HERITAGE SCOPING REPORT, FOR INCLUSION IN THE ENVIRONMENTAL SCOPING REPORT FOR THE PROPOSED MASHISHING HOUSING DEVELOPMENT, MPUMALANGA

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Declaration of Independence

The report has been compiled by PGS Heritage an appointed Heritage Specialist for Environmental Impact Management Services (Pty) Ltd. The views stipulated in this report are purely objective and no other interests are displayed during the decision making processes.

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EXECUTIVE SUMMARY

PGS Heritage (Pty) Ltd (PGS) was appointed by Environmental Impact Management Services (Pty) Ltd (EIMS), to undertake a Heritage Scoping Report (HSR) that forms part of the Environmental Scoping Report (ESR) towards the planning to implementation process of the proposed Mashishing Housing Development within the Thaba Chweu Local Municipality, in Mpumalanga Province.

The Heritage Scoping has shown that the study area and surrounding area has some heritage resources situated inside the Phase A and B foot print areas. Through data analysis and a site investigation the following issues were identified from a heritage perspective.

1.1 Archaeological Heritage

The data analysis has enabled the identification of possible heritage sensitive areas that included:

- Dwellings;
- Clusters of dwellings (homesteads and farmsteads);
- Archaeological Sensitive areas (based on historical descriptions); and
- Structures.

Note that these structures refer to possible heritage sites as listed in *Table* 1.

Table 1 - Tangible Heritage site in the study area (Phases A and B)

Name	Description	Legislative protection
Archaeology – Iron age settlements	Older than 100 years	NHRA Sect 3 and 35
Architectural Structures	Possibly older than 60 years	NHRA Sect 3 and 34
Cemeteries	Graves	NHRA Sect 3 and 36 and MP Graves Act

1.2 Impact rating

Preliminary impact rating has shown that the impact on heritage resources can possibly be medium to high, but through detailed fieldwork during the EIA phase this impact can probably be reduced to Medium-Low or totally mitigated through design.

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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;

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; and

iii. 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.

Early Stone Age
The archaeology of the Stone Age between 700 000 and 2 500 000 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 National Heritage Resources Act 25 of 1999).

Heritage resources
This means any place or object of cultural significance.

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

Late Stone Age
The archaeology of the last 20 000 years associated with fully modern people.

Late Iron Age (Early Farming Communities)
The archaeology of the last 1000 years up to the 1800's, associated with iron-working and farming activities such as herding and agriculture.

Middle Stone Age
The archaeology of the Stone Age between 20 000-300 000 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.

ABBREVIATIONS	DESCRIPTION
ASAPA	Association of South African Professional Archaeologists
DEA	Department of Environmental Affairs
DWA/ DWS	Department of Water Affairs/ Department of Water and Sanitation
EAP	Environmental Impact Assessment Practitioner
EIA	Environmental Impact Assessment
ESA	Early Stone Age
ESR	Environmental Scoping Report
HIA	Heritage Impact Assessment
HSR	Heritage Scoping Report
I&AP	Interested & Affected Party
MPRDA	**Mineral and Petroleum Resources Development Act**
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
SADC	Southern African Development Community
SAHRA	South African Heritage Resources Agency

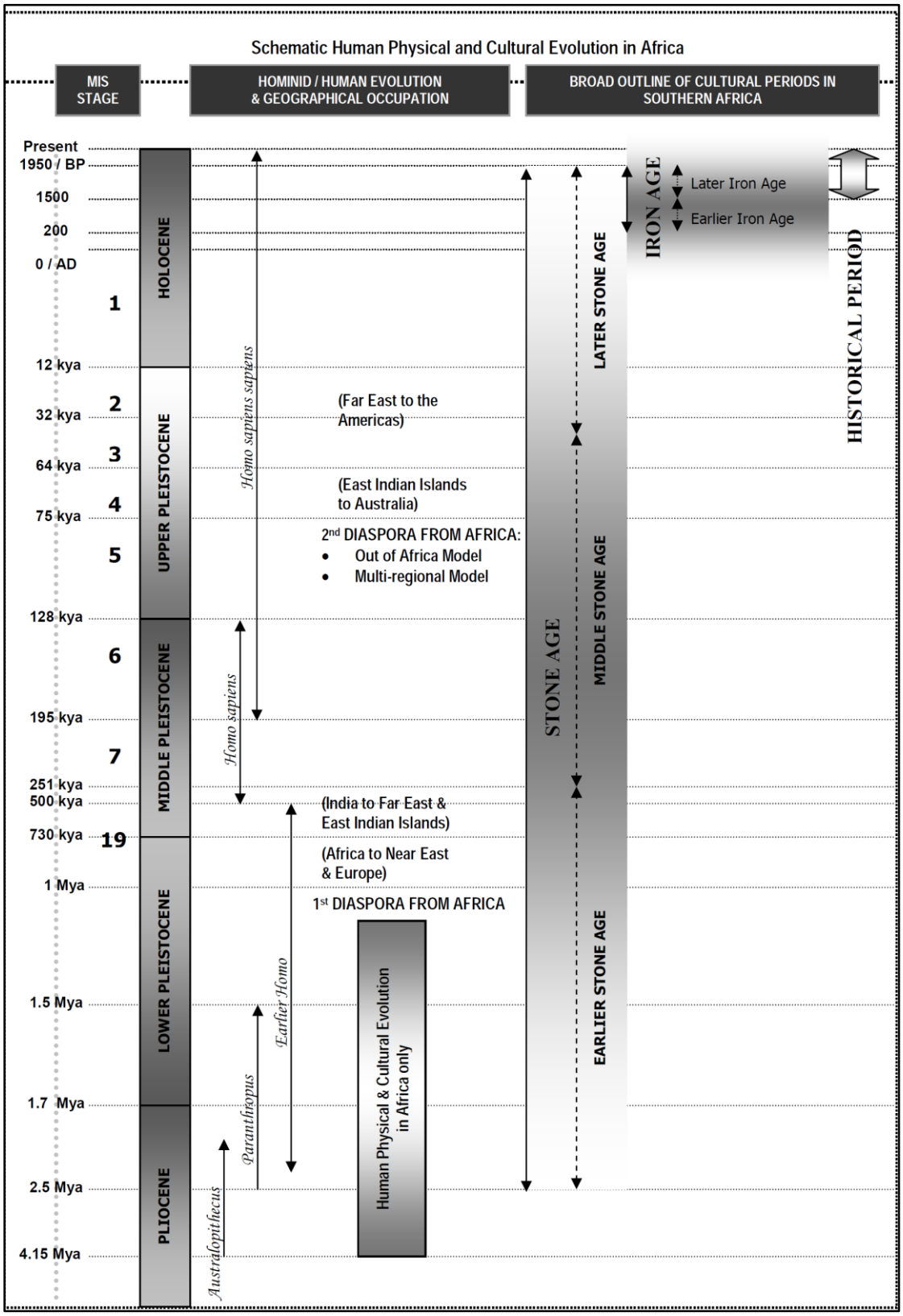


Figure 1 – Human and Cultural Time line in Africa (Morris, 2008)

