF IMPACT: Local

Wallmannsthal Fluorspar Mine: Archaeological Impact Assessment Report

SPECIALIST LEVEL OF CONFIDENCE IN DEGREE OF IMPACT AND SEVERITY: High

3.2 Impact Significance and Severity			
General assessment of impacts on resource (Refer to Section 7.3.1)		Without Management*	With Management*
	Duration	Permanent: High	Permanent: Low
	Intensity	High	Low
	Probability	Improbable	Improbable
	Impact Significance	High	Low
3.3 Direct Impact Rating			
Direct impact on resource	None (the potential development does not adversely or positively affect the heritage resource)		X
	Peripheral / Indirect (the heritage resource or its setting is located in proximity to the footprint of the potential development)		
	Destruction / Direct (the heritage resource or site is physically located within the footprint of the potential development)		
Direct impact rating (Refer to Section 7.3.2) Note that a default "no impact expected" value applies where a heritage resource occurs outside the impact matrix or applicable conservation buffers of the development.			No impact expected
3.4 Recommended Management* (refer to section 7.3.3)			
Monitoring: Ensure that burials are not impacted on.			
Comments on recommended management			
<p style="color: red; margin: 0;">It is essential that the site be monitored to ensure that burials are not impacted on. If further impact occurs, or is envisaged at any stage of development and operation the following will be required:</p> <ul style="list-style-type: none"> - Documentation of site. - Exhumation and reburial - Full social consultation. - Possible conservation management and protection measures. - Relevant Permitting from Heritage Resources Authority. 			
4. APPLICABLE LEGISLATION AND LEGAL REQUIREMENTS			
<ul style="list-style-type: none"> - Human Tissue Act (Act 65 of 1983 as amended). - Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925) - Ordinance on Excavations (Ordinance no. 12 of 1980) - Local and regional provisions, laws and by-laws - National Heritage Resources Act (Act no. 25 of 1999) - Permit from SAHRA for removal 			

Table 12: Site BP04

1. SITE DESCRIPTION: Informal Burial Place			
1.1 General Site Description			
Informal burial places in the form of stone heaps / cairns.			
1.2 Site features / artefacts / Other			
Site Location			
Province / District	Gauteng Province	Map Number	2528CB
Farm Name	Wallmannsthal 278JR	Co-ordinates	S25°32'15.90" E28°17'30.36"
Site Type			
Surface sites	X	Caves and rock shelters	
Larger open-air sites		Sealed sites (deposits)	
River deposits		Other	
Site Function			
Living / habitation		Kill	
Ceremonial		Burial	X
Trading / Barter		Art	
Quarry / Mining / Smelting		Other	
Site Placement			

Wallmannsthal Fluorspar Mine: Archaeological Impact Assessment Report

Valley floor		Hill top		Vlei/swamp		River Mouth	
Dam		River Bank	X	Slope		Plains	X
Other / Comments							

Vegetation

Riverine forest		Bushveld		Savannah		Mountain forest	
Thornveld	X	Grassland	X	Cultivated	X	Other	

Age Classification

Stone Age		Early Iron Age		Middle Iron Age		Later Iron Age	
Historical		Other	X – Recent.				

Material Culture

Midden		House Remains		Stone Walling		Stone Structures	X
Granary		Grinding Stone (L)		Grinding Stone (U)		Granary Stand	
Metal		Ceramics (Pottery)		Ceramics (Porcelain)		Stone (non-lithic)	
Metal slag		Tuyere		Fauna		Bead (Glass)	
Bead (OES / Shell)		Glass		Lithics		Smelting Residues	
Other:				Other:			

1.3 Site Condition

The site integrity is fair.

