PGS HERITAGE

Application for an Environmental Authorisation in support of an Amendment to a Mining Right for the expansion of an existing clay quarry near Delmas on behalf of Era Stene (Pty) Ltd

Heritage Impact Assessment

Issue Date: 24 May 2016

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Declaration of Independence

The report has been compiled by PGS Heritage, an appointed Heritage Specialist for Jones & Wagener (J&W) (Pty) Ltd Engineering and Environmental consultants. The views stipulated in this report are purely objective and no other interests are displayed during the decision making processes discussed in the Heritage Impact Assessment Process

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Report Title	Heritage Impact Assessment for the proposed Era Stene Quarry Expansion:, Delmas, Mpumalanga Province		
Control	Name	Signature	Designation
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As indicated in the table below, this Heritage Impact Assessment report was compiled in accordance with the National Environmental Management Act (NEMA) Environmental Impact Assessment (EIA) Regulations Appendix 6 requirements for specialist reports.

NEMA REGS (2014) - APPENDIX 6	RELEVANT PAGES AND SECTIONS
Details of the specialist who prepared the report.	Pages i, ii, iii and 111
The expertise of that person to compile a specialist report including a curriculum vitae.	Pages 11 (Section 1.2) and Appendix B
A declaration that the person is independent in a form as may be specified by the competent authority.	Page ii
An indication of the scope of, and the purpose for which, the report was prepared.	Page 1 (Section 1.1)
The date and season of the site investigation and the relevance of the season to the outcome of the assessment.	Section 6
A description of the methodology adopted in preparing the report or carrying out the specialised process.	Section 3.1
The specific identified sensitivity of the site related to the activity and its associated structures and infrastructure.	Sections 6
An identification of any areas to be avoided, including buffers.	Section 6
A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers.	Section 6 and Figure 20
A description of any assumptions made and any uncertainties or gaps in knowledge.	Section 1.3
A description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives, on the environment.	Section 7. Please note that no development alternatives were assessed.
Any mitigation measures for inclusion in the EMPr.	Section 8
Any conditions for inclusion in the environmental authorization.	Sections 8 and 9
Any monitoring requirements for inclusion in the EMPr or environmental authorisation	Sections 8 and 9
A reasoned opinion as to whether the proposed activity or portions thereof should be authorised and	Executive Summary and Section 9
If the opinion is that the proposed activity or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	
A description of any consultation process that was undertaken during the course of carrying out the study	Not applicable. A public consultation process was handled as part of the EIA and EMP process.
A summary and copies if any comments that were received during any consultation process	Not applicable. To date not comments regarding heritage resources that require input from a specialist have been raised.
Any other information requested by the competent authority.	Not applicable.

EXECUTIVE SUMMARY

PGS Heritage was appointed by Jones & Wagener (J&W) (Pty) Ltd Engineering and Environmental consultants to undertake a Heritage Impact Assessment that forms part of the Environmental Impact Assessment and Environmental Management Programme for the proposed expansion of the Era Stene south quarry. The project falls within portion 7 (RE) of the Farm Rietvalei 195-IR, Victor Khanye Local Municipality within Nkangala District Municipality, Mpumalanga Province.

An analysis of historical maps identified one grave site north of the study area, while additional analysis of aerial photography identified some anomalies in the maize fields that were investigated during field work. All possible heritage features as noted from the aerial photographs were inspected and photographed and marked as having no heritage significance.

Based on the impact assessment criteria the impact by the proposed development on heritage resources is seen as very low. To address the potential impacts on possible heritage features that might be discovered during construction, the following management measure is recommended:

- Stop construction if any heritage resources – such as graves, human remains or fossils are identified; and
- Inform SAHRA and have a qualified heritage practictioner evaluated the finds and recommend appropriate actions

Conclusions

On the condition that the mitigation measures outlined in this report are undertaken, any development impacts on the proposed development will be adequately mitigated to allow the development to take place. As such, and on this condition, no heritage reasons can be given for the development not to continue.

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1 INTRODUCTION

PGS Heritage was appointed by Jones & Wagener (J&W) (Pty) Ltd Engineering and Environmental consultants to undertake a Heritage Impact Assessment (HIA) that forms part of the Environmental Impact Assessment (EIA) and Environmental Management Programme for the proposed development of an expansion to the Era Stene works. The project falls within portion 7 (RE) of the Farm Rietvalei 195-IR, Victor Khanye Local Municipality within Nkangala District Municipality, Mpumalanga Province.

1.1 Scope of the Study

The aim of the study is to identify possible heritage sites and findings that may occur in the proposed development area. The HIA aims to inform the EIA in the development of a comprehensive EMPr to assist the developer in managing the identified heritage resources in a responsible manner, in order to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act 25 of 1999) (NHRA).

1.2 Specialist Qualifications

This Heritage Impact Assessment was compiled by PGS Heritage (PGS).

The staff at PGS has a combined experience of nearly 70 years in the heritage consulting industry. PGS and its staff have extensive experience in managing HIA processes and will only undertake heritage assessment work where they have the relevant expertise and experience to undertake that work competently.

Wouter Fourie, Project manager for this project, is registered as a Professional Archaeologist with the Association of Southern African Professional Archaeologists (ASAPA) and has CRM accreditation within the said organisation, as well as being accredited as a Professional Heritage Practitioner with the Association of Professional Heritage Practitioners – Western Cape (APHP).

1.3 Assumptions and Limitations

The following assumptions and limitation apply to this study:

- Not detracting in any way from the comprehensiveness of the fieldwork undertaken, it is necessary to realise that the heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the area. Various factors account for this, including the subterranean nature of some archaeological sites and the current dense vegetation cover. As such, should any heritage features and/or objects not included in the present inventory be located or observed, a heritage specialist must immediately be contacted.
- Any such observed or located heritage features and/or objects found during construction/operation may not be disturbed or removed in any way until such time that the heritage specialist has been able to make an assessment as to the significance of the site (or material) in question. This applies to graves and cemeteries as well. In the event that any graves or burial places are located during the development, the procedures and requirements pertaining to graves and burials will apply as set out below.

1.4 Legislative Context

The identification, evaluation and assessment of any cultural heritage site, artefact or find in the South African context is required and governed by the following legislation:

i. National Environmental Management Act (NEMA) Act 107 of 1998
ii. National Heritage Resources Act (NHRA) Act 25 of 1999
iii. Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002

The following sections in each Act refer directly to the identification, evaluation and assessment of cultural heritage resources.

i. GNR 982 (Government Gazette 38282, 14 December 2014) promulgated under the National Environmental Management Act (NEMA) Act 107 of 1998
    a. Basic Assessment Report (BAR) – Regulations 19 and 23
    b. Environmental Scoping Report (ESR) – Regulation 21
    c. Environmental Impact Assessment (EIA) – Regulation 23
    d. Environmental Management Programme (EMPr) – Regulations 19 and 23
ii. National Heritage Resources Act (NHRA) Act 25 of 1999
    a. Protection of Heritage Resources – Sections 34 to 36; and

b. Heritage Resources Management – Section 38

iii. Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002

a. Section 39(3)

The NHRA stipulates that cultural heritage resources may not be disturbed without authorization from the relevant heritage authority. Section 34 (1) of the NHRA states that, "no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority". In addition, the NEMA (No 107 of 1998) and the GNR 982 (Government Gazette 38282, 14 December 2014) state that, "the objective of an environmental impact assessment process is to, identify the location of the development footprint within the preferred site, focussing on the geographical, physical, biological, social, economic, cultural and heritage aspects of the environment" (GNR 982, Appendix 3(2)(c), emphasis added). In accordance with legislative requirements and EIA rating criteria, the regulations of South African Heritage Resource Agency (SAHRA) and ASAPA have also been incorporated to ensure that a comprehensive legally compatible Archaeological Impact Assessment (AIA) report is compiled.