1 INTRODUCTION

PGS Heritage (Pty) Ltd (PGS) was appointed by Environmental Impact Management Services (Pty) Ltd (EIMS), to undertake a Heritage Scoping Report (HSR) that forms part of the Environmental Scoping Report (ESR) as part of the planning to implementation process of the proposed Mashishing Housing Development within the Thaba Chweu Local Municipality, in Mpumalanga Province.

1.1 Scope of the Study

The aim of the study is to identify possible heritage sites and finds that may occur in the proposed development area, comprising of Phase A and Phase B. The HSR aims to inform the ESR in the selection of the relevant sites to be studied during the Environmental Impact Assessment (EIA) to assist the developer in managing the discovered heritage resources in a responsible manner, in order to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act (Act 25 of 1999) (NHRA).

1.2 Specialist Qualifications

This HSR was compiled by 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. PGS will only undertake heritage assessment work where they have the relevant expertise and experience to undertake that work competently.

Wouter Fourie, *the Project Coordinator and author*, is registered with the Association of Southern African Professional Archaeologists (ASAPA) as a Professional Archaeologist and is accredited as a Principal Investigator; he is further an Accredited Professional Heritage Practitioner with the Association of Professional Heritage Practitioners (APHP).

Jessica Angel, Field Archaeologist, holds a Master's degree in Archaeology and is registered as a Professional Archaeologist with the Association of Southern African Professional Archaeologists (ASAPA).

1.3 Assumptions and Limitations

Not detracting in any way from the comprehensiveness of the proposed fieldwork to be 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.

Such observed or located heritage features and/or objects 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 relevant to this type of project:

i. National Environmental Management Act (NEMA), Act 107 of 1998; and
ii. National Heritage Resources Act (NHRA), Act 25 of 1999.

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

i. National Environmental Management Act (NEMA) Act 107 of 1998
    a. Basic Environmental Assessment (BEA) – Section (23)(2)(d);

b. Environmental Scoping Report (ESR) – Section (29)(1)(d);
c. Environmental Impact Assessment (EIA) – Section (32)(2)(d); and
d. Environmental Management Plan (EMP) – Section (34)(b).

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.

The NHRA stipulates that cultural heritage resources may not be disturbed without authorization from the relevant heritage authority and are protected under the Section 3 of the Act.

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…" The NHRA is utilized as the basis for the identification, evaluation and management of heritage resources and in the case of CRM those resources specifically impacted on by development as stipulated in Section 38 of NHRA, and those developments administered through NEMA, and MPRDA legislation. In the latter cases the feedback from the relevant heritage resources authority is required by the State and Provincial Departments managing these Acts before any authorizations are granted for development. The last few years have seen a significant change towards the inclusion of heritage assessments as a major component of Environmental Impact Processes required by NEMA. This change requires us to evaluate the Section of these Acts relevant to heritage (Fourie, 2008).

The NEMA 23(2)(b) states that an integrated environmental management plan should, "…*identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage*".

A study of subsections (23)(2)(d), (29)(1)(d), (32)(2)(d) and (34)(b) and their requirements reveals the compulsory inclusion of the identification of cultural resources, the evaluation of the impacts of the proposed activity on these resources, the identification of alternatives and the management procedures for such cultural resources for each of the documents noted in the Environmental Regulations. A further important aspect to be taken account of in the Regulations under NEMA is the Specialist Report requirements laid down in Section 33 of the regulations (Fourie, 2008).

2 TECHNICAL DETAILS OF THE PROJECT

2.1 Site Location and Description

Table 2: Site location details and description

Location	The new proposed development is situated to the northwest of the town of Mashishing (Lydenburg) in the Thaba Chweu Municipal area
Land	The development area consists of: Phase A – 85,0329 ha Phase B – 146,3554 ha

The proposed development will be done in 2 phase Phases A and B, both of which are already occupied by extensive informal settlements.