2. SITE EVALUATION

2.1 Heritage Value (NHRA, section 2 [3])	High	Medium	Low
It has importance to the community or pattern of South Africa's history or pre-colonial history.		X	
It possesses unique, uncommon, rare or endangered aspects of South Africa's natural or cultural heritage.	X		
It has potential to yield information that will contribute to an understanding of South Africa's natural and cultural heritage.		X	
It is of importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects.	X		
It has importance in exhibiting particular aesthetic characteristics valued by a particular community or cultural group.			X
It has importance in demonstrating a high degree of creative or technical achievement at a particular period.			X
It has marked or special association with a particular community or cultural group for social, cultural or spiritual reasons (sense of place).	X		
It has strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.			X
It has significance through contributing towards the promotion of a local sociocultural identity and can be developed as a tourist destination.			X
It has significance relating to the history of slavery in South Africa.			X
It has importance to the wider understanding of temporal changes within cultural landscapes, settlement patterns and human occupation.		X	

2.2 Field Register Rating

National/Grade 1 [should be registered, retained]	
Provincial/Grade 2 [should be registered, retained]	
Local/Grade 3A [should be registered, mitigation not advised]	
Local/Grade 3B [High significance; mitigation, partly retained]	X
Generally Protected A [High/Medium significance, mitigation]	
Generally protected B [Medium significance, to be recorded]	
Generally Protected C [Low significance, no further action]	

Wallmannsthal Fluorspar Mine: Archaeological Impact Assessment Report

2.3 Sphere of Significance		High	Medium	Low
International				
National				
Provincial				
Local		X		
Specific community				
3. IMPACT RATING AND MITIGATION				
3.1 Impact assessment				
APPROXIMATE DISTANCE FROM DEVELOPMENT: 500+ METERS				
NATURE OF IMPACT: HISTORICAL, AESTHETIC, SOCIAL, SCIENTIFIC, , INTRINSIC, ASSOCIATIONAL & CONTEXTUAL				
EXTENT OF IMPACT: Local				
SPECIALIST LEVEL OF CONFIDENCE IN DEGREE OF IMPACT AND SEVERITY: High				
3.2 Impact Significance and Severity				
General assessment of impacts on resource (Refer to Section 7.3.1)		Without Management*	With Management*	
	Duration	Permanent: Low	Permanent: Low	
	Intensity	Low	Low	
	Probability	Improbable	Improbable	
	Impact Significance	Low	Negligible	
3.3 Direct Impact Rating				
Direct impact on resource	None (the potential development does not adversely or positively affect the heritage resource)			X
	Peripheral / Indirect (the heritage resource or its setting is located in proximity to the footprint of the potential development)			
	Destruction / Direct (the heritage resource or site is physically located within the footprint of the potential development)			
Direct impact rating (Refer to Section 7.3.2) Note that a default "no impact expected" value applies where a heritage resource occurs outside the impact matrix or applicable conservation buffers of the development.				No impact expected.
3.4 Recommended Management* (refer to section 7.3.3)				
Monitoring: Ensure that burials are not impacted on.				
Comments on recommended management				
<p>It is essential that the site be monitored to ensure that burials are not impacted on. If further impact occurs, or is envisaged at any stage of development and operation the following will be required:</p> <ul style="list-style-type: none"> - Documentation of site. - Exhumation and reburial - Full social consultation. - Possible conservation management and protection measures. - Relevant Permitting from Heritage Resources Authority. 				
4. APPLICABLE LEGISLATION AND LEGAL REQUIREMENTS				
<ul style="list-style-type: none"> - Human Tissue Act (Act 65 of 1983 as amended). - Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925) - Ordinance on Excavations (Ordinance no. 12 of 1980) - Local and regional provisions, laws and by-laws - National Heritage Resources Act (Act no. 25 of 1999) - Permit from SAHRA for removal 				

Table 13: Site MQ01

1. SITE DESCRIPTION: Historical / Recent Quarry			
1.1 General Site Description			
A large open air quarry / burrow pit.			
1.2 Site features / artefacts / Other			
Site Location			
Province / District	Gauteng Province	Map Number	2528CB