1.5 Terminology and Abbreviations

Archaeological resources

This includes:

i. material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;

ii. rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;

iii. wrecks, being any vessel or aircraft, or any part thereof which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;

iv. features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

Cultural significance

This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance

Development

This means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way result in a change to the nature, appearance or physical nature of a place or influence its stability and future well-being, including:

i. construction, alteration, demolition, removal or change in use of a place or a structure at a place;
ii. carrying out any works on or over or under a place;
iii. subdivision or consolidation of land comprising a place, including the structures or airspace of a place;
iv. constructing or putting up for display signs or boards;
v. any change to the natural or existing condition or topography of land; and
vi. any removal or destruction of trees, or removal of vegetation or topsoil

Earlier Stone Age

The archaeology of the Stone Age, between 400 000 and 2500 000 years ago.

Fossil

Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.

Heritage

That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the NHRA).

Heritage resources

This means any place or object of cultural significance.

Holocene

The most recent geological time period which commenced 10 000 years ago.

Later Stone Age

The archaeology of the last 30 000 years, associated with fully modern people.

Late Iron Age (Early Farming Communities)

The archaeology of the last 1000 years up to the 1800s, associated with people who carried out iron working and farming activities such as herding and agriculture.

Middle Stone Age

The archaeology of the Stone Age between 30-300 000 years ago, associated with early modern humans.

Palaeontology

Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

Table 1: Abbreviations

Abbreviations	*Description*
AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
CCS	Cryptocrystalline Silica
CRM	Cultural Resource Management
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
LIA	Late Iron Age

LSA	Later Stone Age
MSA	Middle Stone Age
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
PGS	PGS Heritage
PHRA	Provincial Heritage Resources Authority
PSSA	Palaeontological Society of South Africa
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System

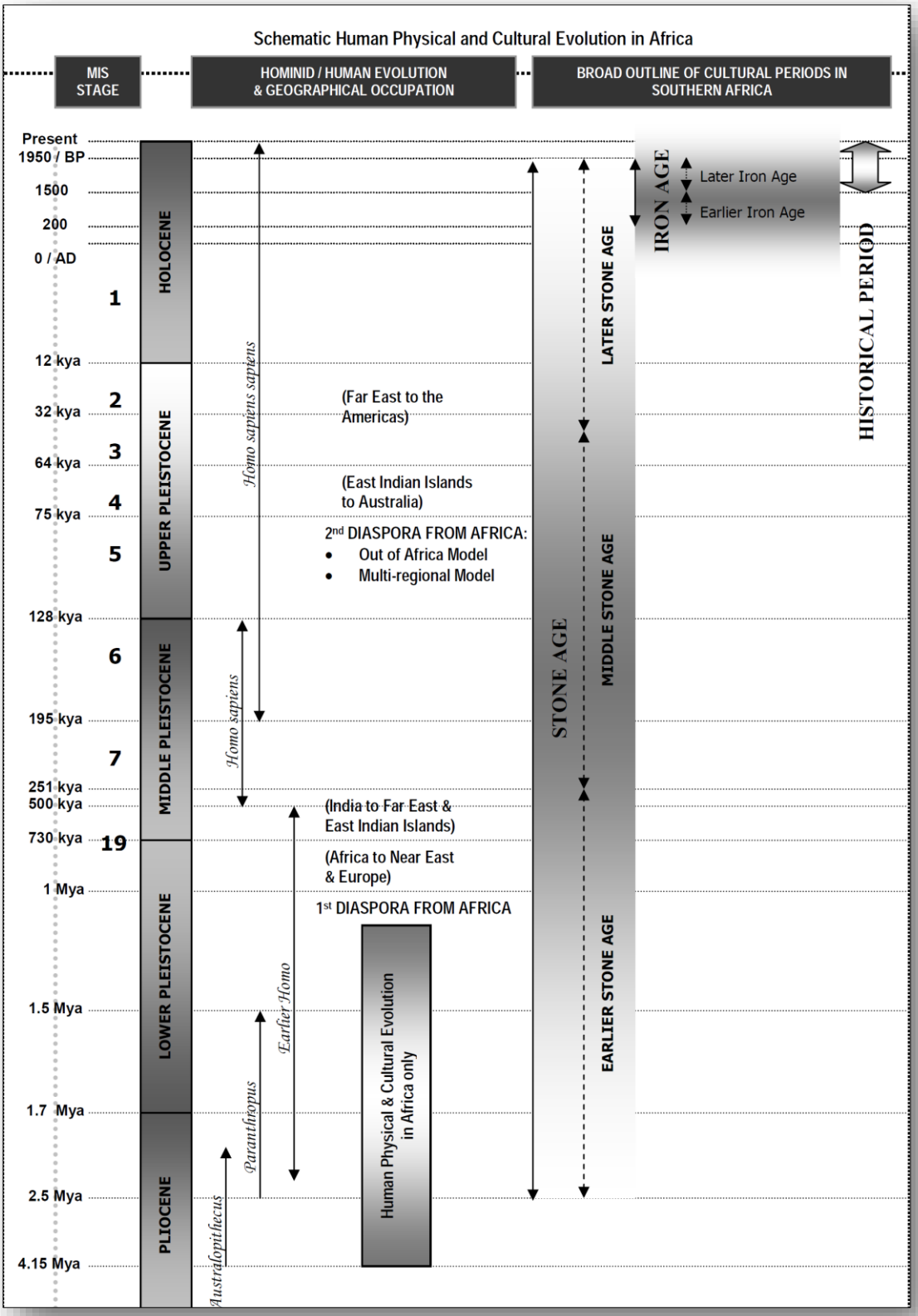


Figure 1 - Human and Cultural Time line in Africa (Morris, 2008)

2 TECHNICAL DETAILS OF THE PROJECT

2.1 Site Location

The study area is defined as the property adjacent to the existing Era Stene Mine. This comprises portion 7 (RE) of the Farm Rietvalei 195-IR. The site is located south of the R50, in the Victor Khanye Local Municipality within Nkangala District Municipality, Mpumalanga Province.

Figure 2 – Layout of the existing and proposed expansion (Jones and Wagener, 2016)

Coordinates	The central coordinate for Portion 7 (RE) of the farm Rietvalei 195 IR is S26° 05' 38.6" E28° 34' 09.5"
Property	Portion 7 (RE) of the Farm Rietvalei 195-IR in the Victor Khanye Local Municipality within Nkangala District Municipality, Mpumalanga Province
Location	The study area is located north of the N12 highway, some 13 kilometers north-west of Delmas in the Victor Khanye Local Municipality within Nkangala District Municipality, Mpumalanga Province
Land Description	The land is flat and the majority of the land was previously and is currently used for maize farming. A small homestead occupies the northern tip of the land. The southern and northern portions of the proposed site are currently covered with maize with a central circular irrigated field. A single power line runs along the western boundary of the proposed expansion area.

2.2 Project Description

2.1.1 Background

Era Stene is the holder of a mining right for clay, granted by the Minister of the Department of Mineral Resources (DMR), in terms of the MPRDA (Act 28 of 2002); and notarially executed on 19 April 2013 under the DMR reference number F/2004/10/12/001, in respect of its operations to remove clay on portion 9 (a portion of portion 7) of farm Rietvalei 195 IR in the Delmas area. The farm is situated approximately 13km north west of Delmas town, just off the R50. The existing operation, which commenced in 1997, comprises of the following:

- 128 ha authorised mining right area;
- Two clay quarries - a northern and southern quarry;
- Roads;
- Storage dams;
- "Affected" water canal;
- Clay stockpiles;
- Overburden stockpiles;
- One excavator and various trucks;
- Existing offices and buildings;
- 15m^3 fuel storage tank.

After the clay material is extracted from the quarries, it is then temporarily stockpiled on site, where after it is transported by means of truck to the brick manufacturing plant (also owned and operated by Era Stene) located in Olifantsfontein, Ekurhuleni, where various types of bricks are being manufactured for the local market. The Life of Mine (LoM) of the existing southern quarry operations is estimated to comprise sufficient reserves to supply Era Stene with clay material for the next 3-5 years. Era Stene therefore has to expand the footprint of their existing clay mining operations in order to be able to sustain their brick manufacturing plant with clay material. This will prolong the life of the clay mining operations by approximately 30 years and ensure prolonged existing employment opportunities for those currently working on the premises. The intention is to make use of the property directly adjacent, towards the east of the existing operations (an increase of approximately 60.93 hectares), as it also belongs to Era Stene.