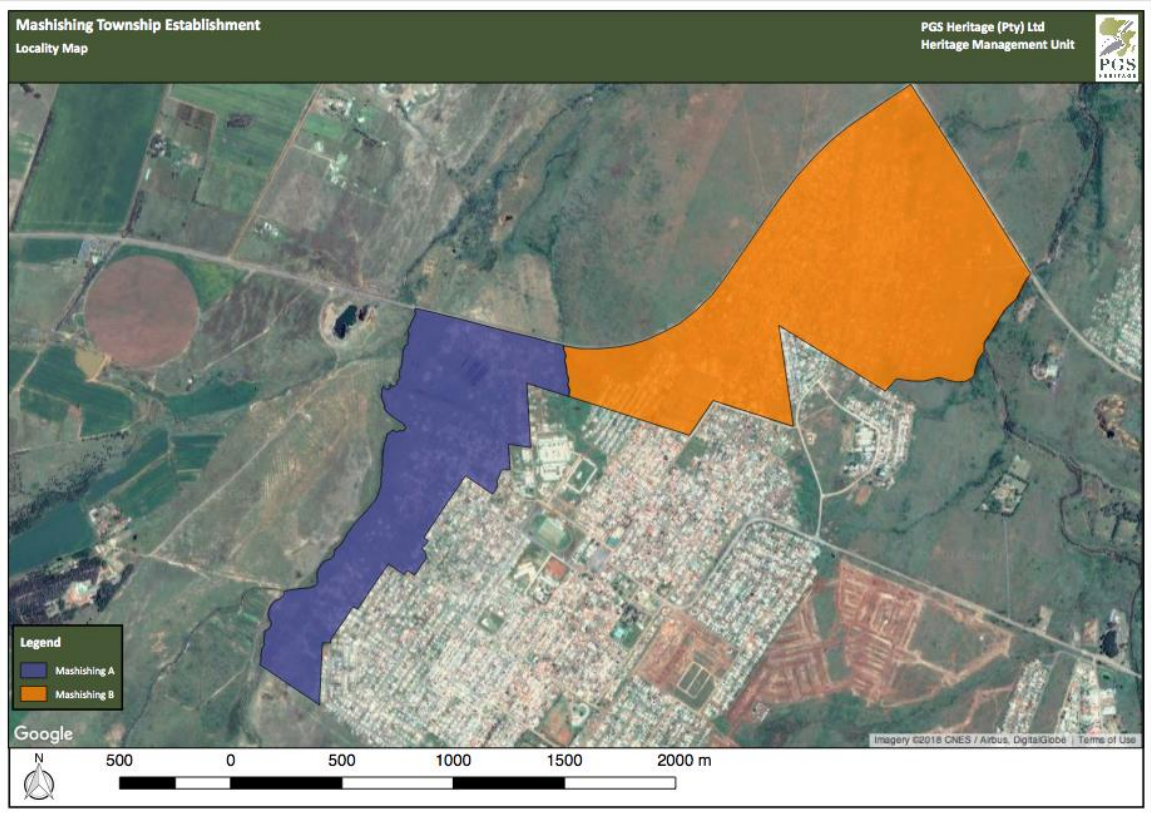


Figure 2 – Locality and proposed layout of the development (Image provided by EIMS, 2017)

3 ASSESSMENT METHODOLOGY

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

3.1 Methodology for Assessing Heritage Site significance

This HSR report was compiled by PGS Heritage (PGS) for the proposed Mashishing Housing Development project. The applicable maps, tables and figures, are included as stipulated in the NHRA (no 25 of 1999), the National Environmental Management Act (NEMA) (no 107 of 1998). The HIA process consisted of three steps:

Step I – Literature Review: The background information to the field survey relies greatly on the Heritage Background Research.

Step II – Physical Survey: A physical survey will be conducted on foot through the proposed project area by a qualified archaeologist and is aimed at locating and documenting sites falling within and adjacent to the proposed development footprint.

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

The determination of the significance of heritage sites will be based on four 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 - <10/50m2
    - Medium - 10-50/50m2
    - High - >50/50m2;
- 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:

3.1.1 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 3: 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 Significance	Conservation; Mitigation not advised
Local Significance (LS)	Grade 3B	High Significance	Mitigation (Part of site should be retained)
Generally Protected A (GP.A)	-	High / Medium Significance	Mitigation before destruction
Generally Protected B (GP.B)	-	Medium Significance	Recording before destruction
Generally Protected C (GP.A)	-	Low Significance	Destruction

3.2 Methodology for Impact Assessment

The impact assessment methodology is guided by the requirements of the NEMA EIA Regulations (2014). The broad approach to the significance rating methodology is to determine the environmental risk (ER) by considering the consequence (C) of each impact (comprising Nature, Extent, Duration, Magnitude, and Reversibility) and relate this to the probability/likelihood (P) of

the impact occurring. This determines the environmental risk. In addition other factors, including cumulative impacts, public concern, and potential for irreplaceable loss of resources, are used to determine a prioritisation factor (PF) which is applied to the ER to determine the overall significance (S).

3.2.1 Determination of Environmental Risk:

The significance (S) of an impact is determined by applying a prioritisation factor (PF) to the environmental risk (ER).

The environmental risk is dependent on the consequence (C) of the particular impact and the probability (P) of the impact occurring. Consequence is determined through the consideration of the Nature (N), Extent (E), Duration (D), Magnitude (M), and reversibility (R) applicable to the specific impact.

For the purpose of this methodology the consequence of the impact is represented by:

$$C = \frac{(E+D+M+R)}{4} \times N$$

Each individual aspect in the determination of the consequence is represented by a rating scale as defined in Table 4.

Table 4: Criteria for Determining Impact Consequence

Aspect	Score	Definition
Nature	- 1	Likely to result in a negative/ detrimental impact
	+1	Likely to result in a positive/ beneficial impact
Extent	1	Activity (i.e. limited to the area applicable to the specific activity)
	2	Site (i.e. within the development property boundary),
	3	Local (i.e. the area within 5 km of the site),
	4	Regional (i.e. extends between 5 and 50 km from the site
	5	Provincial / National (i.e. extends beyond 50 km from the site)
Duration	1	Immediate (<1 year)
	2	Short term (1-5 years),
	3	Medium term (6-15 years),
	4	Long term (the impact will cease after the operational life span of the project),

Aspect	Score	Definition
	5	Permanent (no mitigation measure of natural process will reduce the impact after construction).
Magnitude/ Intensity	1	Minor (where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected),
	2	Low (where the impact affects the environment in such a way that natural, cultural and social functions and processes are slightly affected),
	3	Moderate (where the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way),
	4	High (where natural, cultural or social functions or processes are altered to the extent that it will temporarily cease), or
	5	Very high / don't know (where natural, cultural or social functions or processes are altered to the extent that it will permanently cease).
Reversibility	1	Impact is reversible without any time and cost.
	2	Impact is reversible without incurring significant time and cost.
	3	Impact is reversible only by incurring significant time and cost.
	4	Impact is reversible only by incurring prohibitively high time and cost.
	5	Irreversible Impact

Once the C has been determined the ER is determined in accordance with the standard risk assessment relationship by multiplying the C and the P. Probability is rated/scored as per

Table 5.

Table 5: Probability Scoring

Probability	1	Improbable (the possibility of the impact materialising is very low as a result of design, historic experience, or implementation of adequate corrective actions; <25%),
	2	Low probability (there is a possibility that the impact will occur; >25% and <50%),
	3	Medium probability (the impact may occur; >50% and <75%),
	4	High probability (it is most likely that the impact will occur- > 75% probability), or
	5	Definite (the impact will occur),

The result is a qualitative representation of relative ER associated with the impact. ER is therefore calculated as follows:

ER= C x P

Table 6: Determination of Environmental Risk

Consequence	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
		1	2	3	4	5
		Probability				

The outcome of the environmental risk assessment will result in a range of scores, ranging from 1 through to 25. These ER scores are then grouped into respective classes as described in Table 7.