Wallmannsthal Fluorspar Mine: Archaeological Impact Assessment Report

Farm Name	Wallmannsthal 278JR		Co-ordinates	S25°31'46.16"	E28°17'16.97"	
Site Type						
Surface sites	X		Caves and rock shelters			
Larger open-air sites			Sealed sites (deposits)			
River deposits			Other			
Site Function						
Living / habitation			Kill			
Ceremonial			Burial			
Trading / Barter			Art			
Quarry / Mining / Smelting	X		Other			
Site Placement						
Valley floor		Hill top		Vlei/swamp	River Mouth	
Dam		River Bank		Slope	Plains	
Other / Comments						
Vegetation						
Riverine forest		Bushveld		Savannah	Mountain forest	
Thornveld	X	Grassland	X	Cultivated	Other	
Age Classification						
Stone Age		Early Iron Age		Middle Iron Age	Later Iron Age	
Historical		Other	X – Recent.			
Material Culture						
Midden		House Remains		Stone Walling	Stone Structures	
Granary		Grinding Stone (L)		Grinding Stone (U)	Granary Stand	
Metal		Ceramics (Pottery)		Ceramics (Porcelain)	Stone (non-lithic)	
Metal slag		Tuyere		Fauna	Bead (Glass)	
Bead (OES / Shell)		Glass		Lithics	Smelting Residues	
Other:		Other:				
1.3 Site Condition						
The site integrity low.						
2. SITE EVALUATION						
2.1 Heritage Value (NHRA, section 2 [3])				High	Medium	Low
It has importance to the community or pattern of South Africa's history or pre-colonial history.						X
It possesses unique, uncommon, rare or endangered aspects of South Africa's natural or cultural heritage.						X
It has potential to yield information that will contribute to an understanding of South Africa's natural and cultural heritage.						X
It is of importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects.						X
It has importance in exhibiting particular aesthetic characteristics valued by a particular community or cultural group.						X
It has importance in demonstrating a high degree of creative or technical achievement at a particular period.						X
It has marked or special association with a particular community or cultural group for social, cultural or spiritual reasons (sense of place).						X
It has strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.						X
It has significance through contributing towards the promotion of a local sociocultural identity and can be						X

Wallmannsthal Fluorspar Mine: Archaeological Impact Assessment Report

developed as a tourist destination.						
It has significance relating to the history of slavery in South Africa.						X
It has importance to the wider understanding of temporal changes within cultural landscapes, settlement patterns and human occupation.						X
2.2 Field Register Rating						
National/Grade 1 [should be registered, retained]						
Provincial/Grade 2 [should be registered, retained]						
Local/Grade 3A [should be registered, mitigation not advised]						
Local/Grade 3B [High significance; mitigation, partly retained]						
Generally Protected A [High/Medium significance, mitigation]						
Generally protected B [Medium significance, to be recorded]						
Generally Protected C [Low significance, no further action]						X
2.3 Sphere of Significance			High	Medium	Low	
International						
National						
Provincial						
Local					X	
Specific community						
3. IMPACT RATING AND MITIGATION						
3.1 Impact assessment						
APPROXIMATE DISTANCE FROM DEVELOPMENT: 500+ METERS						
NATURE OF IMPACT: HISTORICAL, INTRINSIC, ASSOCIATIONAL						
EXTENT OF IMPACT: Local						
SPECIALIST LEVEL OF CONFIDENCE IN DEGREE OF IMPACT AND SEVERITY: High						
3.2 Impact Significance and Severity						
			Without Management*	With Management*		
General assessment of impacts on resource (Refer to Section 7.3.1)			Duration	Permanent: Low	Permanent: Low	
			Intensity	Low	Low	
			Probability	Improbable	Improbable	
			Impact Significance	Low	Negligible	
3.3 Direct Impact Rating						
Direct impact on resource	None (the potential development does not adversely or positively affect the heritage resource)					X
	Peripheral / Indirect (the heritage resource or its setting is located in proximity to the footprint of the potential development)					
	Destruction / Direct (the heritage resource or site is physically located within the footprint of the potential development)					
Direct impact rating (Refer to Section 7.3.2) Note that a default "no impact expected" value applies where a heritage resource occurs outside the impact matrix or applicable conservation buffers of the development.				No impact expected.		
3.4 Recommended Management* (refer to section 7.3.3)						
No further action required						
Comments on recommended management						
If further impact is envisaged: - Possible site monitoring during development.						
4. APPLICABLE LEGISLATION AND LEGAL REQUIREMENTS						
- National Heritage Resources Act (Act no. 25 of 1999)						
- Local and regional provisions, laws and by-laws						

7.4 Discussion: Evaluation of Results and Impacts

Previous studies conducted in this section of the Gauteng Province all infer a rich and diverse archaeological and historical landscape, representative of most phases of human and cultural development in southern Africa. The following impact assessment discussion summarises the extent of heritage significance and impact on resources, cognisant of this rich larger archae-historical landscape (refer to Section 3.3 for infrastructure options and Table 14 for impact assessment matrix).