3 ASSESSMENT METHODOLOGY

The section below outlines the assessment methodologies utilised in the study.

3.1 Methodology for Assessing Heritage Site Significance

This HIA report was compiled by PGS Heritage for the proposed expansion to the existing Era Stene Mine. The applicable maps, tables and figures are included, as stipulated in the NHRA (no 25 of 1999) and the NEMA (no 107 of 1998). The HIA process consisted of three steps:

Step I – Literature Review: The background information to the field survey relies greatly on the archival and historical cartographic material assessed as part of the study, as well as a study of the available literature.

Step II – Physical Survey: A physical survey was conducted through the proposed project area by a fieldwork team comprising one heritage specialist (Stephany van der Walt), and archaeological field assistant (Joseph Moela). The study was completed on foot and by vehicle on 7 April 2016. Written descriptions, photographs and GPS coordinates were taken of all heritage sites identified during the survey.

Step III – The final step involved the recording and documentation of relevant archaeological and heritage resources, the assessment of resources in terms of the HIA criteria and report writing, as well as mapping and recommendations.

The significance of identified heritage sites was based on five 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)
    - Low - <10/50m^2
    - Medium - 10-50/50m^2
    - High - >50/50m^2
- Uniqueness; and
- Potential to answer present research questions.

Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be expressed as follows:

A - No further action necessary;
B - Mapping of the site and controlled sampling required;
C - No-go or relocate development activity position;
D - Preserve site, or extensive data collection and mapping of the site; and
E - Preserve site.

Impacts on these sites by the development will be evaluated as follows:

3.2 Site Significance

Site significance classification standards prescribed by the SAHRA (2006) and approved by the ASAPA for the Southern African Development Community (SADC) region, were used for the purpose of this report.

Table 2: Site significance classification standards as prescribed by SAHRA.

FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION
National Significance (NS)	Grade 1	-	Conservation; National Site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; Provincial Site nomination
Local Significance (LS)	Grade 3A	High	Conservation; Mitigation not advised
Local Significance (LS)	Grade 3B	High	Mitigation (Part of site should be retained)
Generally Protected A (GP.A)	Grade 4A	High/Medium	Mitigation before destruction
Generally Protected B (GP.B)	Grade 4B	Medium	Recording before destruction
Generally Protected C (GP.C)	Grade 4C	Low	Destruction

3.3 Methodology for Impact Assessment

In order to ensure uniformity, a standard impact assessment methodology will be utilised so that a wide range of impacts can be compared. The impact assessment methodology makes provision for the assessment of impacts against the following criteria:

- Significance;
- Spatial scale;
- Temporal scale;
- Probability; and
- Degree of certainty.

A combined quantitative and qualitative methodology will be used to describe the impacts for each of the aforementioned assessment criteria. A summary of each of the qualitative descriptors along with the equivalent quantitative rating scale for each of the aforementioned criteria is given in Table 3.

Table 3: Quantitative rating and equivalent descriptors for the impact assessment criteria.

RATING	SIGNIFICANCE	EXTENT SCALE	TEMPORAL SCALE
1	VERY LOW	*Isolated corridor / proposed corridor*	Incidental
2	LOW	*Study area*	Short-term
3	MODERATE	*Local*	Medium-term
4	HIGH	*Regional / Provincial*	Long-term
5	VERY HIGH	*Global / National*	Permanent

A more detailed description of each of the assessment criteria is given in the following sections.

3.3.1 Significance Assessment

Significance rating (importance) of the associated impacts embraces the notion of extent and magnitude, but does not always clearly define these since their importance in the rating scale is very relative. For example, the magnitude (i.e. the size) of area affected by atmospheric pollution may be extremely large (1000km^2) but the significance of this effect is dependent on the concentration or level of pollution. If the concentration is great, the significance of the impact would be HIGH or VERY HIGH, but if it is diluted it would be VERY LOW or LOW. Similarly, if 60 ha of a grassland type are destroyed the impact would be VERY HIGH if only 100 ha of that grassland type were known. The

impact would be VERY LOW if the grassland type was common. A more detailed description of the impact significance rating scale is given in Table 4 below.

Table 4: Description of the significance rating scale.

RATING		DESCRIPTION
5	VERY HIGH	Of the highest order possible within the bounds of impacts which could occur. In the case of adverse impacts: there is no possible mitigation and/or remedial activity which could offset the impact. In the case of beneficial impacts, there is no real alternative to achieving this benefit.
4	HIGH	Impact is of substantial order within the bounds of impacts, which could occur. In the case of adverse impacts: mitigation and/or remedial activity is feasible but difficult, expensive, time-consuming or some combination of these. In the case of beneficial impacts, other means of achieving this benefit are feasible but they are more difficult, expensive, time-consuming or some combination of these.
3	MODERATE	Impact is real but not substantial in relation to other impacts, which might take effect within the bounds of those which could occur. In the case of adverse impacts: mitigation and/or remedial activity are both feasible and fairly easily possible. In the case of beneficial impacts: other means of achieving this benefit are about equal in time, cost, effort, etc.
2	LOW	Impact is of a low order and therefore likely to have little real effect. In the case of adverse impacts: mitigation and/or remedial activity is either easily achieved or little will be required, or both. In the case of beneficial impacts, alternative means for achieving this benefit are likely to be easier, cheaper, more effective, less time consuming, or some combination of these.
1	VERY LOW	Impact is negligible within the bounds of impacts which could occur. In the case of adverse impacts, almost no mitigation and/or remedial activity is needed, and any minor steps which might be needed are easy, cheap, and simple. In the case of beneficial impacts, alternative means are almost all likely to be better, in one or a number of ways, than this means of achieving the benefit. Three additional categories must also be used where relevant. They are in addition to the category represented on the scale, and if used, will replace the scale.
0	NO IMPACT	There is no impact at all - not even a very low impact on a party or system.

3.3.2 Spatial Scale

The spatial scale refers to the extent of the impact i.e. will the impact be felt at the local, regional, or global scale. The spatial assessment scale is described in more detail in Table 5

Table 5: Description of the significance rating scale.

RATING		DESCRIPTION
5	Global/National	The maximum extent of any impact.
4	Regional/Provincial	The spatial scale is moderate within the bounds of impacts possible, and will be felt at a regional scale (District Municipality to Provincial Level). The impact will affect an area up to 50km from the proposed site / corridor.
3	Local	The impact will affect an area up to 5km from the proposed route corridor / site.
2	Study Area	The impact will affect a route corridor not exceeding the boundary of the corridor / site.
1	Isolated Sites / proposed site	The impact will affect an area no bigger than the corridor / site.

3.3.3 Duration Scale

In order to accurately describe the impact it is necessary to understand the duration and persistence of an impact in the environment. The temporal scale is rated according to criteria set out in Table 6.

Table 6: Description of the temporal rating scale.

RATING		DESCRIPTION
1	Incidental	The impact will be limited to isolated incidences that are expected to occur very sporadically.
2	Short-term	The environmental impact identified will operate for the duration of the construction phase or a period of less than 5 years, whichever is the greater.
3	Medium term	The environmental impact identified will operate for the duration of life of the project.
4	Long term	The environmental impact identified will operate beyond the life of operation.
5	Permanent	The environmental impact will be permanent.

3.3.4 Degree of Probability

The probability or likelihood of an impact occurring will be described, as shown in Table 7 below.

Table 7: Description of the degree of probability of an impact occurring.

RATING	DESCRIPTION
1	Practically impossible
2	Unlikely
3	Could happen
4	Very Likely
5	It's going to happen / has occurred

3.3.5 Degree of Certainty

As with all studies it is not possible to be 100% certain of all facts, and for this reason a standard "degree of certainty" scale is used as discussed in Table 8. The level of detail for specialist studies is determined according to the degree of certainty required for decision-making. The impacts are discussed in terms of affected parties or environmental components.

Table 8: Description of the degree of certainty rating scale.