Table 7: Significance Classes

Environmental Risk Score	
Value	**Description**
< 9	Low (i.e. where this impact is unlikely to be a significant environmental risk),
≥9; <17	Medium (i.e. where the impact could have a significant environmental risk),
≥ 17	High (i.e. where the impact will have a significant environmental risk).

The impact ER will be determined for each impact without relevant management and mitigation measures (pre-mitigation), as well as post implementation of relevant management and mitigation measures (post-mitigation). This allows for a prediction in the degree to which the impact can be managed/mitigated.

3.2.2 Impact Prioritisation:

In accordance with the requirements of Appendix 3(3)(j) the 2014 EIA Regulations (GNR 982), and further to the assessment criteria presented in the Section above it is necessary to assess each potentially significant impact in terms of:

- Cumulative impacts; and
- The degree to which the impact may cause irreplaceable loss of resources.

In addition it is important that the public opinion and sentiment regarding a prospective development and consequent potential impacts is considered in the decision making process.

In an effort to ensure that these factors are considered, an impact prioritisation factor (PF) will be applied to each impact ER (post-mitigation). This prioritisation factor does not aim to detract from the risk ratings but rather to focus the attention of the decision-making authority on the higher priority/significance issues and impacts. The PF will be applied to the ER score based on the assumption that relevant suggested management/mitigation impacts are implemented.

Table 8: Criteria for Determining Prioritisation

Public response (PR)	Low (1)	Issue not raised in public response.
	Medium (2)	Issue has received a meaningful and justifiable public response.
	High (3)	Issue has received an intense meaningful and justifiable public response.
Cumulative Impact (CI)	Low (1)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely that the impact will result in spatial and temporal cumulative change.
	Medium (2)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.
	High (3)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is highly probable/definite that the impact will result in spatial and temporal cumulative change.
Irreplaceable loss of resources (LR)	Low (1)	Where the impact is unlikely to result in irreplaceable loss of resources.
	Medium (2)	Where the impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.

	High (3)	Where the impact may result in the irreplaceable loss of resources of high value (services and/or functions).

The value for the final impact priority is represented as a single consolidated priority, determined as the sum of each individual criteria represented in Table 9. The impact priority is therefore determined as follows:

Priority = PR + CI + LR

The result is a priority score which ranges from 3 to 9 and a consequent PF ranging from 1 to 2 (Refer to Table 9).

Table 9: Determination of Prioritisation Factor

Priority	Ranking	Prioritisation Factor
3	Low	1
4	Medium	1.17
5	Medium	1.33
6	Medium	1.5
7	Medium	1.67
8	Medium	1.83
9	High	2

In order to determine the final impact significance the PF is multiplied by the ER of the post mitigation scoring. The ultimate aim of the PF is to be able to increase the post mitigation environmental risk rating by a full ranking class, if all the priority attributes are high (i.e. if an impact comes out with a medium environmental risk after the conventional impact rating, but there is significant cumulative impact potential, significant public response, and significant potential for irreplaceable loss of resources, then the net result would be to upscale the impact to a high significance).

Table 10: Final Environmental Significance Rating

Environmental Significance Rating	
Value	**Description**
< 10	Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
≥10 <20	Medium (i.e. where the impact could influence the decision to develop in the area),
≥ 20	High (i.e. where the impact must have an influence on the decision process to develop in the area).

4 HERITAGE BACKGROUND

The high level archival research focused on available information sources that were used to compile a general background history of the study area and surrounds.

4.1 Aspects of the area's history

4.1.1 Archaeological Background

The province of Mpumalanga is known to be rich in archaeological sites that tell the story of humans and their predecessors in the region going back some 1,7 million years (Delius & Hay, 2009). The pre-colonial period is divided broadly into the Stone Age and the Iron Age *(Refer to **Figure 1** for a visual representation of the human time line).*

The Stone Age refers to the earliest people of South Africa who relied mainly on stone for their tools and were hunter-gatherers. This period is divided into the Earlier, Middle and Later Stone Age:

- *Earlier Stone Age:* The period from ± 2.5 million yrs. – ± 250 000 yrs. ago. Acheulean stone tools are dominant.
- *Middle Stone Age*: Various stone tool industries in South Africa dating from ± 250 000 yrs. – 40 000 yrs. before present.
- *Later Stone Age:* The period from ± 40 000 yrs. before present to the period of contact with either Iron Age farmers or European colonists (Delius & Hay, 2009; Morris, 2008).

The Iron Age as a whole represents the spread of Bantu speaking people whose way of life was pastoral-agricultural and includes both the Pre-Historic and Historic periods. As indicated by the name, this period is distinguished by the knowledge of extraction and use of various metals, mainly iron. Similarly to the Stone Age, it can also be divided into three periods:

- *The Early Iron Age:* Most of the first millennium AD;
- *The Middle Iron Age*: 10th to 13th centuries AD; and
- *The Late Iron Age:* 14th century to colonial period (Delius & Hay, 2009; Morris, 2008).

The archaeological literature does not contain much information on the Stone Age archaeology of this area, since this period has not been researched extensively in Mpumalanga (Esterhuysen & Smith, 2007). However, it is clear from the general archaeological record that the larger Mpumalanga region has been inhabited by humans since Earlier Stone Age (ESA) times. Although no Stone Age sites are known from the immediate vicinity of the study area, there are some sites recorded in the greater region (Esterhuysen & Smith, 2007). Examples of such sites are noted below.

Stone Age Sites

An Earlier Stone Age site is located at Maleoskop near Groblersdal. Concentrations of ESA stone tools were found in erosion gullies along the Rietspruit (Esterhuysen & Smith, 2007). Evidence for the Middle Stone Age (MSA) period has been excavated from Bushman Rock Shelter, situated on the farm Klipfonteinhoek in the Ohrigstad District. The MSA layers indicated that the cave was visited repeatedly over a long period, between approximately 40 000 years ago and 27.000 Before Present (Esterhuysen & Smith, 2007). Two Later Stone Age (LSA) sites were found at the farm Honingklip near Badplaas in the Carolina District, (Esterhuysen & Smith, 2007).

Iron Age Sites

<u>Early Iron Age</u>

Early farming communities moved into the Mpumalanga area around 500 AD. These early farmers used metal tools and pottery and lived in fairly permanent agricultural villages. The most well-known EIA site in the area is the Lydenburg Heads site in the Sterkstroom Valley.