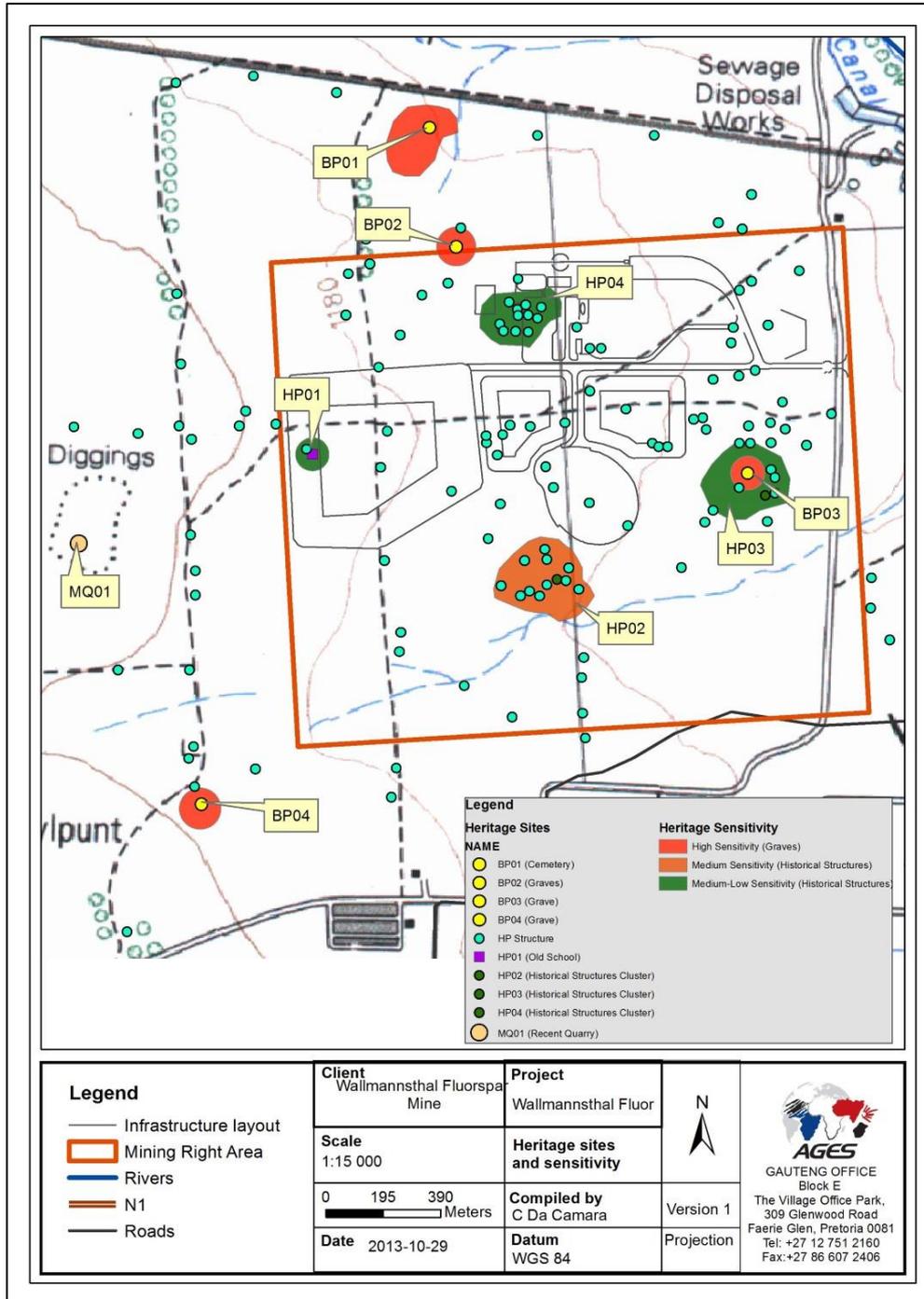


Figure 7-1: Heritage sensitivity map for the Wallmannsthal Fluorspar Mine Project Area