RATING	DESCRIPTION
Definite	More than 90% sure of a particular fact.
Probable	Between 70 and 90% sure of a particular fact, or of the likelihood of that impact occurring.
Possible	Between 40 and 70% sure of a particular fact, or of the likelihood of an impact occurring.
Unsure	Less than 40% sure of a particular fact or the likelihood of an impact occurring.
Can't know	The consultant believes an assessment is not possible even with additional research.

3.3.6 Quantitative Description of Impacts

To allow for impacts to be described in a quantitative manner in addition to the qualitative description given above, a rating scale of between 1 and 5 was used for each of the assessment criteria. Thus the total value of the impact is described as the function of significance, spatial and temporal scale as described below.

$$\textbf{\textit{Impact Risk}} = \frac{(\text{SIGNIFICANCE} + \textit{Spatial} + \text{Temporal})}{3} \times \frac{\text{Probability}}{5}$$

An example of how this rating scale is applied is shown in Table 9

Table 9: Example of Rating Scale

IMPACT	SIGNIFICANCE	SPATIAL SCALE	TEMPORAL SCALE	PROBABILITY	RATING
	LOW	*Local*	Medium Term	*Could Happen*	
Impact to air	**2**	***3***	**3**	**3**	**1.6**

Note: The significance, spatial and temporal scales are added to give a total of 8, that is divided by 3 to give a criteria rating of 2,67. The probability (3) is divided by 5 to give a probability rating of 0,6. The criteria rating of 2,67 is then multiplied by the probability rating (0,6) to give the final rating of 1,6.

The impact risk is classified according to 5 classes as described in Table 10.

Table 10: Impact Risk Classes.

RATING	IMPACT CLASS	DESCRIPTION
0.1 – 1.0	1	Very Low
1.1 – 2.0	2	Low
2.1 – 3.0	3	Moderate
3.1 – 4.0	4	High
4.1 – 5.0	5	Very High

Therefore with reference to the example used for air quality above, an impact rating of 1.6 will fall in the Impact Class 2, which will be considered to be a low impact.

4 CURRENT STATUS QUO

4.1 Description of Study Area

The land is flat and the majority of the land was previously and is currently used for maize farming (

Figure 3). A small homestead is primarily occupying the land to the north of the proposed expansion site but on the day of the field survey no occupants were present. The southern and northern portions of the proposed site are currently covered with maize with a central circular irrigated field. A single power line runs along the western boundary of the proposed expansion area.

Figure 3: Current status/use of the portion of land

5 ARCHIVAL AND DESKTOP RESEARCH FINDINGS

The aim of the archival and desktop background research is to identify possible heritage resources that could be encountered during the field work. The archival and desktop research focused on available information sources, which were used to compile a background history of the study area and surrounds, as summarised in Error! Reference source not found.. This data then informed the possible eritage resources to be expected during field surveying.

5.1 Archival and Historic Maps of the Study Area and Surrounding Landscape

5.1.1 First Edition of the 2628BA Topographical Sheet

A section of the First Edition of the 2628BA Topographical Sheet is depicted below. This map sheet was based on aerial photography undertaken in 1958, was surveyed in 1965 and was printed by the Trigonometrical Survey Office in 1966. An analysis of the map identified one grave site north of the

proposed expansion area, while additional analysis of aerial photography identified some anomalies in the maize fields that were investigated during field work.

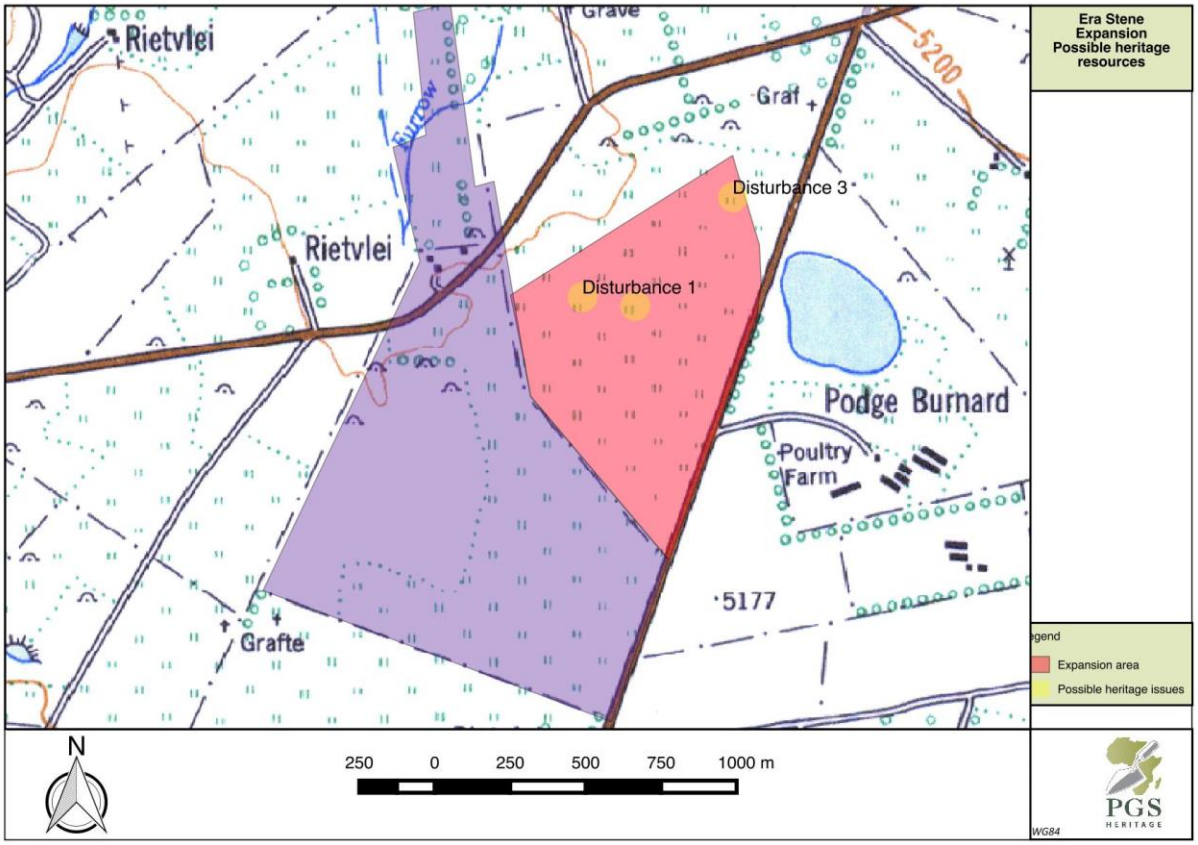


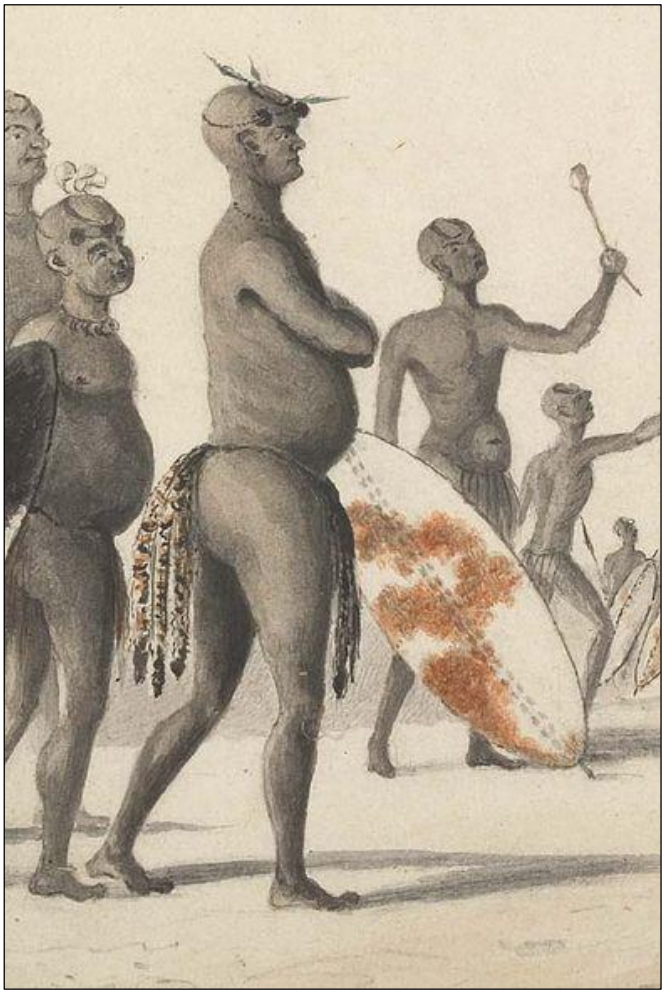
Figure 4 – Detailed view of a section of the First Edition of the 2628BA Topographic Sheet that was surveyed in 1965. The study area boundary is shown in red whereas the identified features discussed in the report are highlighted in yellow..