Late Iron Age

Late Farmer societies developed extensive stone settlements around Lydenburg, Badfontein, Sekhukhuneland, Roossenekal and Steelpoort (Delius & Hay, 2009). The greater Belfast area specifically, is known for its large complexes of LIA stonewalling. Although there was some early research on the stone ruins in the general region of the then-named eastern Transvaal, systematic investigation of the ruins only began in the last decade (Collett, 1982). Evers (1975) and Mason (1968) both undertook surveys of aerial photographs of the general area and identified a vast number of such settlements between Lydenburg and Machadodorp. Evers noted that settlements are not evenly distributed over the area, largely for topographical reasons (1975). These settlements typically consisted of three interrelated elements: homesteads, with cattle kraals surrounded by enclosures for human habitation; stone-edged paths or roadways, probably for movement of cattle; and stone terraces, for agricultural cultivation. Most of the homesteads were built in symmetrical patterns, some of which were reproduced in rock engravings found close to these settlements (Delius and Hay, 2009).

With regard to dating, the beginning of the Late Iron Age in this region is obscure. At the time of Evers' article there were no sites known that were intermediate in age between the Early Iron Age sites and the later stone-walled sites. However, since elsewhere in the then-named Transvaal and Orange Free State, stone-walled building appeared to start around A.D. 1450-1500, this was thought to be true in this region as well (Evers, 1975).

4.1.2 History of Lydenburg Iron Age

The basis of cultural sequence is a combination of ceramic typology, stratigraphy, and radiocarbon dates. The incomplete sequence of the Lydenburg area recognises four phases: Marateng, Eiland, Klingbeil and Lydenburg. In the following section, a short synopsis will be given of the Lydenburg and Klingbeil phases.

- Lydenburg Phase

  Five sites with Lydenburg pottery have been excavated up to 1981. These are the Heads site, Doornkop, Plaston, Langdraai and Klipspruit. All these sites are located on lower valley slopes in interfluve situations at the confluence of two streams. These sites are relatively large measuring between 7 to 15 hectares.

- The Lydenburg Heads Site

During the discovery of the site in 1964 seven clay heads, pottery, achatina and metal beads, bone and ivory objects and some stone bowls were found. Charcoal found was later radiocarbon dated between 600 – 700 AD (Evers, 1981).

The find of the heads was unique and only two other excavations produced fragments of the similar construction, however the Heads site is still the main find spot for these terracotta heads (Evers, 1981)

- Klingbeil Phase

The sites of the Klingbeil Phase appear to have a similar distribution as the Lydenburg Phase. The Klingbeil Nature Reserve sites and other Early Iron Age sites are essentially in the same topographical location (Evers, 1981).

- Klingbeil 2530AB1 and 2

The site is situated in the Gustav Klingbeil Nature Reserve. It covers an area of approximately 4 hectares. The site was severely damaged by the construction of a dam spillway in 1976. The sites were covered by a 0,5 to 1 meter layer of colluvium making it impossible to identify from surface features. Both these site belong to the Early Iron Age Tradition (Evers, 1981). (See Map of find sites for survey for position of these sites).

- Settlement location and layout

Collett (1979) as well as Marker and Evers (1976) have indicated that settlements were located on the lower foot slopes and spur ends, while a westerly aspect was preferred.

Homesteads can be divided into two groups. The first comprises two concentric circles and is mostly small. The second is more elaborate and larger. It comprises of a central ring with two opposite openings with a number of concentric circles around it. The huts were usually built between the two walls. The outer wall is usually mistaken for a terrace wall and not seen as part of the settlement (Evers, 1981).

Terraces on gentle slopes area often just stone lines possibly serving as boundary markers between fields. On steeper slopes, close-set, well-built walls are found retaining up to a meter of soil (Evers, 1981).

Cattle tracks usually link directly from the outside of the homesteads to the central kraal. Several major cattle tracks are found with ach settlement linking several homesteads

Rock Engravings

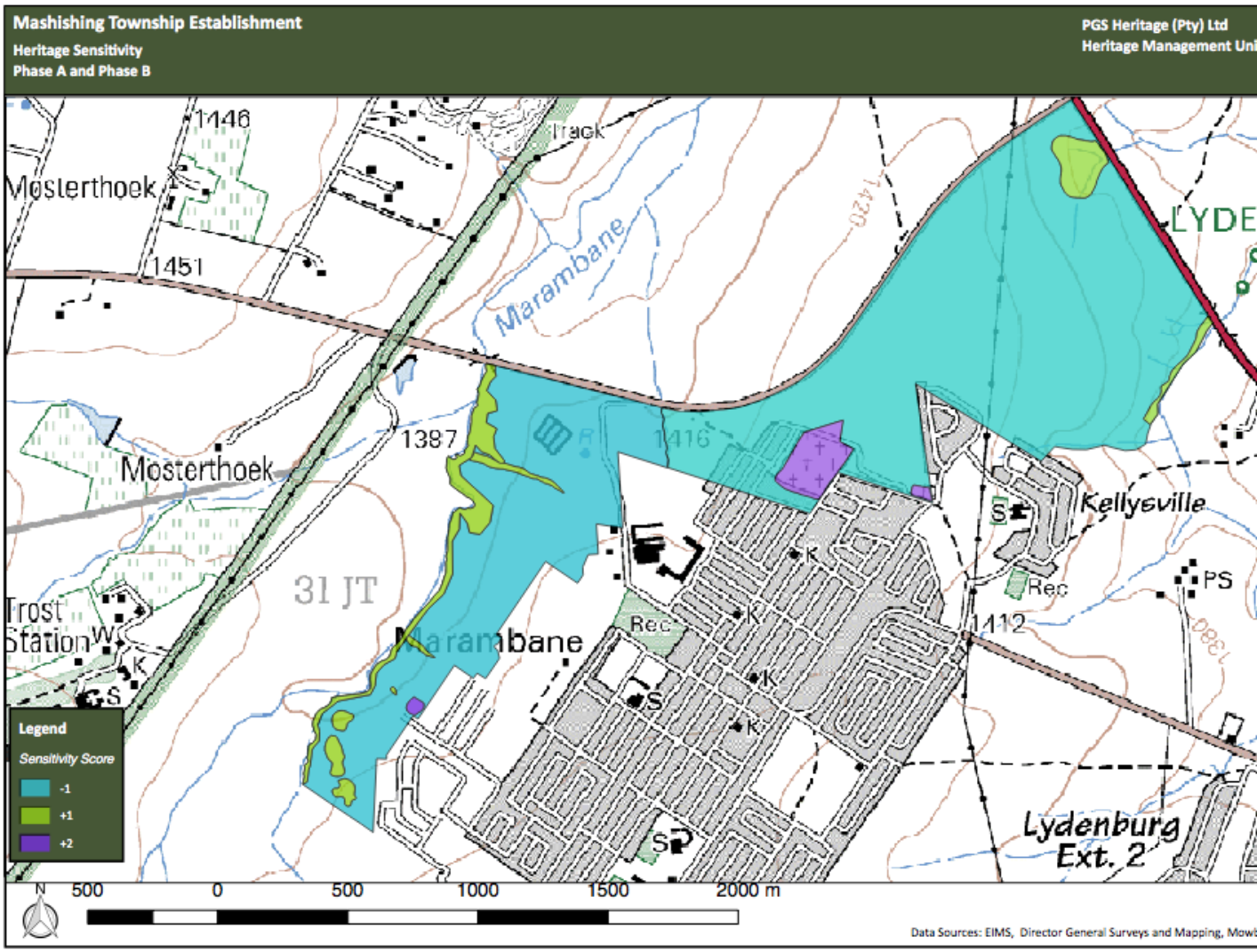
An article by Maggs (1995), explains that these agriculturist engravings are mainly dominated by depictions of ground plans representing the shape of settlements people built and lived in. Virtually all known engraved sites are in the vicinity of Late Iron Age settlements and it is now known that such engravings are much more common than was previously thought. Fieldwork in several such regions has produced many formerly unrecorded sites within the limited areas searched. Therefore, Maggs recommended that future fieldwork on the stone-built settlements should incorporate an examination of neighbouring rock outcrops for possible engravings (*ibid*). Maggs' article highlights that such images may represent abstract or symbolic spatial arrangements reflecting the cosmology of the society that made them. He uses an example taken from the Pedi, a northern Sotho group linked geographically and culturally with the Mpumalanga engravings. Within this system, social and religious structure was, and among many rural communities still is, clearly inseparable. Each member literally knows their place within the homestead according to their age, sex and status (*ibid*).