The Historical Period / recent remains of the school at Wallmannsthal (**Site HP01**) is of medium significance as the site might yield an understanding of the recent occupational and social history of the area, as well as historical architectural and settlement developments in the larger landscape. The site is located within the footprint of all infrastructure alternatives and the impact on the site by the proposed mining activities will be direct and permanent where in essence, the impact will result the potential damage / loss of the site. **The significance of the impact on the heritage resource is considered MODERATE but the threshold of the impact can be limited to a NEGLIBLE impact by the implementation of mitigation measures (documentation and desktop study) for the site, if / when required.** The Historical Period / recent house remains at **Site HP02** are also of medium significance as the site might add to our current knowledge of historical architectural and settlement developments in the larger landscape. Since the site is situated some distance from proposed infrastructure alternatives, the impact on the sites by the proposed activity is considered to be negligible. **The significance of the impact on the heritage resource is considered to be NEGLIBLE and this rating is expected to remain unchanged if the site is avoided and monitored.** The large number of poorly preserved brick, cement and mud structures, stone wall enclosures and middens scattered across Wallmannsthal at **Site HP03** and **Site HP04** are of medium-low significance due to the poor preservation of the sites. The impact on the sites by the proposed activity will be local, and of permanent duration where in essence, the impact will result the potential damage / loss of the sites. **The significance of the impact on the heritage resources is considered MODERATE but the threshold of the impact can be limited to a NEGLIBLE impact by the implementation of mitigation measures (documentation and desktop study) for the sites, if / when required.** The large open air quarry near the N1 highway at **Site MQ01** is of low significance due to the poor preservation of the site and its more recent age. **The site is situated some distance from proposed infrastructure alternatives and the impact on the site by the proposed activity is considered to be NEGLIBLE.**

The large cemetery north of the study area at **Site BP01** is of heritage priority and carries high significance ratings. However, the development alternative has been proposed for areas some distance from the site and the impact on the cemetery by the proposed mining activities is considered to be none. **The significance of the impact on the heritage resource is considered to be NEGLIBLE is this rating is expected to remain unchanged if the site is avoided, conserved and monitored.** A burial site at **Site BP02** is of heritage priority and carries high significance ratings. The site occurs some distance from the proposed infrastructure and the impact on the cemetery by the proposed mining activities is considered to be none. **The significance of the impact on the heritage resource is considered to be NEGLIBLE is this rating is expected to remain unchanged if the site is avoided, conserved and monitored.** Similarly, a burial at **Site BP03** is of heritage priority and carry high significance ratings. The site occurs some distance from the proposed infrastructure and the impact on the cemetery by the proposed mining activities is considered to be none. **The significance of the impact on the heritage resource is considered to be NEGLIBLE is this rating is expected to remain unchanged if the site is avoided, conserved and monitored.** Single burials at **Site BP04** are of heritage priority and carries high significance ratings. However, the proposed development alternative has been proposed for areas some distance from the site and the impact on the burials is considered to be none. **The significance of the impact on the heritage resource is considered to be NEGLIBLE is this rating is expected to remain unchanged if the site is avoided, conserved and monitored.**

Wallmannsthal Fluorspar Mine: Archaeological Impact Assessment Report

Table 14: Impact assessment matrix for proposed footprint areas of mining development during the Pre-Construction, Construction, Operation and Closure Phases. Unique weight values indicated below.