5.2 Historic Overview of Study Area and Surrounding Landscape

DATE	DESCRIPTION
2.5 million to 250 000 years ago	The Earlier Stone Age is the first phase identified in South Africa's archaeological history and comprises two technological phases. The earliest of these is known as Oldowan and is associated with crude flakes and hammer stones. It dates to approximately 2 million years ago. The second technological phase is the Acheulian and comprises more refined and better made stone artefacts such as the cleaver and bifacial hand axe. The Acheulian dates back to approximately 1.5 million years ago. No Early Stone Age sites are known to be in the vicinity of the study area. However, this is in all likelihood rather due to a lack of research focus on the surroundings of the study area than a lack of sites.

DATE	DESCRIPTION
250 000 to 40 000 years ago	The Middle Stone Age (MSA) is the second oldest phase identified in South Africa's archaeological history. This phase is associated with flakes, points and blades manufactured by means of the so-called 'prepared core' technique. A Middle Stone Age site is known from Primrose Ridge in Germiston (Harcus, 1945) (situated roughly 34 km west of the present study area) as well as two sites near Brakpan (Gaigher, 2013) (located roughly 16.6 km south-west of the present study area). However, no Middle Stone Age sites are known to be in the direct vicinity of the study area. However, this is in all likelihood rather due to a lack of research focus on the surroundings of the study area than a lack of sites.
40 000 years ago to the historic past	The Later Stone Age is the third archaeological phase identified and is associated with an abundance of very small artefacts known as microliths. No Later Stone Age sites are known to be in the vicinity of the study area. However, this is in all likelihood rather due to a lack of research focus on the surroundings of the study area than a lack of sites.
AD 1450 – AD 1650	The Uitkomst facies of the Blackburn Branch of the Urewe Ceramic Tradition represents the first Iron Age period to be identified for the surroundings of the study area. This facies can likely be dated to between AD 1650 and AD 1820. The decoration on the ceramics associated with this facies is characterised by stamped arcades, appliqué of parallel incisions, stamping as well as cord impressions and is described as a mixture of the characteristics of both Ntsuanatsatsi (Nguni) and Olifantspoort (Sotho). The Uitkomst facies (with the Makgwareng facies) is seen as the successors to the Ntsuanatsatsi facies. The Ntsuanatsatsi facies is closely related to the oral histories of the Early Fokeng and represent the earliest known movement of Nguni people out of Kwazulu-Natal into the inland areas of South Africa. In terms of this theory, the Bafokeng settled at Ntsuanatsatsi Hill in the present-day Free State Province. Subsequently, the BaKwena lineage broke away from the Bahurutshe cluster and crossed southward over the Vaal River to come in contact with the Bafokeng. As a result of this contact a Bafokeng-Bakwena cluster was formed, which moved northward and became further 'Sotho-ised' by coming into increasing contact with other Sotho-Tswana groups. This eventually resulted in the appearance of Uitkomst facies type pottery which contained elements of both Nguni and Sotho-Tswana speakers (Huffman, 2007). No sites associated with the Uitkomst facies are known from the surroundings of the study area.
AD 1700 – AD 1840	The Buispoort facies of the Moloko branch of the Urewe Ceramic Tradition is the next phase to be identified within the study area's surroundings. It is most likely dated to between AD 1700 and AD 1840. The key features on the decorated ceramics include rim notching, broadly incised chevrons and white bands, all with red ochre (Huffman, 2007). It is believed that the Madikwe facies developed into the Buispoort facies. The Buispoort facies is associated

DATE	DESCRIPTION
	with sites such as Boschhoek, Buffelshoek, Kaditshwene, Molokwane and Olifantspoort (Huffman, 2007). No sites associated with the Buispoort facies are known from the surroundings of the study area.
AD 1821 – AD 1823	After leaving present-day KwaZulu-Natal the Khumalo Ndebele (more commonly known as the Matabele) of Mzilikazi migrated through the general vicinity of the study area under discussion before reaching the central reaches of the Vaal River in the vicinity of Heidelberg in 1823 (www.mk.org.za). Two different settlement types have been associated with the Khumalo Ndebele. The first of these is known as Type B walling and was found at Nqabeni in the Babanango area of KwaZulu-Natal. These walls stood in the open without any military or defensive considerations and comprised an inner circle of linked cattle enclosures (Huffman, 2007). The second settlement type associated with the Khumalo Ndebele is known as Doornspruit, and comprises a layout which from the air has the appearance of a 'beaded necklace'. This layout comprises long scalloped walls (which mark the back of the residential area) which closely surround a complex core which in turn comprises a number of stone circles. The structures from the centre of the settlement can be interpreted as kitchen areas and enclosures for keeping small stock. It is important to note that the Doornspruit settlement type is associated with the later settlements of the Khumalo Ndebele in areas such as the Magaliesberg Mountains and Marico and represent a settlement under the influence of the Sotho with whom the Khumalo Ndebele intermarried. The Type B settlement is associated with the early Khumalo Ndebele settlements and conforms more to the typical Zulu form of settlement. As the Khumalo Ndebele passed through the general vicinity of the study areas shortly after leaving Kwazulu-Natal, one can assume that their settlements here would have conformed more to the Type B than the Doornspruit type of settlement. It must be stressed however that no published information could be found which indicates the presence of Type B sites in the general vicinity of the study area. No sites associated with this period of the archaeological history of the surroundings of the study area are presently known.

DATE	DESCRIPTION
 *Figure 5: King Mzilikazi of the Matabele. This illustration was made by Captain Cornwallis Harris in c. 1838 (www.sahistory.org.za).*	
1832	At the time, a Zulu impi of King Dingane moved through the general vicinity of the study area on their way to attack the Matabele of Mzilikazi who were settled along the Magaliesberg Mountains (Bergh, 1999).
1836	The first Voortrekker parties started crossing over the Vaal River at the time. The earliest Voortrekker party to cross over the Vaal River was the one under the leadership of Louis Trichardt and Johannes Jacobus Janse van Rensburg. Although the exact route followed by the Trichardt-Janse van Rensburg party was not recorded, one suggestion is that they passed through the strip of land in-between the Bronkhorst Spruit in the west and the Wilge River to the east (Bergh, 1999). These two rivers are located to the east of Delmas, and as a result some distance east of the present study area.
1841 – 1850	These years saw the early establishment of farms by the Voortrekkers in the general vicinity of the study area (Bergh, 1999).
1845	Both the district and town of Lydenburg was established in this year (Bergh, 1999). The district of Lydenburg at the time encompassed a massive land

DATE	DESCRIPTION
	mass, and it would appear that the study area fell just within this newly proclaimed district at the time.
1857	The district of Pretoria was established in 1857, with the town of that name established in 1855 (Bergh, 1999). The study area now fell within this newly proclaimed district.
1866	The town and district of Heidelberg were established in this year (Bergh, 1999). The study area fell within the Heidelberg district at the time.
1883 - 1887	In 1883, the farm, "The Springs" was surveyed by James Brooks. Coal was discovered in 1887 and the region soon became the most productive coal mining region in the country. Unfortunately, the low quality and inflammable nature of the coal resulted in most of the coal mines closing down after better quality coal was discovered in Witbank (Erasmus, 2004).
1899 – 1902	The South African War took place during this time. No events or activities during the war can be associated with the present study area. However, a number of such events and activities are known from the general vicinity. These will be briefly mentioned in paragraph below. Skirmishes or battles from the surrounding landscape include an action between a British force under the command Lieutenant-General J.D.P. French and a Boer commando of some 1 000 men on 23 July 1900. This main component of the battle occurred a short distance to the east and south-east of the present-day town of Delmas, at a distance of roughly 20 km east of the present study area (Changuion, 2001). During the early morning of 26 December 1900, a section of the Heidelberg Commando of some 350 men attacked the town of Benoni, as well as some of the gold mines surrounding the town, including the Kleinfontein Mine. The attack was a success, and according to some eye witnesses resulted in 22 British casualties (eight killed and 14 wounded) as well as the capture of three prisoners by the Boer commando (Blake, 2012). The town of Benoni is located 18.9 km west by south-west of the present study area. It is also interesting to note that the Boer Commando used the farm Rietkol as a meeting place from where the attack on Benoni proceeded (Blake, 2012). The farm Rietkol is located immediately east of the present study area.