Ethnographic History

The Pedi oral tradition refers to the people living near Orighstad and Lydenburg as Koni (Hunt, 1931 from Evers, 1981). '…*They were raided early in Pedi history under Chief Moukangoe and later came under Pedi rule in the days of Thulare who reigned in the late eighteenth and early nineteenth centuries. One of Thulare's sons was placed in charge of the Koni near Orighstad. The Pedi west of the Steelpoort River and the Koni were devastated by Mzilikazi in about 1826*. Hunt (1931) recorded accounts *of retreat to caves and other refuges in the mountains, severe famine, stock loss and cannibalism. Caves near Orighstad and Sabie, and krantz situations near Lydenburg all seem to have been occupied late in the Iron Age…*', (Evers, 1981).

4.2 Findings of the Heritage Screening

The findings can be compiled as follows and have been combined to produce a heritage sensitivity map for the project based on the desktop assessment (*Figure 3* and



).

4.2.1 Heritage

The sensitivity maps were produced by overlying:

- Satellite Imagery;
- Current Topographical Maps; and
- First edition Topographical Maps dating from the 1960's.

This enabled the identification of possible heritage sensitive areas that included:

- Dwellings;
- Clusters of dwellings (homesteads and farmsteads);
- Archaeological Sensitive areas; and
- Structures/Buildings.

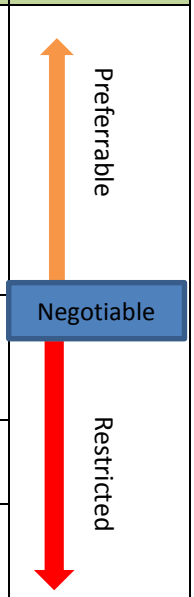
By superimposition and analysis it was possible to rate these structure/areas according to age and thus their level of protection under the NHRA. Note that these structures refer to possible tangible heritage sites as listed in *Table 11*.

Table 11: Tangible heritage site in the study area

Name	Description	Legislative protection
Archaeology - Iron Age Sites	Older than 100 years	NHRA Sect 3 and 35
Architectural Structures	Possibly older than 60 years	NHRA Sect 3 and 34
Cemeteries	Graves	NHRA Sect 3 and 36 and MP Graves Act

Based on the analysis and possible extent of the mitigation that could be required to enable development in the areas of heritage sensitivity, a sensitivity rating was given to each area (*Figure 5*). This rating scale is based on Table 12.

Table 12: Sensitivity ratings and weighting

Sensitivity Rating	Description	Weighting	Preference
Least Concern	The inherent feature status and sensitivity is already degraded. The proposed development will not affect the current status and/or may result in a positive impact. These features would be the preferred alternative for mining or infrastructure placement.	-1	
Low/Poor	The proposed development will have not have a significant effect on the inherent feature status and sensitivity.	0	
High	The proposed development will negatively influence the current status of the feature.	+1	
Very High	The proposed development will negatively significantly influence the current status of the feature.	+2	