Site	Activity	Impact	P	D	S	M/S	Significance Before Mitigation	Mitigation Measures	P	D	S	M / S	Significance After Mitigation		
Pre-Construction, Construction, Operation and Closure								Pre-Construction and Construction Phase							
HP01	Pre-Construction, Construction, Operation and Closure	Loss of Heritage Resource and Attributes	5	5	1	6	60	Moderate	Documentation	1	1	1	2	4	Negligible
HP02	Pre-Construction, Construction, Operation and Closure	Loss of Heritage Resource and Attributes	1	5	1	2	8	Negligible	Conservation	1	1	1	2	4	Negligible
HP03	Pre-Construction, Construction, Operation and Closure	Loss of Heritage Resource and Attributes	5	5	1	6	60	Moderate	Documentation	1	1	1	2	4	Negligible
HP04	Pre-Construction, Construction, Operation and Closure	Loss of Heritage Resource and Attributes	5	5	1	6	60	Moderate	Documentation	1	1	1	2	4	Negligible
BP01	Pre-Construction, Construction, Operation and Closure	Loss of Heritage Resource and Attributes	1	5	1	8	14	Negligible	Conservation	1	1	1	2	4	Negligible
BP02	Pre-Construction, Construction, Operation and Closure	Loss of Heritage Resource and Attributes	1	5	1	8	14	Negligible	Relocation	1	1	1	2	4	Negligible
BP03	Pre-Construction, Construction, Operation and Closure	Loss of Heritage Resource and Attributes	1	5	1	8	14	Negligible	Relocation	1	1	1	2	4	Negligible
BP04	Pre-Construction, Construction, Operation and Closure	Loss of Heritage Resource and Attributes	1	5	1	8	14	Negligible	Conservation	1	1	1	2	4	Negligible
MQ01	Pre-Construction, Construction, Operation and Closure	Loss of Heritage Resource and Attributes	1	5	1	2	8	Negligible	None	1	1	1	2	4	Negligible

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

8 RECOMMENDATIONS

The larger landscape around Wallmannsthal is rich in pre-historical and historical remnants. Cognisant of this historically significant landscape and the need for the conservation of its heritage resources, the following recommendations are made based on general observations in the proposed Wallmannsthal Fluorspar Mine Project Area:

- Considering the localised nature of heritage remains, a careful watching brief monitoring process is recommended for all stages of the project, specifically around heritage sensitive areas i.e. historical period structures and graves. Should any subsurface palaeontological, archaeological or historical material, or burials be exposed during construction activities, all activities should be suspended and the archaeological specialist should be notified immediately
- The Palaeontological Impact Assessment concluded that the south-eastern corner of the study area could be fossiliferous since it consists of shales and sandstones of the Ecca Group, and it is recommended that any material from the potentially sensitive south eastern corner of the study area be dumped in spoil heaps on the property which will make it accessible to palaeontologists visiting the area. Should fossil remains such as fossil fish, reptiles or petrified wood be exposed during construction, these objects should carefully safeguarded and the relevant heritage resources authority (SAHRA) should be notified immediately so that the appropriate action can be taken by a professional palaeontologist.
- The old Wallmannsthal school buildings (**Site HP01**) are of importance in terms of the regional history of the area. In addition, the structures are older than 60 years and therefore protected under the NHRA (Act 25 of 1999). Since the site falls within infrastructure options, it is recommended that the site be documented and a destruction permit be obtained from the relevant heritage resources authority (SAHRA). The old house structure at **Site HP02** is of significance in terms of its architectural value but the structure occurs away from proposed alternatives and the resource has been poorly preserved. Thus, it is recommended that the structure be carefully documented and its provenance be established if the building is to be impacted upon by the development. A destruction permit should be obtained from the relevant heritage resources authority (SAHRA) prior to any alteration of the site. The number of poorly preserved brick, concrete and mud structures, stone wall enclosures and middens scattered across the property and at infrastructure alternatives (**Site HP03 & Site HP04**) are of medium-low significance and site monitoring of these structures are recommended when development commences, **as graves are likely to occur around the structures**. If the sites were to be impacted on by the mining development, destruction permits should be obtained from the relevant heritage resources authority (SAHRA). It is recommended that the sites and surroundings be monitored when the mining development commences.
- The large open air quarry near the N1 highway at **Site MQ01** is of low significance due to the poor preservation of the site and its recent age, no further action is recommended for the site.
- All cemeteries and burials at Wallmannsthal (**Site BP01, Site BP02, Site BP03, Site BP04**) are of high significance and since they are structurally stable, the resources will require management or mitigation. All burials occur away from areas proposed for mining infrastructure placement and it is recommended that conservation buffer zones of at least 20m around graves be maintained. In addition, all graves and cemeteries should be fenced off and access control should be applied. All burials should also be monitored in order to avoid any impact on the resources. Should impact occur on any burial site, the

affected resources should be mitigated by means of full grave relocation measures. This should be undertaken by a qualified archaeologist, and in accordance with relevant legislation and subject to any local and regional provisions and laws and by-laws pertaining to human remains. A full social consultation process should occur in conjunction with the mitigation of cemeteries and burials and a concerted effort must also be made to identify all buried individuals and to contact their relatives and descendants. Other legislative measures which may be of relevance include the Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925), the Human Tissues Act (Act no. 65 of 1983, as amended), the Ordinance on Excavations (Ordinance no. 12 of 1980) as well as any local and regional provisions, laws and by-laws that may be in place.

- **Burial locations in this area follow a general pattern where graves occur around historical house structures and homestead complexes. It is therefore probable that further undetected burials might occur in the study area and utmost care should be taken not to disturb such resources.**
- Due cognizance should be taken of the larger palaeontological, archaeological and historical landscape of the area in order to avoid the destruction of previously undetected heritage sites in the area. Here, care should be taken around sandstone outcrops and rock faces, as rock art is known to occur on such features. Water sources such as drainage lines, springs and pans should also be regarded as potentially sensitive in terms of possible Stone Age and Iron Age deposits. The existence of Historical Period and recent resources deriving from the area's contemporary farming history should also be considered.

In addition to these site-specific recommendations, careful cognizance should be taken of the following:

- Water sources such as drainage lines, fountains and pans would often have attracted human activity in the past. As Stone Age material seems to originate from below present soil surfaces in eroded areas, the larger landscape should be regarded as potentially sensitive in terms of possible subsurface deposits.
- As Palaeontological remains occur where bedrock has been exposed, such geological features should be regarded as sensitive in terms of impacts on fossilized resources.
- The Wallmannsthal Fluorspar Mine Project Area has been occupied for many decades and places of "Living Heritage" might be present in the landscape. Here, "Living Heritage" can broadly refer to a place of cultural heritage and sacred nature; with cultural attributions that are not generally physically manifested. Such places might include initiation sites, places of ritual seclusion, old farmsteads, ritual graves and specific meeting areas. These sites and possible material residues thereof convey an intangible cultural significance beyond the site, shelter or object, where the meaning speaks directly of a sense of place and lived experience. Therefore, Historical period and recent material culture and structures should be regarded as potentially sensitive in terms of the tangible and intangible value of such resources.

9 GENERAL COMMENTS AND CONDITIONS

This AIA report serves to confirm the extent and significance of archaeological material in the Wallmannsthal Fluorspar Mine Project Area. In addition to heritage resources occurring here, the larger Gauteng encompasses a rich and diverse archaeological landscape and cognizance should be taken of heritage resources and archaeological material that might be present in surface and sub-surface deposits. If, during construction, any

possible archaeological material culture are made, the operations must be stopped and a qualified archaeologist be contacted for an assessment of the find. Such material culture might include:

- Formal Earlier Stone Age stone tools such as handaxes, choppers and cleavers.
- Formal Middle Stone Age stone tools such as points, blades and scrapers.
- Formal Later Stone Age stone tools such a microlithic blades, points and scrapers.
- Lithic residues and debris such as stone cores and flakes.
- Decorated and undecorated potsherds.
- Iron objects.
- Beads made from ostrich eggshell and glass.
- Ash middens and cattle dung deposits and accumulations.
- Animal bones and faunal remains.
- Human remains/graves.
- Stone walling or any sub-surface structures.
- Historical glass, tin or ceramics.
- Fossils.

If such site were to be encountered or impacted by any proposed developments, recommendations contained in this report, as well as endorsement of mitigation measures as set out by SAHRA, the National Resources Act and the CRM section of ASAPA will be required. Please note that this report is an archaeological scoping study only and does not include or exempt other required heritage impact assessments.

It must be emphasised that the conclusions and recommendations expressed in this archaeological heritage sensitivity investigation are based on the visibility of archaeological sites/features and may not therefore, represent the area's complete archaeological legacy. Many sites/features may be covered by soil and vegetation and might only be located during sub-surface investigations. If subsurface archaeological deposits, artefacts or skeletal material were to be recovered in the area during construction activities, all activities should be suspended and the archaeological specialist should be notified immediately (**cf. NHRA (Act No. 25 of 1999)**, Section 36 (6)).

It must also be clear that Archaeological Specialist Reports will be assessed by the relevant heritage resources authority. The final decision rests with the heritage resources authority, which should give a permit or a formal letter of permission for the destruction of any cultural sites.

10 BIBLIOGRAPHY

Acocks, J.P.H. 1988. Veld types of South Africa (3rd edition). *Memoirs of the Botanical Survey of South Africa* 57: 1-146

Bergh, J.S. 1999. *Geskiedenisatlas van Suid-Afrika: die vier noordelike provinsies*. Pretoria: J.L. van Schaik

Deacon, J. 1996. *Archaeology for Planners, Developers and Local Authorities*. National Monuments Council. Publication no. P021E.

Deacon, J. 1997. Report: Workshop on Standards for the Assessment of Significance and Research Priorities for Contract Archaeology. In: *Newsletter No 49, Sept 1998*. Association for Southern African Archaeologists.

Denbow, J.R. 1979. *Cenchrus ciliaris*: an ecological indicator of Iron Age middens using aerial photography in eastern Botswana. *South African Journal of Science* 75:405—408

De V. Pienaar, U. 1990. *Neem uit die Verlede*. Pretoria: National Parks Board.

Durand, F. 2013. *Scoping Report Palaeontology: Proposed development of a Fluorspar mine at Wallmannsthal, north of Pretoria*. Pretoria: Ages

Evers, T.M. 1981. The Iron Age in eastern Transvaal, South Africa. In: Voigt, E.A. (ed.) *Guide to archaeological sites in the northern and eastern Transvaal*. Pretoria: Transvaal Museum.

Evers, T.M. 1988. *The recognition of Groups in the Iron Age of Southern Africa*. PhD thesis. Johannesburg: University of the Witwatersrand.

Hall, M. 1987. *The Changing Past :Farmers, Kings & Traders in Southern Africa 200 – 1860* Cape Town, Johannesburg: David Philip

Hall, M. 1996. *Archaeology Africa*. Cape Town, Johannesburg: David Philip

Huffman, T.N. 2002. *Regionality in the Iron Age: the case of the Sotho-Tswana*. *Southern African Humanities*. Vol 14. Pietermaritzburg.

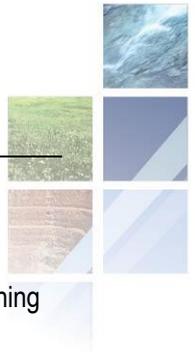
Huffman, T.N. 2007. *Handbook to the Iron Age*. Pietermaritzburg: University of Kwazulu-Natal Press

Mason, R.J. 1986. *Origins of black people of Johannesburg and the southern western central Transvaal AD 350-1880*. Johannesburg: Witwatersrand University Press.

Mucina, L & Rutherford, M. C. 2006. *The vegetation of South Africa, Lesotho and Swaziland*. *Strelitzia* 19, SANBI, Pretoria

Phillipson, D.W. 1985. *African Archaeology (second edition)*. Cambridge: Cambridge University Press

Rathje, W.L & Schiffer, M.B. 1982. *Archaeology*. USA: Harcourt



Renfrew, C & Bahn, P. 1991. Archaeology: Theories, Methods and Practice USA: Thames & Hudson

Sharer, A.J & Ashmore, W 1979. The Nature of Archaeological Data California: Benjamin/Cummings Publishing

Van Warmelo, N.J. 1935. A Preliminary Survey of the Bantu Tribes of South Africa. Pretoria: Government Printer.

Winter, S. & Baumann, N. 2005. Guideline for involving heritage specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 E. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town.

Human Tissue Act and Ordinance 7 of 1925, Government Gazette, Cape Town

National Resource Act No.25 of 1999, Government Gazette, Cape Town