DATE	DESCRIPTION
  *Figure 6: Henning Petrus Nicolaas Viljoen (left) of the Heidelberg Commando, who's diary provides an eyewitness account of the attack on Benoni and its mines on 26 December 1900 (Blake, 2012). The image on the right depicts Lieutenant-General J.D.P. French, the commanding officer of the British force at the battle which occurred in close proximity to Delmas on 23 July 1900 (Changuion, 2001:77).*	
1902	At the end of hostilities in 1902, the new Witwatersrand District was created from farms which were previously located in the districts of Krugersdorp, Heidelberg and Pretoria. The study area now fell within the district of Witwatersrand (Bergh 1999).
1907	The town of Delmas was laid out on the farm Witklip and comprised 192 residential stands, 48 smallholdings (of 4 hectares each) with a commange of 134 hectares. It was established by the owner of Witklip, Frenchman Frank Dumat (Erasmus, 2004). The name Delmas was derived from the French phrase '*de le mas*' which means 'of the small farm' (www.sa-venues.com). Delmas is located some 13km south east of the present study area.

5.3 Previous Heritage Impact Assessment Reports

Studies in the general vicinity of the study area are:

- ***Pistorius J. 2015. Cultural-Historical Impact Assessment for the proposed Amadwala Integrated Waste Management Facility, Ekurhuleni, Gauteng***.

  Dr. Julius Pistorius was commissioned to carry out a cultural-historical impact assessment for the proposed waste management facility on portions 14 and 27 of the Farm Holfontein 71-IR, on Inqwelo Street, off the K175 Road, Ekurhuleni, Gauteng. As indicated, this study area is located 9km north east of the Era Stene study area. Only one heritage site was located in the report's study area, namely a residence with historical significance.

In addition, a search of the South African Heritage Resources Information System database (SAHRIS – (http://www.sahra.org.za/sahris), identified several previous HIA's undertaken within the wider area. A selection of previous studies for the area is listed in descending chronological order below:

- ***Pelser AJ. 2015. Baseline Study & Heritage Assessment Report for the proposed Gold One International Holfontein Project, near Springs, Gauteng***.

  A Pelser Archaeological Consulting was appointed by Prime Resources (Pty) Ltd to conduct a Baseline Study Phase 1 HIA for the Gold One International Holfontein Project, situated near the old Holfontein Shaft and existing Modder East operations. The study area is located on the East Rand, near Springs, in Gauteng and is located approximately approximately 21km south west of of the Era Stene study area. During the assessment a number sites and features were identified, all related to earlier gold mining at Holfontein. The sites and features recorded during the assessment include the remains of various structures such as headgear foundation and bases, the old Holfontein Shaft as well as some mine buildings. Old houses and a cemetery were recorded next to the haul road from Holfontein to the Modder East operations. The old Mine Compound was also identified during the study.

- ***Pelser AJ, 2014. Updated Report on a Phase 1 HIA for a proposed Coal Mine on Portions 26, 46 & 47 of the Farm Droogenfontein 242IR, Delmas District, Mpumalanga. For Shangoni Management Service (Pty) Ltd.***

  A Pelser Archaeological Consulting was appointed by Shangoni Management Services (Pty) Ltd, on behalf of Ngululu Resources (Pty) Ltd, to conduct a Phase 1 HIA for the proposed development of an opencast Coal Mine on portions 26, 46 & 47 of the farm Droogenfontein 242-IR, near Sundra (in the Delmas district), Mpumalanga Province. This study area is located roughly 10 km south-west of the existing Era Stene operations. Two sites were identified on Portion 26, namely a cemetery and the remains of a farm labour settlement, possibly related to the grave site. No heritage sites, features or objects were identified on the two other portions of land.

- ***Van Vollenhoven, A. 2011. A Report on a Cultural Heritage Baseline Study and Impact Assessment for the Proposed New Kleinfontein Goldmine (Modder East Operations), close to Springs, Gauteng Province. For Prime Resources (Pty) Ltd.***

  Archaetnos cc was requested by Prime Resources (Pty) Ltd to conduct a cultural heritage baseline study and impact assessment for the proposed Modder East Operations at the New Kleinfontein Goldmine. This is to the east of the town of Boksburg and to the north of the town of Springs in the Gauteng Province. During the survey, three sites of cultural heritage significance were identified close to the proposed development area namely an extensive cemetery as well as two small clusters of dilapidated industrial buildings. No other cultural resources were identified.

- ***Coetzee, FP. 2008. Cultural Heritage Survey of Portion 1 of Portion 228 (a Portion of 213) and Portion 63 of the Farm Geduld 123 IR, Gauteng Province. For AGES Environmental.***

  The project study area was situated between the suburbs of Dersley and Eastvale, east of Benoni and Brakpan. Two built structures of recent date and an extensive cemetery containing approximately 100 graves were recorded. Extensive mining activities were observed outside of the project area which are associated with Geduld Proprietary Mines.

- ***Van der Walt, J. 2008. Archaeological Impact Assessment on the Remainder of Portion 7 of the Farm Modderfontein East 72 IQ, Benoni, Gauteng Province. Prepared by the Wits Heritage Contracts Unit for Eco Assessment Environmental Consultants.***

  The impact assessment was undertaken for a proposed mixed use residential township development on the Remainder of Portion 7 of the farm Modderfontein East 72 IR, Benoni, Gauteng Province. The only site identified in the study area was an area of approximately 3ha in extent which included the foundations of several demolished buildings. Several other features associated with the site were also identified, including a ventilation shaft and an ash dump. These features were identified from an archival map as being part of the old mine compound for the Modder East mine.

- ***Van Schalkwyk, JA. 1997. A Survey of Cultural Resources in the Proposed Erwat Sewer Outfall Route, north of Springs, Gauteng Province. For Afrosearch Index. Prepared by the National Cultural History Museum***.

  A survey to establish the nature, extent and significance of cultural resources were made in the area of the proposed Erwat Sewer outfall route and two proposed sewer sites, Springs District, Gauteng Province. The area surveyed was located on the farms Klipfontein 70 IR, Welgedacht 74IR, Modderfontein 76IR and Geduld 123IR of the Springs, Benoni and Brakpan districts, Gauteng Province. A number of sites were identified during the survey including two cemeteries and a number of structures. One of the two cemeteries was still in use, and located at the north-eastern extremity of the proposed sewer outfall route on the farm Klipfontein. The second, containing approximately 1000 graves, is located just west of an old Modderfontein slimes dam. These graves are apparently of Chinese mine labourers and date to the turn of the century. A number of structures, all possibly related to mining or farming activities, were located. Except for one site, all were in ruins. The Klipfontein No 5 Shaft, though abandoned, shows architecture that is specific to mining activities of the last 50 years. A number of houses, possibly dating to the 1930s were identified on the farm Welgedag, next to the railroad. These houses belonged to Transnet.