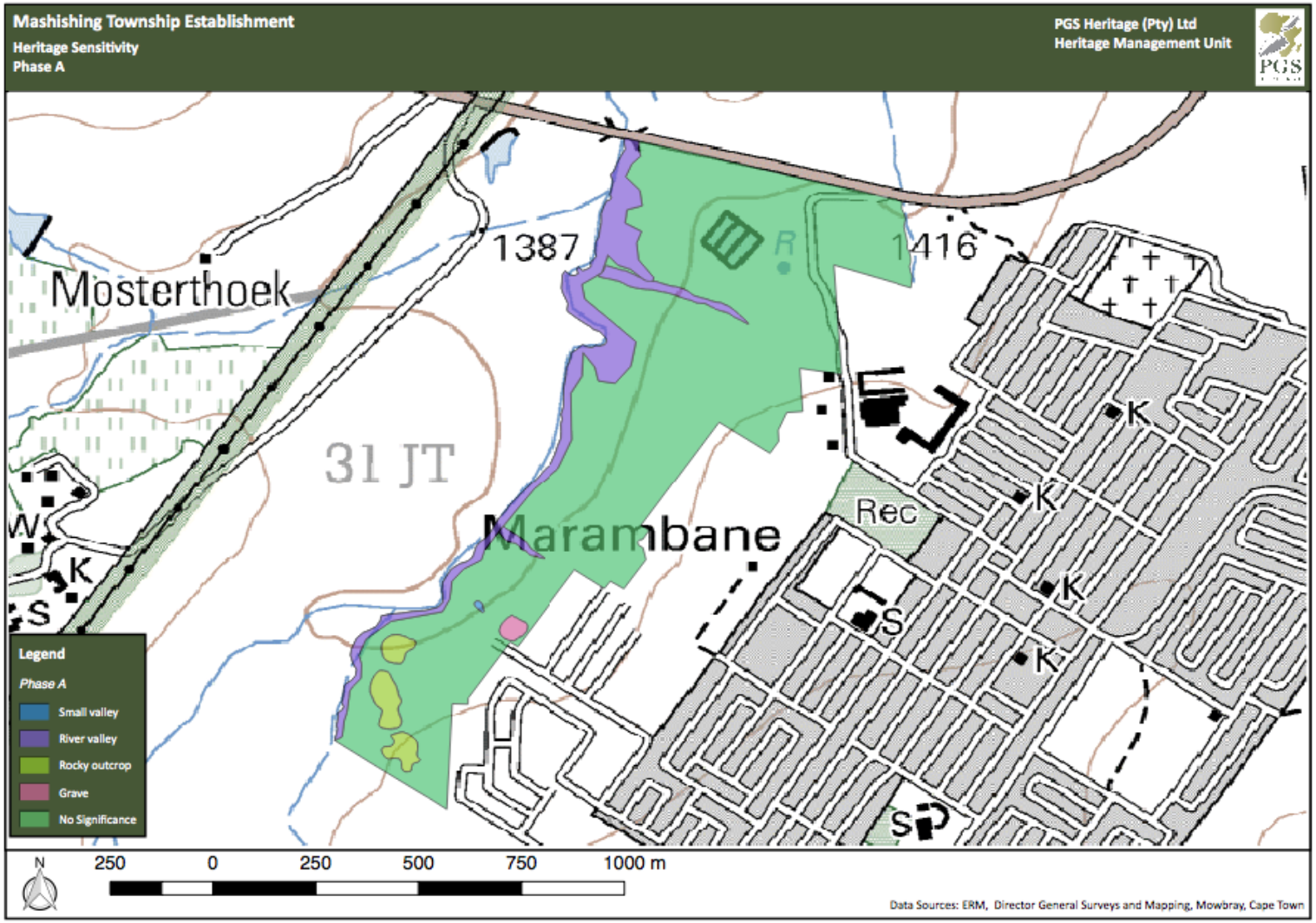


Figure 3 – Heritage sensitivity map indicating possible sensitive areas – Phase A

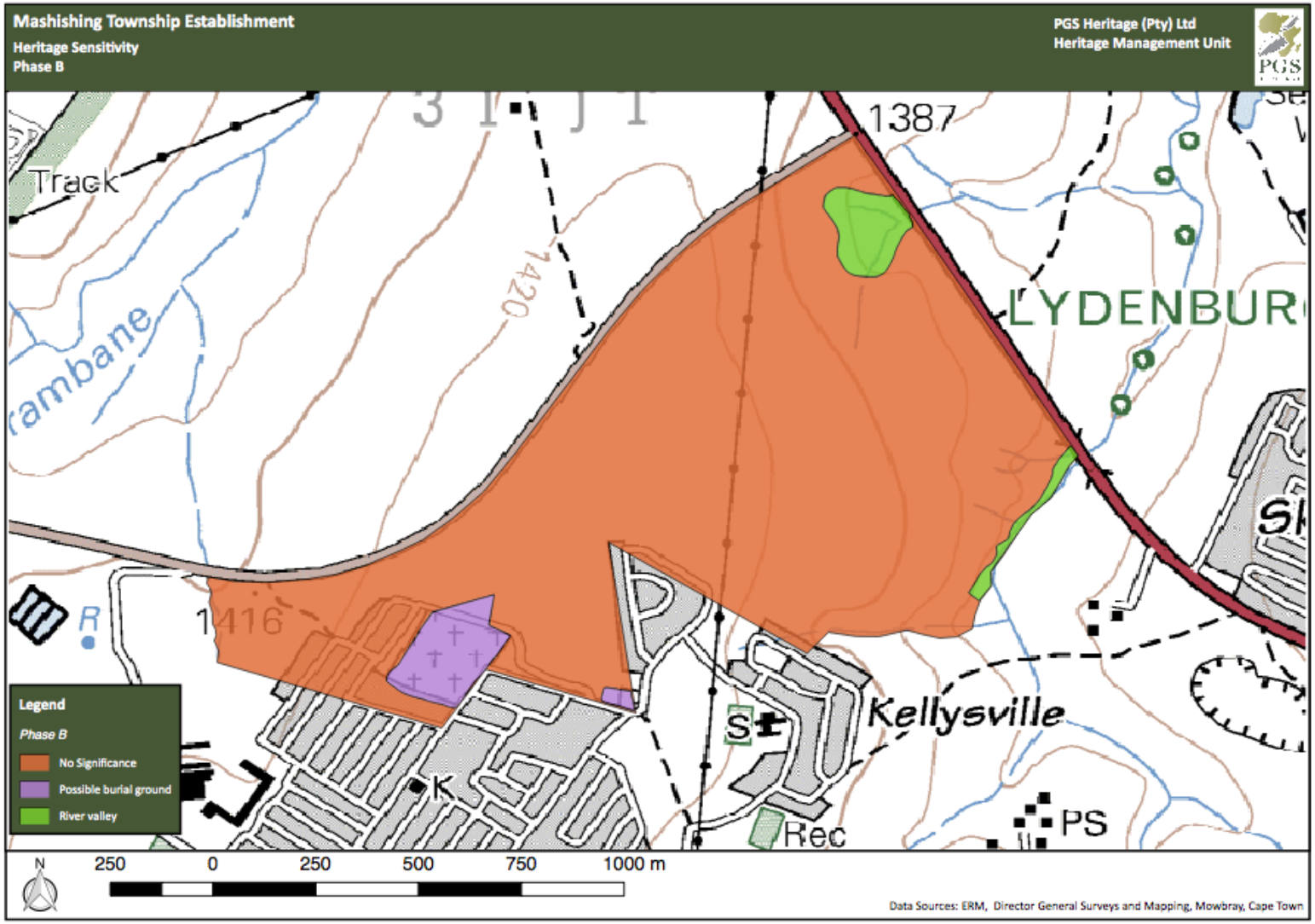


Figure 4 – Heritage sensitivity map indicating possible sensitive areas – Phase B

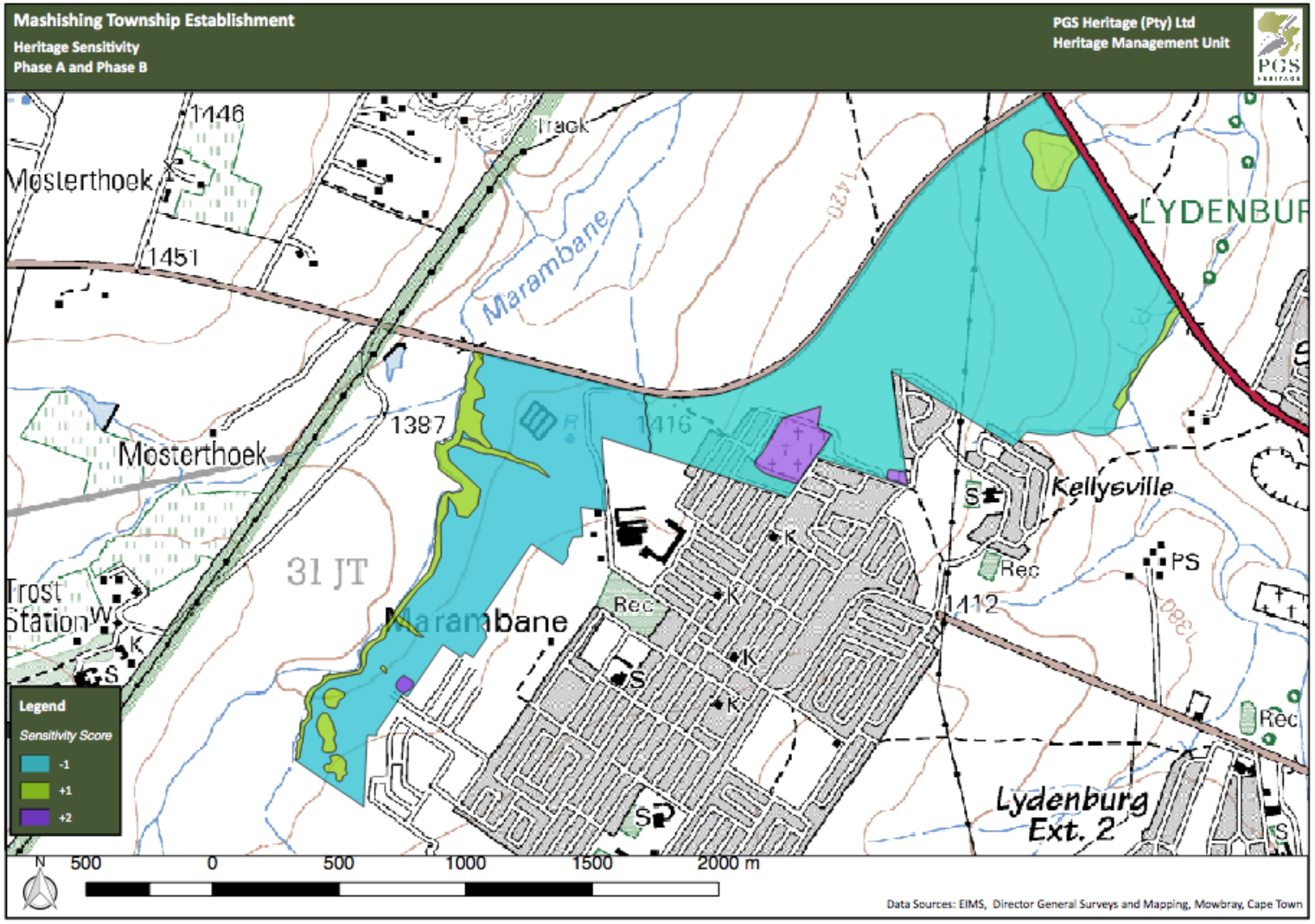


Figure 5 – Heritage sensitivity map indicating sensitivity rating for phases A and B.

5 PROJECTED IMPACT ASSESSMENT

The following section provides a projected impact of the proposed development on identified heritage resources. These impacts can only be fully quantified after fieldwork completion.

Impact Name	**Impact on graves**				
Alternative	**Phase A and B**				
Phase	**Construction**				
Environmental Risk					
Attribute	**Pre-mitigation**	**Post-mitigation**	**Attribute**	**Pre-mitigation**	**Post-mitigation**
Nature of Impact	-1	-1	Magnitude of Impact	5	5
Extent of Impact	2	2	Reversibility of Impact	5	5
Duration of Impact	5	2	Probability	3	1
Environmental Risk (Pre-mitigation)					-12.75
Mitigation Measures					
Comprehensive fieldwork component during the EIA phase of the project to identify, evaluate and delineate the possible resource					
Environmental Risk (Post-mitigation)					-3.50
Degree of confidence in impact prediction:					High
Impact Prioritisation					
Public Response					1
Low: Issue not raised in public responses					
Cumulative Impacts					2
Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.					
Degree of potential irreplaceable loss of resources					2
The impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.					
Prioritisation Factor					1.33
Final Significance					-4.67

6 CONCLUSIONS AND RECOMMENDATIONS

The Heritage Scoping has shown that the study area and surrounding area has some heritage resources situated inside the two phases' foot print areas Phase A and Phase B). Through data analysis and a site investigation the following issues were identified from a heritage perspective.

6.1 Archaeological Heritage

The data analysis has enabled the identification of possible heritage sensitive areas that included:

- Dwellings;
- Clusters of dwellings (homesteads and farmsteads);
- Archaeological Sensitive areas (based on historical descriptions); and
- Structures.

Note that these structures refer to possible heritage sites as listed in *Table* 1.

6.2 Impact rating

Preliminary impact rating has shown that the impact on heritage resources can possibly be medium to high, but through detailed fieldwork during the EIA phase this impact can probably be reduced to Medium-Low or totally mitigated through design.

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