6 FIELDWORK FINDINGS

On 7 April 2016 PGS staff, Ms S van der Walt (Archaeologist) and Mr J Moela (field technician), visited the site to survey for possible heritage features. The PGS staff arrived on site at 10:15 and continued a perimeter walk down of the property. After informing the client of PGS' arrival, permission was received from the client to interview the occupants of the property and possible labour that would be encountered. No interviews on the history of the property or possible heritage features noted by local inhabitants or labour were collected as no persons were available. Transects of the property were conducted focussing on areas of possible heritage features (PHF) that were noted when viewing past aerial images of the land and the topographical map from 1965.

The following features were identified

6.1 Heritage Sites identified in the Field

All possible heritage features as noted from the aerial photographs were inspected and photographed and marked as of no heritage significance.

PHF No.	Latitude, Longitude	Description	Photograph
1	-26.093808°, 28.567570°	No observed disturbance in this location	

PHF No.	Latitude, Longitude	Description	Photograph
2	-26.094067°, 28.569317°	Electrical power supply	
3	-26.090839°, 28.572550°	Telephone cables poles in the maize field.	

7 IMPACT OF PROPOSED DEVELOPMENT ON HERITAGE RESOURCES

In this section the impact of the proposed development on the study area will be calculated.

7.1 Introduction

No heritage resources were identified during the survey.

In the section that follows, impact risk assessments will be undertaken on those sites that will be impacted upon by the proposed development.

7.2 Risk Calculation for the Impact of the Proposed Development on possible heritage resources

Based on the impact assessment criteria the impact by the proposed development on heritage resources is seen as low.

Table 11: Impact calculation

Activity	Impact	Proposed Mitigation Measures	Post-Activity Impact			Cumulative Impact			Post-Mitigatory Impact		
			Ranking Criteria	Scores	Impact Rating	Ranking Criteria	Scores	Impact Rating	Ranking Criteria	Scores	Impact Rating
Construction Phase											
Fencing and site clearing	Impact on unidentified heritage resources	• Stop construction if any heritage resources – such as graves, human remains or fossils are identified • Inform SAHRA and have a qualified heritage practictioner evaluated the finds and recommend appropriate actions	Significance	2	1.73	Significance	1	0.2	Significance	1	0.2
			Impact Extent	1		Impact Extent	1		Impact Extent	1	
			Duration Scale	1		Duration Scale	1		Duration Scale	1	
			Degree of Probability	2		Degree of Probability	1		Degree of Probability	1	
			Degree of Certainty	Probable		Degree of Certainty	Probable		Degree of Certainty	Probable	

No impact is expected past the construction phase

8 MITIGATION MEASURES

The risk calculation above has shown that the impact of the proposed development on heritage resources in the study area is a Very Low impact.

8.1 Mitigation Measures required for chance finds

Stop construction if any heritage resources – such as graves, human remains or fossils are identified; and

Inform SAHRA and have a qualified heritage practictioner evaluated the finds and recommend appropriate actions

9 CONCLUSIONS AND RECOMMENDATIONS

PGS was appointed by Jones & Wagener (J&W) to undertake a Phase 1 HIA that forms part of the EIA and EMPr for the proposed expansion of the southern clay quarry at the Era Stene Mine in the Mpumalanga Province.

An analysis of historical maps identified one grave site north of the study area, while additional analysis of aerial photography identified some anomalies in the maize fields that were investigated during field work. All possible heritage features as noted from the aerial photographs were inspected and photographed and marked as of no heritage significance.

Based on the impact assessment criteria the impact by the proposed development on heritage resources is seen as very low. To address the potential impacts on possible heritage features that might be discovered during construction, the following management measure is recommended:

- Stop construction if any heritage resources – such as graves, human remains or fossils are identified; and
- Inform SAHRA and have a qualified heritage practitioner evaluated the finds and recommend appropriate actions

The overall impact of the development on heritage resources is seen as very low and impacts can be mitigated to acceptable levels.

10 REFERENCES

10.1 Published Sources

ALLEN, V. 2007. Kruger's Pretoria: Building and Personalities of the city in the nineteenth century. Protea Boekhuis: Pretoria.

BERGH, IS. (ed.). 1999. Geskiedenisatlas van Suid-Afrika. Die vier noordelike provinsies. Pretoria: J.L. van Schaik.

BLAKE, A. 2012. Boerekryger: 'n Seun se Hoogste Offer. Tafelberg: Cape Town.

CHANGUION, L. 2001. Silence of the Guns: The History of the Long Toms of the Anglo-Boer War. Protea Book House, Pretoria

CONAN-DOYLE, A - The Great Boer War. 1902

ERASMUS, B.P.J. 2004. On Route in South Africa. Third edition. Jonathan Ball Publishers: Johannesburg

FOURIE, W. 2008. Archaeological Impact Assessments within South African Legislation. South African Archaeological Bulletin 63 (187): 77–85, 2008.

FRASER, M. 1986. Some Reminiscences: Lionel Phillips. A.D. Donker: Johannesburg.

HARCUS, J. 1945. A Middle Stone Age Industry From Primrose Ridge District: Germiston Transvaal. South African Journal of Science. Vol. 41 p. 459-464

HUFFMAN, T.N. 2007. Handbook to the Iron Age: The archaeology of Pre-Colonial Farming Societies in Southern Africa. University of KwaZulu-Natal Press, Scottsville.

HUMPHRISS, D. & D.G. THOMAS. 1968. Benoni: Son of my Sorrow. Town Council of Benoni: Benoni.

MASON, RJ. 1986. Origins of black people of Johannesburg and the southern western central Transvaal AD 350-1880'.

MENDELSOHN, R. 1991. Sammy Marks: The Uncrowned King of the Transvaal. David Philip: Cape Town.

MITCHELL, P. 2002. The archaeology of southern Africa. Cambridge University Press.

MOHLAMME, J.S. 1995. Soldiers without Reward: Africans in South Africa's Wars in *Military History Journal*, vol. 10, no. 1.

OBERHOLSTER, J.J. 1972. The historical monuments of South Africa. Cape Town: Rembrandt van Rijn Foundation for Culture at the request of the National Monuments Council. Pp. 330-331.

RAPER, PE. 2004. Dictionary of Southern African Place Names. Jonathan Ball Publishers.

SOUTH AFRICAN MINING YEARBOOK, 1941/2

WARWICK, P. 2004. Black People and the South African War 1899-1902. Cambridge University.

ZIERVOGEL, D. 1954. The Eastern Sotho. Pretoria.

10.2 Unpublished Sources

COETZEE, FP. 2008. Cultural Heritage Survey of Portion 1 of Portion 228 (a Portion of 213) and Portion 63 of the Farm Geduld 123 IR, Gauteng Province. For AGES Environmental.

Gaigher, S. 2013. Heritage Impact Assessment for the Proposed Holgatfontein Residential Development, Nigel, Ekurhuleni. For Metroprojects Gauteng.

PELSER AJ. 2015. Baseline Study & Heritage Assessment Report For The Proposed Gold One International Holfontein Project, Near Springs, Gauteng.

PELSER AJ, 2014. Updated Report On A Phase 1 HIA For A Proposed Coal Mine On Portions 26, 46 & 47 Of The Farm Droogenfontein 242IR, Delmas District, Mpumalanga. For Shangoni Management Service (Pty) Ltd.

PISTORIUS, JCC. 2015. A Phase I Heritage Impact Assessment (HIA) Study For The Amadwala Integrated Waste Management Facility Near Springs In The Ekurhuleni Local Municipality In The Gauteng Province. Prepared For: Golder Associates Africa (Pty) Ltd.

VAN DER WALT, J. 2008. Archaeological Impact Assessment On Remainder Of Portion 7 Of The Farm Modderfontein East 72 IQ, Benoni, Gauteng Province. Prepared by the Wits Heritage Contracts Unit For Eco Assessment Environmental Consultants.

VAN SCHALKWYK, JA. 1997. A Survey Of Cultural Resources In The Proposed Erwat Sewer Outfall Route, North Of Springs, Gauteng Province. For Afrosearch Index. Prepared By The National Cultural History Museum.

VAN VOLLENHOVEN, A. 2011. A Report On A Cultural Heritage Baseline Study And Impact Assessment For The Proposed New Kleinfontein Goldmine (Modder East Operations) Close To Springs, Gauteng Province. For: Prime Resources (Pty) Ltd.

10.3 Archival Sources

National Archives, BAO, 3/4373, 12/2/6/S47/1

National Archives, DIR 241 - Rand-Pretoria Directory, 1950

National Archives, KAB, 1062, UC8455

National Archives, PWD, 959, 3/2397

National Archives, RAK, 3036

National Archives, SAB, BVE, 487, W8/197

National Archives, TPD, 10382/1979

10.4 Internet Sources

http://www.angloboerwar.com/boer-war

www.csg.dla.gov.za

www.cwgc.org

www.gold1.co.za

www.mk.org.za

www.sahistory.org.za

http://www.sahra.org.za/sahris

www.wikipedia.org

10.5 National Geo-Spatial Information, Department of Rural Development

The historic aerial photographs and topographic maps were all obtained from National Geo-Spatial Information at the Department of Rural Development in Cape Town.

10.6 Google Earth and Google Earth Pro

All contemporary aerial views used in this report were obtained using Google Earth and Google Earth Pro. This is true for overlays made as well.

Appendix A

LEGISLATIVE REQUIREMENTS – TERMINOLOGY AND ASSESSMENT CRITERIA

1. GENERAL PRINCIPLES

In areas where there has not yet been a systematic survey to identify conservation-worthy places, a permit is required to alter or demolish any structure older than 60 years. This will apply until a survey has been completed and identified heritage resources are formally protected.

Archaeological and palaeontological sites, materials, and meteorites are the source of our understanding of the evolution of the earth, life on earth and the history of people. In terms of the heritage legislation, permits are required to damage, destroy, alter, or disturb such sites. People who already possess such material are required to register it. The management of heritage resources is integrated with environmental resources and this means that before development takes place heritage resources are assessed and, if necessary, rescued or mitigated.

In addition to the formal protection of culturally significant graves, all graves which are older than 60 years and are not in a cemetery (such as ancestral graves in rural areas) are protected. The legislation protects the interests of communities who have an interest in the graves: they must be consulted before any disturbance takes place. The graves of victims of conflict and those associated with the liberation struggle should be identified, cared for, protected and memorials erected in their honour.

Anyone who intends to undertake a development must notify the heritage resource authority and if there is reason to believe that heritage resources will be affected, an impact assessment report must be compiled at the applicant's (i.e. mining company or development company) cost. Thus, the applicant will be able to proceed without uncertainty about whether work will have to be stopped if an archaeological or heritage resource is discovered.

According to the National Heritage Act (Act 25 of 1999 section 32) it is stated that:

An object or collection of objects, or a type of object or a list of objects, whether specific or generic, that is part of the national estate and the export of which SAHRA deems it necessary to control, may be declared a heritage object, including –

- 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;
- books, records, documents, photographic positives and negatives, graphic material, film or video or sound recordings, excluding those that are public records as defined in section 1 (xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996), or in a provincial law pertaining to records or archives; and
- any other prescribed category.

Under the National Heritage Resources Act (Act No. 25 of 1999), provisions are made that deal with, and offer protection to, all historic and prehistoric cultural remains, including graves and human remains.

2. GRAVES AND CEMETERIES

Graves younger than 60 years fall under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925) as well as the Human Tissues Act (Act 65 of 1983) and National Health Act (Act 61 0f 2003) and are the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the Office of the relevant Provincial Premier. This function is usually delegated to the Provincial MEC for Local Government and Planning or in some cases the MEC for Housing and Welfare. Authorisation for exhumation and reinterment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. In order to handle and transport human remains, the institution conducting the relocation should be authorised under Section 24 of Act 65 of 1983 (Human Tissues Act).

Graves older than 60 years, but younger than 100 years, fall under Section 36 of Act 25 of 1999 (National Heritage Resources Act) as well as the Human Tissues Act (Act 65 of 1983) and National Health Act (Act 61 0f 2003) and are the jurisdiction of the South African Heritage Resource Agency (SAHRA). The procedure for Consultation Regarding Burial Grounds and Graves (Section 36(5) of Act 25 of 1999) is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in the category located inside a formal cemetery

administrated by a local authority will also require the same authorisation as set out for graves younger than 60 years over and above SAHRA authorisation.

If the grave is not situated inside a formal cemetery but is to be relocated to one, permission from the local authority is required and all regulations, laws and by-laws set by the cemetery authority must be adhered to.

Appendix B

CURRICULUM VITAE

WOUTER FOURIE
Professional Heritage Specialist and Professional Archaeologist and Director PGS Heritage

Summary of Experience

Specialised expertise in Archaeological Mitigation and excavations, Cultural Resource Management and Heritage Impact Assessment Management, Archaeology, Anthropology, Applicable survey methods, Fieldwork and project management, Geographic Information Systems, including *inter alia* -

Involvement in various grave relocation projects (some of which relocated up to 1000 graves) and grave "rescue" excavations in the various provinces of South Africa

Involvement with various Heritage Impact Assessments, within South Africa, including -

- Archaeological Walkdowns for various projects
- Phase 2 Heritage Impact Assessments and EMPs for various projects
- Heritage Impact Assessments for various projects
- Iron Age Mitigation Work for various projects, including archaeological excavations and monitoring
- Involvement with various Heritage Impact Assessments, outside South Africa, including -
    - Archaeological Studies in Democratic Republic of Congo
    - Heritage Impact Assessments in Mozambique, Botswana and DRC
    - Grave Relocation project in DRC

Key Qualifications

BA [Hons] (Cum laude) - Archaeology and Geography - 1997

BA - Archaeology, Geography and Anthropology - 1996

Professional Archaeologist - Association of Southern African Professional Archaeologists (ASAPA) - Professional Member

Accredited Professional Heritage Specialist – Association of Professional Heritage Practitioners (APHP)

CRM Accreditation (ASAPA) -

- Principal Investigator - Grave Relocations
- Field Director – Iron Age
- Field Supervisor – Colonial Period and Stone Age
- Accredited with Amafa KZN

Key Work Experience

2003- current - Director – Professional Grave Solutions (Pty) Ltd

2007 – 2008 - Project Manager – Matakoma-ARM, Heritage Contracts Unit, University of the Witwatersrand

2005-2007 - Director – Matakoma Heritage Consultants (Pty) Ltd

2000-2004 - CEO– Matakoma Consultants

1998-2000 - Environmental Coordinator – Randfontein Estates Limited. Randfontein, Gauteng

1997-1998 - Environmental Officer – Department of Minerals and Energy. Johannesburg, Gauteng

Worked on various heritage projects in the SADC region including, Botswana, Mozambique and the Democratic Republic of the Congo

environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/ or 12/9/11/L
NEAS Reference Number:	DEA/EIA
Date Received:	

Application for integrated environmental authorisation and waste management licence in terms of the-

(1) National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014; and

(2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 921, 2013

PROJECT TITLE

Application for an Environmental Authorisation and a Water Use Licence in support of an Amendment to a Mining Right for the extension of an existing clay quarry near Delmas on behalf of Era Stene (Pty) Ltd

Specialist:	Heritage Specialist		
Contact person:	Wouter Fourie		
Postal address:	PO Box 32542, Totiusdal,		
Postal code:	0134	Cell:	0828513575
Telephone:	012 332 5305	Fax:	
E-mail:	wouter@pgsheritage.co.za		
Professional affiliation(s) (if any)	Registered professional Archaeologist (ASAPA) Registered Professional Heritage Practitioner (APHP)		

Project Consultant:			
Contact person:			
Postal address:			
Postal code:		Cell:	
Telephone:		Fax:	
E-mail:			

4.2 The specialist appointed in terms of the Regulations_

I, Wouter Fourie , declare that -- General declaration:

I act as the independent specialist in this application;
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, Regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct; and
I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist:

PGS Heritage (Pty) Ltd

Name of company (if applicable):

14 April 2016

Date: