PROPOSED SOLAR PV PLANT AT ARMOEDE, NEAR MOKOPANE, LIMPOPO PROVINCE

Heritage Impact Assessment

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Revision No.: **2**
Project No.: **489 HIA**

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Declaration of Independence

I, Polke Birkholtz, declare that –

- General declaration:
- I act as the independent heritage practitioner 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 heritage impact assessments, 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 will take into account, to the extent possible, the matters listed in section 38 of the NHRA when preparing the application and any report relating to the application;
- 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;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- All the particulars furnished by me in this form are true and correct;
- I will perform all other obligations as expected from a heritage practitioner in terms of the Act and the constitutions of my affiliated professional bodies; and
- I realise that a false declaration is an offence in terms of regulation 71 of the Regulations and is punishable in terms of section 24F of the NEMA.

Disclosure of Vested Interest

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;

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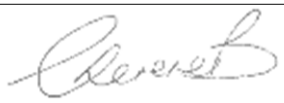
Co-Author	Cherene de Bruyn		Archaeologist – PGS Heritage

DETAILS OF CLIENT:

CLIENT: **Zutari Pty (Ltd)**

CONTACT PERSON: **Ms. Noluyolo Xorile**
Noluyolo.Xorile@zutari.com

The heritage impact assessment report has been compiled taking into account the NEMA Appendix 6 requirements for specialist reports as indicated in the table below.

NEMA Regs (2014) - Appendix 6	Relevant section in report
Details of the specialist who prepared the report	Page iii and Section 1.2
The expertise of that person to compile a specialist report including a curriculum vita	Section 1.2 – refer to **Appendix B**
A declaration that the person is independent in a form as may be specified by the competent authority	Page ii of the report
An indication of the scope of, and the purpose for which, the report was prepared	Section 1
The date and season of the site investigation and the relevance of the season to the outcome of the assessment	Section 3
A description of the methodology adopted in preparing the report or carrying out the specialised process	Section 3
The specific identified sensitivity of the site related to the activity and its associated structures and infrastructure	Executive Summary, Sections 6 & 9
An identification of any areas to be avoided, including buffers	Executive Summary, Sections 6 & 9
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;	Refer to Figures 2 and Figure 19
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	Sections 5, 6, 7 & 8
Any mitigation measures for inclusion in the EMPr	Section 8
Any conditions for inclusion in the environmental authorisation	Sections 7, 8 & 9
Any monitoring requirements for inclusion in the EMPr or environmental authorisation	Sections 7, 8 & 9
A reasoned opinion as to whether the proposed activity or portions thereof should be authorised and	Executive Summary & 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. No public participation process was undertaken by PGS Heritage.
A summary and copies if any comments that were received during any consultation process	Not applicable. See comment above.
Any other information requested by the competent authority.	Not applicable. No consultation with the heritage authorities has as of yet taken place.

EXECUTIVE SUMMARY

Introduction

PGS Heritage (Pty) Ltd was appointed by Zutari Pty (Ltd) to undertake a Heritage Impact Assessment (HIA) for a Proposed Solar PV Plant at Armoede, near Mokopane, Limpopo Province. The study area is located on sections of the farm Armoede 823 LR and falls under the Mapela Traditional Authority and the Mogalakwena Local Municipality, Limpopo Province. The applicant is Anglo American Platinum.

General Desktop Study

An archival and historical desktop study was undertaken to provide a historic framework for the project area and surrounding landscape. This was augmented by a study of available historical and archival maps. The desktop study revealed that the surroundings of the study area is characterised by a long and significant history. The assessment of the available historical maps did not reveal the presence of any heritage features.

Associated Reports and Processes

PGS Heritage (Pty) Ltd compiled a Heritage Screening Assessment was undertaken for the same project in 2019. The study area for this 2019 screening study and the current report are in the same general area. The screening level fieldwork was undertaken by an experienced team comprising professional archaeologist Polke Birkholtz and fieldwork assistant Derrick James. The fieldwork was undertaken on Wednesday, 2 October and Thursday, 3 October 2019. The fieldwork was aimed at establishing whether any significant heritage resources are located within the study area. Despite the fact that only a screening level site visit was undertaken, the fieldwork resulted in the identification of five (5) sites.

Fieldwork

The fieldwork component of the study was aimed at identifying tangible remains of archaeological, historical and heritage significance. The fieldwork was undertaken by way of intensive walkthroughs of the study area. These intensive walkthroughs were undertaken by experienced archaeological fieldwork team over the course of several days. The fieldwork was undertaken from Monday, 21 September 2020 to Wednesday, 23 September 2020. This fieldwork team consisted of an archaeologist (Cherene de Bruyn) and field technician (Thomas Mulaudzi).

Sections of the study are located in very inaccessible, often densely overgrown areas. Throughout the fieldwork, hand-held GPS devices were used to record the tracklogs showing the routes followed by the two archaeological fieldwork teams.

The fieldwork undertaken resulted in the identification of a total of seven (7) sites. These were numbered from MGSP 6 to MGSP 12. The reason for this is that the same numbering system as the one used for the 2019 screening project was used for the current study. With five sites identified during the previous screening assessment (none of which are located within the current study area), the site numbering for this assessment started at MGSP 6. The identified sites comprised the following:

- **MGSP 6**: A water trough that runs through Area 2;
- **MGSP 7**: The ruins of a reservoir and structure;
- **MGSP 8:** A single grave;
- **MGSP 9**: The ruins of a house;
- **MGSP 10**: A contemporary homestead with livestock enclosure;
- **MGSP 11**: The ruins of a reservoir; and
- **MGSP 12**: A shed.

It should be noted that the southern section (Area 3) was only assessed during the Heritage Screening Assessment undertaken in 2019. The inclusion of this section for the purposes of the present report was only indicated by the client after the submission of this current report to the client. As this section was not assessed intensively during the fieldwork, a revisit to the field must be undertaken before this report can be completed. This revisit will be focussed on intensively assessing this southern section in the field. This said, if no development is envisaged for the southern section, the revisit would not be required.

Impact Assessment and Mitigation

An overlay of the identified archaeological and heritage sites over the proposed development footprint areas was made to assess the impact of the proposed development on these identified archaeological and heritage sites. Both pre-mitigation and post-mitigation impact assessments were undertaken. Please refer **Chapter 7** for the impact assessment calculations. A series of site-specific mitigation measures are outlined in **Chapter 8** of this report.

Fieldwork Coverage at Area 3

The southern section (Area 3) was only assessed during the Heritage Screening Assessment undertaken in 2019. The inclusion of this section for the purposes of the present report was only indicated by the client after the submission of this current report to the client. The following recommendations are required to address this:

- As Area 3 was not assessed intensively during the fieldwork, a revisit to the field must be undertaken before this report can be completed. This revisit will be focussed on intensively assessing this southern section in the field. This said, if no development is envisaged for the southern section, the revisit would not be required.

Conclusions

While the unmitigated impact of the proposed development is expected to result in Medium to High negative impacts in terms of the identified heritage fabric of the study area, the resources identified are not considered to be conservation worthy. With mitigation successfully completed, the impact of the proposed development on the identified heritage sites will result in Low to Medium negative impacts. As a result, on the condition that the recommendations made in this report are adhered to, no heritage reasons can be given for the development not to continue.

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TERMINOLOGY AND ABBREVIATIONS

Archaeological resources

This includes:

- 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;
- 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;
- 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:

- construction, alteration, demolition, removal or change in use of a place or a structure at a place;
- carrying out any works on or over or under a place;
- subdivision or consolidation of land comprising a place, including the structures or airspace of a place;
- constructing or putting up for display signs or boards;
- any change to the natural or existing condition or topography of land; and
- 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 and can include (but not limited to) as stated under Section 3 of the NHRA,

- places, buildings, structures and equipment of cultural significance;

- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features of cultural significance;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds, and
- sites of significance relating to the history of slavery in South Africa;

Holocene

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

Late 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 1800's, associated with iron-working and farming activities such as herding and agriculture.

Middle Stone Age

The archaeology of the Stone Age between 30 000-300 000 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.

Table 1 – List of abbreviations used in this report.

Abbreviations	Description
AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
CRM	Cultural Resource Management
DEA	Department of Environmental Affairs
DWS	Department of Water and Sanitation
ECO	Environmental Control Officer
EAP	Environmental Assessment Practitioner

EIA	Environmental Impact Assessment
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
IAP	Interested and Affected Party
LSA	Late Stone Age
LIA	Late Iron Age
MSA	Middle Stone Age
MIA	Middle Iron Age
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Authority
PSSA	Palaeontological Society of South Africa
SADC	Southern African Development Community
SAHRA	South African Heritage Resources Agency

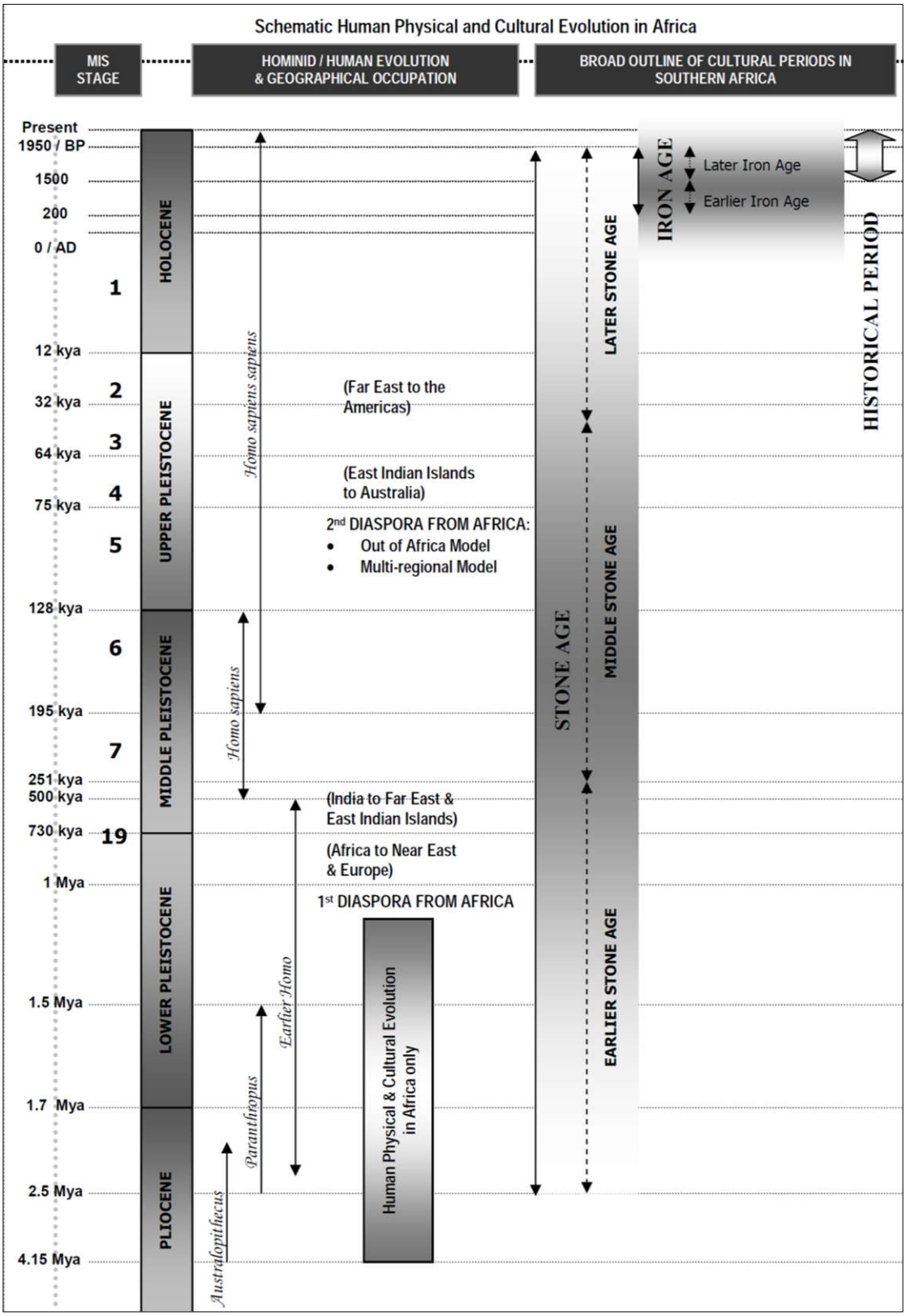

Figure 1 - Human and Cultural Timeline in Africa (Morris, 2008).

1 INTRODUCTION

PGS Heritage (Pty) Ltd (PGS) was appointed by Zutari Pty (Ltd) to undertake a Heritage Impact Assessment (HIA) for a Proposed Solar PV Plant at Armoede, near Mokopane, Limpopo Province. The study area is located on sections of the farm Armoede 823 LR and falls under the Mapela Traditional Authority and the Mogalakwena Local Municipality, Limpopo 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 study area.

The Heritage Impact Assessment aims to inform the 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 of 1999 (Act 25 of 1999) (NHRA).

1.2 Specialist Qualifications

This HIA Report was compiled by PGS. The staff at PGS has a combined experience of nearly 90 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.

The following individuals were involved with this study:

- Mr Polke Birkholtz, the project manager and principal heritage specialist, is registered with the Association of Southern African Professional Archaeologists (ASAPA) as a Professional Archaeologist and is also accredited with the Cultural Resources Management (CRM) Section of the same association. He has 20 years of experience in the heritage assessment and management field and holds a B.A. (cum laude) from the University of Pretoria specialising in Archaeology, Anthropology and History and a B.A. (Hons.) in Archaeology (cum laude) from the same institution.

- Miss Cherene de Bruyn, the author of this report is registered with ASAPA as a Professional Archaeologist and is accredited as a Principal Investigator and Field Director. She is also a member of the International Association for Impact Assessment South Africa (IAIASA). She holds an MA in Archaeology from University College London, and a BSc (Hons) in Physical Anthropology and a BA (Hons) in Archaeology from the University of Pretoria.

1.3 Assumptions and Limitations

The following assumptions and limitations regarding this study and report exist:

- 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. In fact, due to the dense vegetation and steep topographic gradients found within the study area, it is highly likely that the presently identified heritage sites are not a complete record of all the archaeological and heritage resources located within the study area.

  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.

- It should be noted that the southern section (Area 3) was only assessed during the Heritage Screening Assessment undertaken in 2019. The inclusion of this section for the purposes of the present report was only indicated by the client after the submission of this current report to the client. As this section was not assessed intensively during the fieldwork, a revisit to the field must be undertaken before this report can be completed. This revisit will be focussed on intensively assessing this southern section in the field. This said, if no development is envisaged for the southern section, the revisit would not be required.

1.4 Legislative Context

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

i. National Environmental Management Act, 1998 (NEMA) (Act No. 107 of 1998)
ii. National Heritage Resources Act, 1999 (NHRA) (Act No. 25 of 1999)
iii. Notice 648 of the Government Gazette 45421- General requirements for undertaking an initial site sensitivity verification where no specific assessment protocol has been identified.

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)

a. Basic Assessment Report(BAR) – Regulations 19 and 23
b. Scoping Report (ESR) – Regulation 21
c. Environmental Impacts Report (EIR) – Regulation 23
d. Environmental Management Programme (EMPr) – Regulations 19 and 23

ii. National Heritage Resources Act (NHRA)
a. Protection of Heritage Resources – Sections 34 to 36
b. Heritage Resources Management – Section 38

iii. Notice 648 of 2019

Although minimum standards for archaeological (2007) and palaeontological (2012) assessments were published by SAHRA, GN.648 of 2019 requires sensitivity verification for a site selected on the national web-based environmental screening tool for which no specific assessment protocol related to any theme has been identified. The requirements for this Government Notice (GN) is listed in Table 2 and the applicable section in this report noted.

Table 2 - Reporting requirements for GN648.

GN 648 of 2019	**Relevant section in report**	**Where not applicable in this report**
2.2 (a) a desktop analysis, using satellite imagery;	section 5.3	
2.2 (b) a preliminary on-site inspection to identify if there are any discrepancies with the current use of land and environmental status quo versus the environmental sensitivity as identified on the national web-based environmental screening tool, such as new developments, infrastructure, indigenous/pristine vegetation, etc.	section 4.1	-
2.3(a) confirms or disputes the current use of the land and environmental sensitivity as identified by the national web-based environmental screening tool;	section 5.5	-
2.3(b) contains motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity;	section 4.1	-

iv. The Regulations relating to the Management of Human Remains (GNR 363 of 2013 in Government Gazette 36473) promulgated under the National Health Act (Act No. 61 of 2003)

a. Exhumation and Reburial of Human Remains – Regulations 26, 27 and 28

The NHRA stipulates that cultural heritage resources may not be disturbed without authorisation 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*".

The NEMA (No 107 of 1998) states that an integrated EMP should (23:2 (b)) "…*identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage*".

In accordance with legislative requirements and EIA rating criteria, the regulations of SAHRA and ASAPA have also been incorporated to ensure that a comprehensive and legally compatible HIA report is compiled.

2 TECHNICAL DETAILS OF THE PROJECT

2.1 Locality

Study Area Coordinates	Northernmost point: S 23.968047 E 28.952841	Easternmost point: S 23.983792 E 28.979062
	Southernmost point: S 23.991354 E 28.974606	Westernmost point: S 23.978982 E 28.954873
Location	The study area is located within the Mapela Traditional Authority and the Mogalakwena Local Municipality. It is located approximately 20km north by north-west of Mokopane, Limpopo Province.	
Property	Portions of the farm Armoede 823 LR.	
Topographic Map	2328DD	
Study Area Extent	The combined extent of the study area is approximately 260 hectares.	

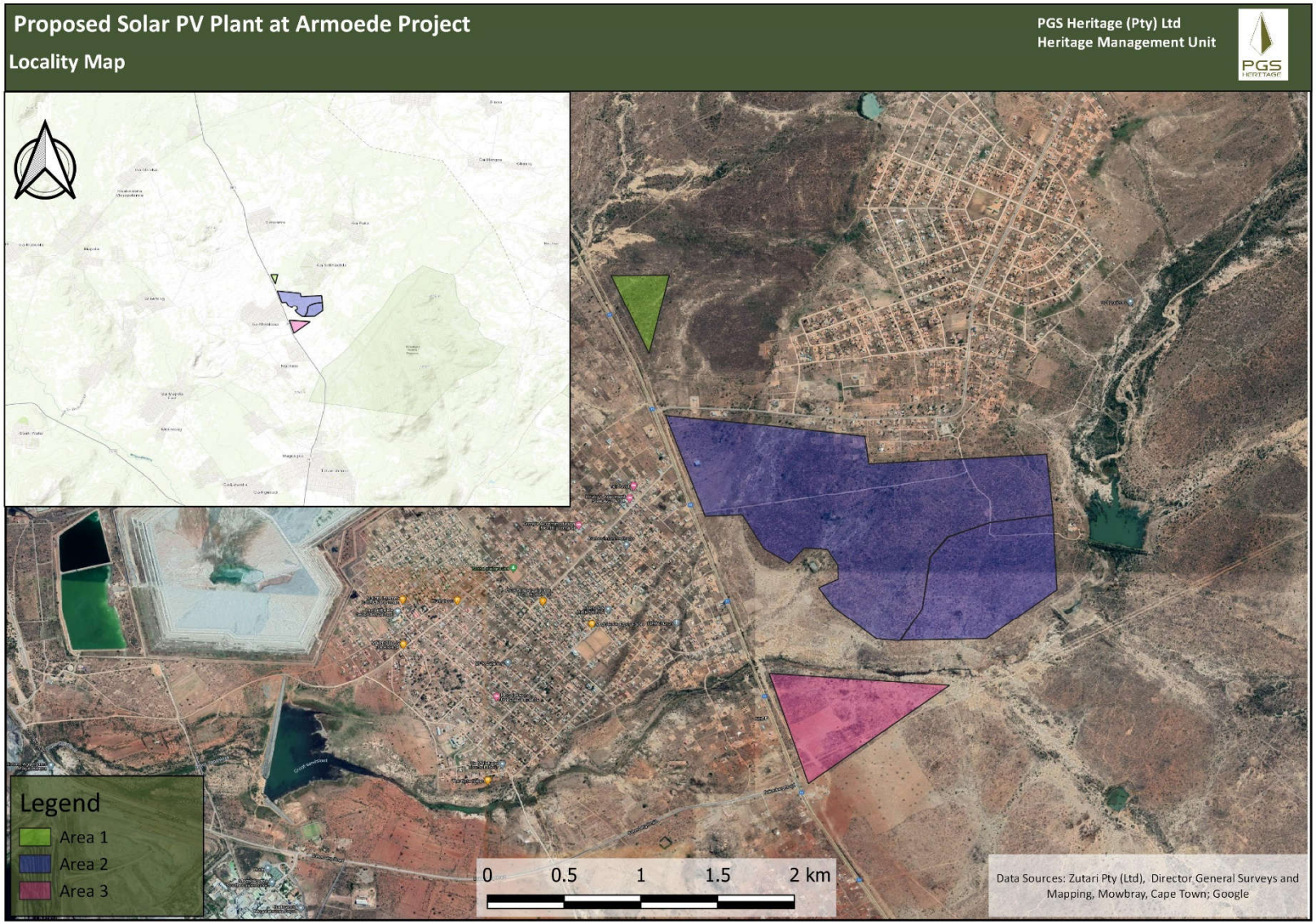

Figure 2 – Google Earth depiction of the study area boundaries. The study area is located on the farm Armoede 823 LR.

2.2 Technical Project Description

The proposed development consists of the construction of a Solar PV Plant on a section of the farm Armoede 823 LR. Additionally, associated grid connection infrastructure is also proposed.

3 ASSESSMENT METHODOLOGY

3.1 Methodology for Assessing Heritage Site Significance

This report was compiled by PGS Heritage for the Solar PV Plant near Mokopane, Limpopo Province. The applicable maps, tables and figures are included as stipulated in the NHRA and NEMA. The HIA process consisted of three steps:

Step I – Desktop Study: A detailed archaeological and historical overview of the study area and surroundings was undertaken. This work was augmented by an assessment of reports and data contained on the South African Heritage Resources Information System (SAHRIS). Additionally, an assessment was made of the available historic topographic maps. All these desktop study components were undertaken to support the fieldwork.

Step II – Field Survey: The fieldwork component of the study was aimed at identifying tangible remains of archaeological, historical and heritage significance. The fieldwork was undertaken by way of intensive walkthroughs of the study area. The fieldwork component of the study was aimed at identifying tangible remains of archaeological, historical and heritage significance. The fieldwork was undertaken by way of intensive walkthroughs of the study area. These intensive walkthroughs were undertaken by experienced archaeological fieldwork team over the course of several days. The fieldwork was undertaken from Monday, 21 September 2020 to Wednesday, 23 September 2020. This fieldwork team consisted of an archaeologist (Cherene de Bruyn) and field technician (Thomas Maluadzi).

Throughout the fieldwork, hand-held GPS devices were used to record the tracklogs showing the routes followed by the two archaeological fieldwork teams. All sites identified during the fieldwork were photographically and qualitatively recorded, and their respective localities documented using a hand-held GPS device.

Step III – Report: The final step involved the recording and documentation of relevant heritage resources, as well as the assessment of resources regarding the heritage impact assessment criteria and report writing, as well as mapping and recommendations.

The significance of 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 - <10/50m2
    - 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 position
D - Preserve site, or extensive data collection and mapping of the site; and
E - Preserve site

Site Significance

Site significance classification standards prescribed by the South African Heritage Resources Agency (2006) and approved by the ASAPA for the Southern African Development Community (SADC) region, were used for the purpose of this report (see **Table 2**).

Table 3 – Site significance classification 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 4D	Low	Destruction

3.2 Methodology for Impact Assessment

The methodology for impact assessment outlined here was provided by Zutari. The assessment of the significance of impacts for a proposed development is by its nature, a matter of judgement. To deal with the uncertainty associated with judgement and ensure repeatable results, Zutari rates impacts using a standardised and internationally recognised methodology.

For each predicted impact, criteria are applied to establish the **significance** of the impact based on likelihood and consequence, both without mitigation being applied and with the most effective mitigation measure(s) in place.

The criteria that contribute to the **consequence** of the impact are **intensity** (the degree to which pre-development conditions are changed); the **duration** (length of time that the impact will continue); and the **extent** (spatial scale) of the impact. The sensitivity of the receiving environment and/or sensitive receptors are incorporated into the consideration of consequence by appropriately adjusting the thresholds or scales of the intensity, duration and extent criteria, based on expert knowledge. For each impact, the specialist applies professional judgement to ascribe a numerical rating for each criterion according to the examples provided in Table 4, Table 5 and Table 6 below. The consequence is then established using the formula:

Consequence = intensity x (+ duration + extent)

Depending on the numerical result, the impact's consequence would be defined as either extremely, highly, moderately or slightly detrimental; or neutral; or slightly, moderately, highly or extremely beneficial. These categories are provided in Table 8.

To determine the significance of an impact, the **probability** (or likelihood) of that impact occurring is also taken into account. In assigning probability, the specialist takes into account the likelihood of occurrence but also takes cognisance of uncertainty and detectability of the impact. The most suitable numerical rating for probability is selected from Table 7 below and applied with the consequence according to the following equation:

Significance = consequence x probability

When assigning a **probability** to an impact, it is vitally important to distinguish this from the concepts of **frequency and confidence,** with which it is sometimes confused.

- **Probability** refers to the likelihood that an impact will occur.
- **Frequency** refers to the regularity with which an impact occurs. To illustrate the difference between frequency and probability, it must be considered that something that happens infrequently may still be a certainty (i.e. have a high probability). For instance, Halley's Comet only comes close to the sun every 75 to 76 years (i.e. it has a very low frequency), but it is still a certainty. Table 8 refers to the degree of certainty of a prediction. Confidence may be related to any of the impact assessment criteria (extent, intensity, duration or probability) and is not necessarily only related to probability. Confidence may be influenced by any factors that introduce uncertainty into a prediction.

Depending on the numerical result of this calculation, the impact would fall into a significance category of negligible, minor, moderate or major, and the type would be either positive or negative. Examples of these categories are provided in Table 9.

Once the significance of an impact occurring without mitigation has been established, the specialist must apply his/her professional judgement to assign ratings for the same impact after the proposed mitigation has been implemented. The tables on the following pages show the scales used to classify the above variables and define each of the rating categories.

Table 4 - Definition of Intensity Ratings.

Rating	**Criteria**	
	Negative impacts (-)	**Positive impacts (+)**
Very high (-/+ 4)	Very high degree of damage to natural or social systems or resources. These processes or resources may restore to their pre-project condition over very long periods of time (more than a typical human life time).	Great improvement to ecosystem or social processes and services or resources.
High (-/+ 3)	High degree damage to natural or social system components, species or resources.	Intense positive benefits for natural or social systems or resources.
Moderate (-/+ 2)	Moderate damage to natural or social system components, species or resources.	Average, on-going positive benefits for natural or social systems or resources.
Low (-/+ 1)	Minor damage to natural or social system components, species or resources. Likely to recover over time. Ecosystems and valuable social processes not affected.	Low positive impacts on natural or social systems or resources.
Negligible (0)	Negligible damage to individual components of natural or social systems or resources, such that it is hardly noticeable.	Limited low-level benefits to natural or social systems or resources.

Table 5: Definition of Duration Ratings.

Rating	**Criteria**
2	**Long-term**: The impact will continue for 6-15 years.
1	**Medium-term:** The impact will continue for 2-5 years.

0	**Short-term:** The impact will continue for between 1 month and 2 years.

Table 6: Definition of Extent Ratings.

Rating	Criteria
2	**Regional**: The impact will affect the entire region.
1	**Local:** The impact will extend across the site and to nearby properties.
0	**Site specific:** The impact will be limited to the site or immediate area.

Table 7: Definition of Probability Ratings.

Rating	Criteria
4	**Certain/ Definite:** There are sound scientific reasons to expect that the impact will definitely occur.
3	**Very likely:** It is most likely that the impact will occur.
2	**Fairly likely:** This impact has occurred numerous times here or elsewhere in a similar environment and with a similar type of development and could very conceivably occur.
1	**Unlikely:** This impact has not happened yet but could happen.
0	**Very unlikely:** The impact is expected never to happen or has a very low chance of occurring.

Table 8: Application of Consequence Ratings.

Rating	Consequence rating
-8	Extremely detrimental
-7 to -6	Highly detrimental
-5 to -4	Moderately detrimental
-3 to -2	Slightly detrimental
-1 to 1	Negligible
2 to 3	Slightly beneficial
4 to 5	Moderately beneficial
6 to 7	Highly beneficial
8	Extremely beneficial

Table 9: Application of Significance Ratings.

Rating	Significance rating
-4	Very high - negative
-3	High - negative
-2	Moderate - negative
-1	Low - negative
0	Very low
1	Low - positive
2	Moderate - positive
3	High - positive
4	Very high - positive

Despite attempts at ensuring objectivity and impartiality, the environmental assessment remains an act of judgement and can never escape the subjectivity inherent in attempting to define significance. The determination of the significance of an impact depends on context (spatial and duration) and intensity of that impact. Since the rationalisation of context and intensity will ultimately be prejudiced by the observer, there can be no wholly objective measure by which to judge the components of significance, let alone how they are integrated into a single comparable measure.

This notwithstanding, in order to facilitate informed decision-making, environmental assessments must endeavour to come to terms with the significance of the environmental impacts. Recognising this, Zutari has attempted to address potential subjectivity in the current ESIA process as follows:

- Being explicit about the difficulty of being completely objective in the determination of significance, as outlined above;
- Developing an explicit methodology for assigning significance to impacts and outlining this methodology in detail. Having an explicit methodology not only forces the specialist to come to terms with the various facets that contribute to significance (thereby avoiding arbitrary assessment), but also provides the reader with a clear summary of how the specialist derived the significance;
- Wherever possible, differentiating between the significance of potential environmental impacts as experienced by the various affected parties; and
- Utilising a team approach and internal review of the assessment to facilitate a rigorous and defendable system.

Although these measures may not totally eliminate subjectivity, they provide an explicit context within which to review the assessment of impacts.

The specialists appointed to contribute to this impact assessment have empirical knowledge of their respective fields and are thus able to comment on the confidence they have in their findings based on the availability of data and the certainty of their findings (Example provided in Table 10).

Table 10: Definition of Confidence Ratings.

Rating	Criteria
Low	Judgement is based on intuition and there some major assumptions used in assessing the impact may prove to be untrue.
Medium	Determination is based on common sense and general knowledge. The assumptions made, whilst having a degree of uncertainty, are fairly robust.
High	Substantive supportive data or evidence exists to verify the assessment.

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4 CURRENT STATUS QUO

4.1 General Description of the Study Area

The study area is reasonably level and is located east of the N11 between Mokopane and Grobler's Bridge.

In terms of vegetation, the study area is located within the Makhado Sweet Bushveld vegetation type. This vegetation type is described as "…*slightly to moderately undulating plains sloping generally down to the north, with some hills in the southwest. Short and shrubby bushveld with a poorly developed grass layer* (www.sanbi.org). Significant sections of the study area are characterised by reasonably dense vegetation in the form of thorn-bearing trees and bushes. This type of vegetation made the fieldwork difficult in parts in terms of movement and visibility.

In terms of geology and soils, the Makhado Sweet Bushveld vegetation type is "…*underlain by the gneisses and migmatites of the Hout River Gneiss (Randian Erathem) and the potassium-deficient gneisses of the Goudplaats Gneiss (Swazian Erathem). Sandstones and mudstones of the Matlabas Subgroup (Mokolian Waterberg Group) are also found. Soils include deep, greyish sands, eutrophic plinthic catenas, red-yellow apedal freely drained soils with high base status, clayey in bottomlands*." (www.sanbi.org).

Existing surrounding land uses associated with the project area include a combination of:

- Residential settlement: Ga-Sekhaolelo is located to the north and east of the study area, while Ga-Molekana is located to the west of the project area;
- Powerlines; and
- Sections of the study area were used for grazing of animals.

During the fieldwork, the study area was found to be located in a landscape that is generally level. Sections of the footprint overlays disturbed terrain. Illegal dumping was observed in areas. Sections of Area 3 are characterised by extensively eroded watercourses.

Overall, the accessibility of the project footprint area was fairly good. Visibility of the site was limited due to the grassy vegetation and dense thorny trees. Several photographs below provide general views of the study area and the landscape within which it is located.

Figure 3 – General view of Area 1. This section of the study area is characterised by dense thorn trees and bushes.

Figure 4 – General view of Area 2. This section of the study area is characterised by thorn trees and bushes.

Figure 5 – General view of Area 2. Sections of which is characterised by thorn trees. Houses from Ga- Sekhaolelo can be seen in the background.

Figure 6 - General view of Area 3, the southern component of the study area, sections of which is characterised by a higher predominance of trees (photograph taken during the heritage screening work undertaken in 2019).

Figure 7 – A reasonably large component of Area 3 had been cleared of vegetation. It is not presently certain why or by whom this activity was undertaken (photograph taken during the heritage screening work undertaken in 2019).

Figure 8 - The site was accessed via the N11, located to the west of the project area.

Figure 9 - Power lines observed in Area 1.

Figure 10 – Houses from Ga-Sekhaolelo located north of the project area.

Figure 11 - Sections of the project area are used for the grazing of livestock.

Figure 12 – Evidence for dumping activities were observed throughout the project area.

5 DESKTOP STUDY FINDINGS

5.1 Archaeological overview of the Study Area and Surroundings

5.1.1 Early Stone Age (ESA) (>200 000 – 2 million years Before Present/BP)

General characteristics: Early stages include simple flakes struck from cobbles, core and pebble tools; later stages include intentionally shaped handaxes, cleavers and picks; final or transitional stages have tools that are smaller than the preceding stages and include large blades (Lombard *et al.* 2012). Phases of the Early Stone Age:

- *Oldowan*: 1.5 to >2 million years ago - Technological characteristics: Cobble, core or flake tools with little retouch and no flaking to predetermined patterns; Hammerstones, manuports, cores; and polished bone fragments/tools (Lombard *et al.* 2012).
- *Acheulean*: 300 thousand to 1.5 million years ago - Technological characteristics: Bifacially worked handaxes and cleavers, large flakes > 10 cm; some flakes with deliberate retouch, sometimes classified as scrapers; gives the impression of being deliberately shaped, but could indicate result of knapping strategy; sometimes shows core preparation; and generally found in disturbed open-air locations (Lombard *et al.* 2012).
- *ESA-MSA transition*: 200 to 600 thousand years ago - Technological characteristics: Described at some sites as *Fauresmith* or *Sangoan*; *Fauresmith* assemblages have large blades, points, Levallois technology, and the remaining ESA components have small bifaces; the *Sangoan* contains small bifaces (<100 mm), picks, heavy and light-duty denticulated and notched scrapers; The *Sangoan* is less well described than the *Fauresmith*(Lombard *et al.* 2012).

As far as is currently known, Limpopo province is not as well known for its Early Stone Age resources as other parts of the country. The closest occurrences of major finds from this time period are located at the Cave of Hearths (Herries 2011), which is dated to 1.1-1.4 Ma (best age estimates interpreted from contexts of direct/associated dates) and characterised by *Acheulian* assemblages.

5.1.2 Middle Stone Age (MSA) (20 000 – 300 000 BP)

General characteristics: Levallois or prepared core techniques (for definitions see Van Peer 1992; Boeda 1995; Pleurdeau 2005) occur in which triangular flakes with convergent dorsal scars, often with faceted striking platforms are produced; Discoidal systems (for definition see Inizan et al. 1999) and intentional blade production from volumetric cores (for definition see Pleurdeau 2005) also occur; formal tools may include unifacially and bifacially retouched points, backed artefacts, scrapers, and denticulates (for definition see Bisson 2000); evidence of hafted tools; occasionally includes marine shell beads, bone points, engraved ochre nodules, engraved OES fragments, engraved bone fragments, and grindstones (Lombard *et al.* 2012). Phases of the MSA:

- *early Middle Stone Age*: 130 to 300 thousand years - Technological characteristics: Includes discoidal and Levallois flake technologies, blades from volumetric cores and a generalised toolkit (Lombard *et al.* 2012).
- *Klasies River*: 105 to 130 thousand years ago - Technological characteristics: Recurrent blade and convergent flake production; end products are elongated and relatively thin, often with curved profiles; platforms are often small with diffused bulbs; low frequencies of retouch; and denticulated pieces (Lombard *et al.* 2012).
- *Mossel Bay*: 77 to 105 thousand years ago - Technological characteristics: Recurrent uni-polar Levallois point and blade reduction; products have straight profiles; percussion bulbs are prominent and often splintered or ring-cracked; formal retouch is infrequent and restricted to sharpening the tip or shaping the butt (Lombard *et al.* 2012).
- *Still Bay*: 70 to 77 thousand years ago - Technological characteristics: Characterised by thin (<10 mm), bifacially worked foliate or lanceolate points; semi-circular or wide-angled pointed butts; and could include blades and finely serrated points (Lombard et al. 2010).
- *Howieson's Poort*: 58 to 66 thousand years ago - Technological characteristics: Characterised by blade technology; includes small (<4 cm) backed tools, e.g. segments, scrapers, trapezes and backed blades; some denticulated blades; and pointed forms are rare or absent (Lombard *et al.* 2012).
- *Sibudu*: 45 to 58 thousand years ago – Technological characteristics: Most points are produced using Levallois technique; most formal retouch aimed at producing unifacial points; some plain butts; rare bifacially retouched points; some side scrapers are present; and backed pieces are rare (Lombard *et al.* 2012).
- *final Middle Stone Age*: 20 to 40 thousand years - Technological characteristics: Characterised by high regional variability that may include, e.g. bifacial tools, bifacially retouched points, hollow-based points; triangular flake and blade industries; small bifacial and unifacial; Sibudu point characteristics: short, stout, lighter in mass compared to points from the Sibudu technocomplex, but heavier than those from the Still Bay; can be microlithic; can include bipolar technology; and could include backed geometric shapes such as segments, as well as side scrapers (Lombard *et al.* 2012).

Most MSA sites in Limpopo Province are caves or rock shelters, the best-known being Cave of Hearths (Mason 1962, 1988; Sampson 1974; Sinclair 2009), Olieboomspoort (Mason 1962; Van der Ryst 2006), Bushman Rock Shelter (Plug 1981; Porraz *et al*. 2015) and Mwulu's Cave (Tobias 1949; Sampson 1974).

5.1.3 Later Stone Age (LSA) (40 000 – < 2 000 BP)

General characteristics: Variability between assemblages; a wide range of formal tools, particularly scrapers (microlithic and macrolithic), backed artefacts, evidence of hafted stone and bone tools, borers, bored stones, upper and lower grindstones, grooved stones, ostrich eggshell (OES) beads and other ornaments, undecorated/decorated OES fragments, flasks/flask fragments, bone tools

(sometimes with decoration), fishing equipment, rock art, and ceramics in the final phase (Lombard *et al.* 2012).

Phases of Later Stone Age:

- *Early Later Stone Age*: 18 to 40 thousand years ago - Technological characteristics: Characterised by unstandardised, often microlithic, pieces and includes the bipolar technique; described at some sites, but not always clear whether assemblages represent a real archaeological phase or a mixture of LSA/MSA artefacts (Lombard *et al.* 2012).
- *Robberg*: 12 to 18 thousand years ago - Technological characteristics: Characterised by systematic bladelet (<26 mm) production and the occurrence of outils écaillés or scaled pieces (for the definition of outils écaillés see Hayden 1980); significant numbers of unretouched bladelets and bladelet cores; few formal tools; and some sites have significant macrolithic element (Lombard *et al.* 2012).
- *Oakhurst*: 7 to 12 thousand years ago - Technological characteristics: Flake-based industry; characterised by round, end, and D-shaped scrapers and adzes; wide range of polished bone tools; and few or no Microliths (Lombard *et al.* 2012).
- *Wilton*: ~4 to 8 thousand years ago - Technological characteristics: Fully developed microlithic tradition with numerous formal tools; highly standardised backed microliths and small convex scrapers (for the definition of standardisation see Eerkens & Bettinger 2001); OES is common; Ochre is common; and bone, shell and wooden artefacts occur (Lombard *et al.* 2012).
- *Final Later Stone Age:* ~1 hundred to ~4 thousand years ago - Technological characteristics: Much variability can be expected; variants include macrolithic (similar to *Smithfield* [Sampson 1974]) and/or microlithic (similar to *Wilton*) assemblages; assemblages are mostly informal (*Smithfield*); often characterised by large untrimmed flakes (*Smithfield*); sometimes microlithic with scrapers, blades and bladelets, backed tools and adzes (*Wilton*-like); worked bone is common; OES is common; Ochre is common; iron objects are rare; ceramics are absent (Lombard *et al.* 2012).
- *Ceramic final Later Stone Age*: Generally <2 thousand years ago - Contemporaneous with, and broadly similar to, final Later Stone Age, but includes ceramics - Economy may be associated with hunter-gatherers or herders -Technological characteristics: Stone tool assemblages are often microlithic (for a definition of 'microlithic' see Elston & Kuhn 2002);in some areas they are dominated by long end scrapers and few backed Microliths and in others formal tools are absent or rare; grindstones are common, ground stone artefacts, stone bowls and boat-shaped grinding grooves may occur; includes grit- or grass-tempered pottery; ceramics can be coarse, or well-fired and thin-walled; sometimes with lugs, spouts and conical bases; sometimes with decoration; sometimes shaped as bowls; Ochre is common; OES is common; metal objects, glass beads and glass artefacts also occur (Lombard *et al.* 2012).

Major LSA sites occurring in the Limpopo Province include: Balerno Main Shelter (Van Doornum 2007a), Goergap 113 KR (Van der Ryst 1998), New Belgium (Van der Ryst 1998), Schurfpoort 112 KR (Van der Ryst 1998) and Tshisiku Shelter (Van Doornum 2007b).

5.1.4 Rock Art

By the beginning of the Later Stone Age, human behaviours were undoubtedly modern (Huffman 2005). Uniquely human traits, such as rock art and purposeful burials with ornaments, became regular practice (Huffman 2005).

South Africa's rock art tradition is the engravings and paintings produced by forager or San communities (Smith & Ouzman 2004). Though considered predominantly shamanistic and symbolic, San rock art also concerns gender, landscape, and politics (Smith & Ouzman 2004).

In addition, Bantu-speaking farmers' rock art also exists that was made by groups that appeared in southern Africa about 2,000 years ago (Vogel 1995) from East and Central Africa (e.g., Ten Raa 1974; B. Smith 1995, 1997, 2002). This art has several distinct traditions, among them the northern Sotho initiation and protest rock arts (Smith and van Schalkwyk 2002, van Schalkwyk and Smith 2004), the rock engravings of Late Iron Age settlements (e.g., Maggs 1995), and the boys' initiation rock art of the southern Sotho and Zulu. Most of these traditions are informed by oral history, and some may continue to be practiced (Smith & Ouzman 2004).

Four areas known from the northern part of the country where rock art clusters are found, comprise the Limpopo River Valley, the Makabeng-Blouberg Mountains, the Soutpansberg Mountains and the Waterberg. Each of these areas has its own distinct iconography but also shares a number of common qualities that make it different from the south-eastern mountain complex (Blundell and Ferreira 2017). These common attributes are:

- A greater representation in the art of diverse animal species. The rock art of the south-eastern mountain complex, as well as other parts of South Africa, heavily emphasizes eland. After eland, rhaebuck and hartebeest are the most numerically important animal-images. Images of felines, elephant, domestic animals and other species do occur but are generally numerically poorly represented, both at a single site (only a single feline may be present at a site, whereas hundreds of images of eland might be present for example) and as a category of images within the corpus of rock art for a region. The rock art of the northern part of South Africa differs from that of the south-eastern mountains because there is greater species variability and numerical representation of those species both at a single shelter and throughout the corpus of rock art. Giraffe, elephant, hartebeest/tsessebe, kudu and other animals are commonly found at rock art sites. The numerical dominance of eland appears to wane in the northern parts of the country (Blundell & Ferreira 2017).

- A greater proportion of images of women when compared to other parts of South Africa. Women typically make up between 2% and 14% of identifiable human images in the rock art of most parts of South Africa but in the northern parts of the country this increases dramatically to 31% (Blundell & Ferreira 2017).

- A widespread emphasis at rock art sites of images of clothing. These images include both men's loincloths (Y-shaped images) and female aprons (stretched out skin-shapes). Such motifs are exceptionally rare in the south-eastern mountain complex but common in the northern areas of the country (Blundell & Ferreira 2017).

5.1.5 Iron Age Sequence

In the northern regions of South Africa at least three settlement phases have been distinguished for early prehistoric agropastoralist settlements during the Early Iron Age (EIA). Diagnostic pottery assemblages can be used to infer group identities and to trace movements across the landscape. The first phase of the Early Iron Age, known as Happy Rest (named after the site where the ceramics were first identified), is representative of the Western Stream of migrations, and dates to AD 400 - AD 600. The second phase of Diamant is dated to AD 600 - AD 900 and was first recognized at the eponymous site of Diamant in the western Waterberg. The third phase, characterised by herringbone-decorated pottery of the Eiland tradition, is regarded as the final expression of the Early Iron Age (EIA) and occurs over large parts of the North West Province, Northern Province, Gauteng and Mpumalanga. This phase has been dated to about AD 900 - AD 1200. These sites are usually located on low-lying spurs close to water (Coetzee 2015).

The Late Iron Age (LIA) settlements are characterised by stone-walled enclosures situated on defensive hilltops c. AD 1640 - AD 1830). This occupation phase has been linked to the arrival of ancestral Northern Sotho, Tswana and Ndebele (Nguni–speakers) in the northern regions of South Africa with associated sites dating between the sixteenth and seventeenth centuries AD. The terminal LIA is represented by late 18th/early 19th century settlements with multichrome Moloko pottery commonly attributed to the Sotho-Tswana. These settlements can in many instances be correlated with oral traditions on population movements during which African farming communities sought refuge in mountainous regions during the processes of disruption in the northern interior of South Africa, resulting from the so-called difaqane (or mfecane) (Coetzee 2015).

5.2 Historical overview of the Study Area and Surroundings

The archival and desktop research of the history of the study area and surrounding landscape identified a number of historical aspects which can be associated with the study area as well as its immediate surroundings. These historical facets will be discussed in more detail and in chronological sequence below.

Please note that the authors are aware of the Makapan Valley with its various historical, archaeological and palaeontological significant sites and features such as Makapan's Caves, Cave of Hearths etc. The authors are also aware that the Makapan Valley is both a National Heritage and World Heritage site. However, the Makapan Valley is located approximately 30km south-east of the study area. As a result, the Makapan Valley is not directly associated with the history of the study area and was not included in this section or overall report.

5.2.1 The Northern Transvaal Ndebele

The Ndebele-speaking people in the Mokopane and Polokwane regions (including the small Kekana group around Hammanskraal) were classified by Van Warmelo (1930) as the Northern Transvaal Ndebele. He classified the local Ndebele into Northern Transvaal Ndebele and Southern Transvaal Ndebele on the basis of geographical location; the division roughly mirrored a cultural split between the two groups. He also mapped the common descent of the Transvaal Ndebele from the original chiefdom under Musi, and outlined the succession battle following Musi's death and the formation of several chiefdoms (Lekgoathi, 2009).

The study area and its surrounding landscape are strongly associated without especially two Late Iron Age / Historic agropastoralist groups, namely the Langa Ndebele and the Kekana Ndebele.

5.2.1.1 The Langa Ndebele

The Langa Ndebele originally lived in present-day Kwazulu-Natal and was associated with the extensive and powerful Hlubi kingdom. Centuries before the rise and expansion of the Zulu kingdom, the Langa Ndebele departed from present-day Kwazulu-Natal in c. 1650. This migration was most likely led by Chief Masebe I.

Their migration from present-day Kwazulu-Natal took many years. It is understood that one of the first settlements along their migration was within present-day Swaziland. From here they moved to Ga-Maferera, on the Olifants River. The Langa Ndebele then migrated to Bošega, east of present-day Polokwane. Their closests neighbours at the time were the Matlala of the Matlala Mountains and the Kekana Ndebele of Chief Moletlane at present-day Zebediela. The Langa Ndebele stayed at Bošega for only a short period of time before moving to a hill located south-east of Polokwane known as Thaba Tšhweu. At Thaba Tšhweu a number of the Langa Ndebele chiefs ruled and died, including Masebe I, Mapuso, Podile and Masebe II. This points to a relatively long occupation of the settlement.

While residing at Thaba Tšhweu, the Langa Ndebele adopted the Sotho custom of circumcision. Some scholars believe that it was the relatively nearby Matlala people who introduced circumcision to the Langa Ndebele. The first of their leaders to have been circumcised appears to have been

Chief Podile. During this same period, the Langa Ndebele obtained the medicated pumpkin for their first fruits ceremony from the Kekana Ndebele of Moletlane. Similarly, it is believed that the Kekana Ndebele had to be notified by the Langa Ndebele before the latter Ndebele group could undertake initiation and form age-sets. These factors suggest that the Langa Ndebele were subject to the Kekana Ndebele, or that as a minimum they recognised the genealogical superiority of the Kekana Ndebele.

Masebe II was succeeded at Thaba Tšhweu as ruler by Chief Seritarita in c. 1775. Shortly after his succession, Seritarita led his people from Thaba Tšhweu to Maleoko, on the present-day farm Bultongfontein 239 KR. This farm adjoins the farm Armoede 823LR on its southern boundary. It is therefore clear that the arrival of the Langa Ndebele at Maleoko represented the first settlement of the Langa Ndebele in the general surroundings of the present study area.

Seritarita remained at Maleoko for approximately three years before moving with his people to Moumong-wa-Matswake, located on the present-day farm Zuid-Holland 773 LR. This settlement of Moumong-wa-Matswake was also known as Mokgokgong. The farm Zuid-Holland is located north-east of the farm Utrecht, and is located approximately 5.5km north of the closest point along the present study area.

Seritarita lived at Moumong-wa-Matswake until his death, and was succeeded by Chief Mapela, the son of his third-ranking wife. Seritarita's principal wife had had no sons, whereas his son by his second-ranking wife, Makgenene (Mamaala) was not deemed fit to hold the office of chief as he was believed to have deserted his father. Furthermore, it also appears that a *ngwetši* (daughter-in-law) was married to produce an heir on behalf of the principal wife. The *ngwetši* bore a son named Mosoge. While Mosoge, as the most senior of Seritarita descendants, was therefore to have become chief in time, this never happened. Some scholars believe that he was unfit to succeed and that he preferred to spend his time farming rather than to succeed as the ruler of the Langa Ndebele. Other scholars believe that by the time that Mosoge was old enough to succeed, Mapela had entrenched his position as chief to such an extent that it was impossible for Mosoge to take over the chieftainship from Mapela. In the end, during the mfecane, Mosoga led his followers away from Moumong-wa-Matswake to settle at a small hill named Mabjanamaswana, immediately east of Thutlane, and located some distance north and west of Moumong-wa-Matswake. Incidentally, Tutlane is located approximately 22km north-west of the present study area.
At the time of his 'desertion', Makgenene moved with his followers away from Moumong-wa-Matswake and settled at Tsotsodi, on the present-day farm Planknek 43 KS, situated east of Mokopane and approximately 19.5km south-east of the present study area. Makgenene also lived at Segodini, located on the present-day farm Makapansgat 39 KS. Their settlement at Segodini was ruled by three successive chiefs, namely Makgenene, Selepe and Mphunye (Mapunya).

During the reign of Mapela, the Langa Ndebele experienced a growth period during which their number and fame increased. During his reign, Mapela incorporated a number of smaller Sotho

groups and clans, some voluntary and others by force. He also managed to defeat the Phalane Nareng of Mabuela and the Pedi of Matlou. These two groups had been settled along the Mogalakwena River for some time, and had been unsuccessfully attacked by the Langa Ndebele even before their arrival at Moumong-wa-Matswake and before the succession of Mapela. It is interesting to note that a present-day settlement located approximately 14km west by northwest of the present study area, bears the name Ga-Mabuela (i.e. the place of Mabuela). The Bibidi of Šongwane were also defeated during the reign of Mapela and fled to the Bobibidi hill near Villa Nora. Similarly, the Kwena of Ramorulane and the Hurutshe of Molokomme were defeated by Mapela's forces at Senta Hill and Swartkop. The Koni of Masenya and Puka, the Tlokwa of Pila and the followers of Tšhokwe joined the Langa Ndebele voluntarily during Mapela's reign.

During his old age, Mapela moved his capital from Moumong-wa-Matswake to Fothane Hill (Moordkoppie) where he died in 1825. Fothane Hill is located approximately 10.6km west by northwest of the study area. After Mapela's death, Mankopane, the son of Mapela's second-ranking son, Masekamiša, was earmarked to succeed. However, at the time Mankopane was still to young and as a result, Maleya, Mapela's son from a lower ranking wife was appointed as chief. Chief Maleya ruled the Kekana Ndebele from his capital on the Ditlotswane Hills, situated approximately 14km north-west of the present study area.

Maleya proved to be an unpopular chief, and as soon as Mankopane was old enough to succeed he ousted Maleya and became ruler of the Langa Ndebele. Mankopane's succession is believed to have taken place around 1835 or 1836.

After Mapela's death, the Mamaala group returned to the Langa Ndebele capital and claimed the chieftainship under their current leader, Mphunye. This was denied and as indicated above, Mankopane succeeded Mapela as the chief of the Langa Ndebele. As a result, the Mamaala group planned to kill Mankopane, but without success.

During Chief Mankopane's reign, the Langa Ndebele attacked and defeated the Bibidi of Šongwane at their settlement Bobididi near Villa Nora. Villa Nora is located approximately 90km north-west of the present study area. The Langa Ndebele also attacked and scattered the copper miners of Musina, near the present-day town bearing the same name (Jackson 1983).

5.2.1.2 The Kekana Ndebele

The Kekana Ndebele group, which is associated specifically with the area around Mokopane and Zebediela, seems to be a sub-group of the so-called Northern Transvaal Ndebele (Bergh 1990) (Skhosana 2010). Skhosana (2010) references Van Warmelo (1930) and other scholars who subscribe to the view that the so-called Southern and Northern Ndebele of the Republic of South Africa constitutes a single ethnic group that claims its origin from the ancestral chief, Musi (or Msi). According to these scholars, the Ndebele originate from KwaZulu-Natal. They originally split from

the main Hlubi group circa 1552 under the chieftainship of Mafana and subsequently travelled northwards.

The AmaNdebele crossed the Vaal River and entered what is today known as Gauteng, and initially settled around eMhlangeni, known as Randfontein, which is on the western side of Johannesburg. From eMhlangeni, they moved to KwaMnyamana near Pretoria and arrived there in 1610. At KwaMnyamana, the AmaNdebele were under the chieftainship of Musi who, according to Van Warmelo (1930), had either five or six sons, namely Manala, Nzunza (or Ndzundza), Mhwaduba, Dlomu, Mthombeni and Siobasa or M'pafuli (or Mphafudi).

Historically, KwaMnyamana is considered to be an important settlement of the AmaNdebele of the Republic of South Africa, because it is the place where the AmaNdebele split into two main groups and numerous smaller sub-groups. When Musi died in 1630, a succession struggle between two of his sons, namely Manala and Nzunza (or Ndzundza), resulted in them splitting into the Southern and Northern Ndebele, respectively, as well as into other smaller groups. The Southern Ndebele comprised the followers of Manala and Nzunza while the Northern Ndebele consisted of the followers of Mthombeni. Together with his brother, Nzunza (or Ndzundza), Mthombeni left KwaMnyamana and travelled to KwaSimkhulu, north of Belfast in the present Mpumalanga Province. At KwaSimkhulu, Mthombeni parted ways with Nzunza (or Ndzundza) and moved northwards along the Olifants River until he reached the area around Zebediela. On his way northwards, Chief Mthombeni became known as Gegana (or Kekana) and his followers were referred to as the 'people of Gegana (or Kekana)' instead of remaining the 'people of Mthombeni'. In explaining how Mthombeni changed his name to Gegana (or Kekana), De Beer (cited in Skhosana, 2010) states that, "*Die naam Gegana is afgelei van die Noord-Ndebele woord, kugega, wat beteken om saam met of parallel met iets te beweeg en verwys na die feit dat Mthombeni en sy volgelinge in hulle noordwaartse migrasie al langs die Olifantsrivier op beweeg het. Daarom word daar ook na hulle verwys as Gegana nomlambo, dit wil se die Gegana wat met die revier (mulambo) opgetrek het*."

Bergh (1990) states that the Kekana Ndebele (Mathombeni/Yangalala) settled south-east of Potgietersrus at Moletlane. According to him, this community had earlier split from the Ndzundza group. A further split within the Kekana community occurred when the Vaaltyn-Kekana established a separate community closer to the present day town of Mokopane on the farm Pruissen. This group was known as the Kekana Ndebele of Chief Mugombhane (who was also known as Sejwamadi, Mokopane and Makapane) (Bergh, 1999).

5.2.2 The arrival and settlement of the Voortrekkers and the establishment of Potgietersrus

The Historical Period within the study area and surroundings commenced with the arrival of newcomers to this area. The first arrivals would almost certainly have been travellers, traders, missionaries, hunters and fortune seekers. However, with time, this initial trickle was replaced by a

flood of white immigrants during the 1830s, when mass migration of roughly 2 540 Afrikaner families (comprising approximately 12 000 individuals) from the frontier zone of the Cape Colony to the interior of Southern Africa took place. The people who took part in this Great Trek were named Voortrekkers (those who travel ahead) and formed part of the first mass movement of whites into the interior of Southern Africa (Visagie, 2011). The reasons behind this migration are complex, but in general, terms include aspects such as a general discontent with the British authorities and the way in which they dealt with various aspects on the frontier.

In 1836, two pathfinding parties under the leadership of Louis Tregardt and Johannes Jacobus Janse (Lang Hans) van Rensburg passed the outskirts of present-day Heidelberg in a northward direction. While the exact route followed by these Voortrekkers are not always equally clear, Bergh (1999) and others contend that they followed the Olifants River (or alternatively followed a route a short distance west of the river) before passing through a poort in the Strydpoort Mountains. The Strydpoort Mountains are located approximately 50km south-east of the present study area.

However, at the Strydpoort Mountains, the two parties separated, apparently due to differences of opinion the two trek leaders held regarding the purpose of the expedition. Van Rensburg was anxious to reach Lourenço Marques to replenish his store of ammunition (for ivory hunting), while Tregardt was in favour of reaching the Zoutpansberg Mountains, now only seventy miles away. Van Rensburg's party separated from Tregardt's and they never saw each other again. The place where they parted ways has since become known as the Strydpoort—the Pass of the Quarrel (Ransford, 1968). After the separation of the two Voortrekker parties, Louis Tregardt continued northward and passed the present-day town of Polokwane before reaching the Soutpansberg. He eventually reached Delagoa Bay, where, tragically, Louis Trhicardt and many of his party died of malaria (Ransford. 1968). The Van Rensburg trek met a violent end in present-day Mozambique when they were attacked and the entire party (with the exception of two children) annialated by a Zulu impi (www.wikipedia.org).

With time, other Voortrekker parties followed and in 1846 the Voortrekker town of Andries Orieg Stad (Ohrigstad) was established. The original Voortrekker town had a short existence, and by 1849 most of its residents had moved to the newly established Voortrekker towns of Schoemansdal (along the Soutpansberg Mountains) and Lydenburg (Changuion 1986).

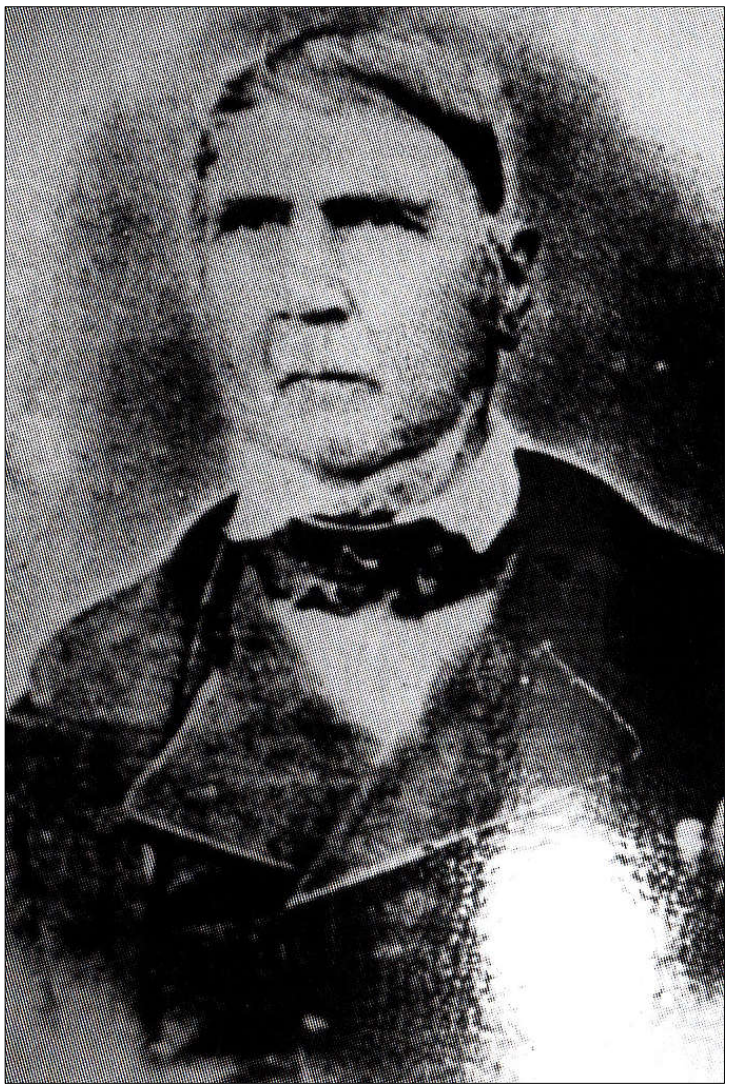

Figure 13 – Voortrekker leader Louis Tregardt (Visagie, 2011:500).

On 16 January 1852 the Sand River Convention was signed between the British Government and the Transvaal Boers. This convention formally recognised the existence and independence of the Boer Republic north of the Vaal River by the British Government. As a result, this agreement allowed for the creation of a Boer Republic, namely the *Zuid-Afrikaansche Republiek* (South African Republic) (Oberholster, 1972). The *Zuid-Afrikaansche Republiek* remained in existence until the end of the South African War in 1902.

The constitution of the newly established *Zuid-Afrikaansche Republiek* stated that each burger who had established himself within the republic before 1852, could choose and receive two farms of roughly 3 000 morgen each. Those burgers who arrived after 1852 could only obtain one such farm, and had to pay an amount of 10 shillings for it annually. The initial settlement and concentration of Voortrekkers tended to be along the Mooi River (near present-day Potchefstroom), Magaliesberg Mountains (near the present-day towns of Pretoria and Rustenburg) and Lydenburg areas. However, the establishment of farms by the Voortrekkers in the surroundings of the study area appears to have been isolated and sporadic during these early years with some settlement only

taking place during the 1850s and early 1860s (Bergh 1999).

On 19 March 1852 the Volksraad of the newly established *Zuid-Afrikaansche Republiek* approved the establishment of a town named Vredeburg in the Makanspoort area. Vredeburg was however never established (Bergh 1999).

5.2.3 Moordkoppie, Moorddrift and Pruizen

In September 1854 three events took place in the surroundings of the study area which were to have a profound impact on the history and characteristics of the surrounding landscape. Moordkoppie, Moorddrift and Pruizen, the three scenes of these events, would echo in the combined memory of both white and black residents of these parts for years to come. In fact, one of these places, Moorddrift, would be proclaimed as a National Monument in 1940, whereas a monument commemorating the victims of all three events was erected in Potgietersrus (present-day Mokopane) in 1909. The events associated with especially Moorddrift and Pruizen also led to a battle and siege which was to become synonymous with the town of Potgietersrus / Mokopane to this day, namely Makapan's Caves. Makapan's Caves were declared a National Monument in 1938 (Bergh 1999).

During late September 1854, the Langa Ndebele of Mankopane and Kekana Ndebele of Mokopane attacked three groups of Voortrekkers. A total of 28 Voortrekkers were killed during these attacks, which comprised 14 men that were killed by the Langa Ndebele near their capital at Fothane Hill (Moordkoppie), a party of 12 men, women and children killed at Moorddrift by the Kekana Ndebele and two men killed at the capital of the Kekana Ndebele on the farm Pruizen.

The attack at Fothane Hill (Moordkoppie) was first, and those killed included Voortrekker leader Andries Hendrik Potgieter's younger brother Hermanus Philippus Potgieter. The attacks at Moorddrift and Pruizen took place the following day. The three attacks taking place in such a short period of time by two different, though neighbouring Ndebele groups, suggest that the attacks were orchestrated and planned beforehand (Jackson 1983). The reasons for the Ndebele attacks on the three Voortrekker parties are explained by Dr Alex Schoeman of the University of the Witwatersrand as follows: "*Tension between the Ndebele and the Trekkers had been mounting for a number of years prior to the siege. This hostility was fuelled by the Trekkers' interest in the territory of the Kekana and Langa Ndebele because of its strategic importance as a route to the ivory-rich northern Transvaal (now Limpopo Province). In 1852 Commandant-General A.H. Potgieter intended to establish a town (De Vaal 1990: 140) in the Makapanspoort to lay claim to the route and facilitate the movement of goods and people between Schoemansdal and the Magaliesberg (Rustenburg). His objectives remained unrealized because he fell ill and died in December the same year (De Vaal 1990: 140). By 1854 the Kekana, who had fallen repeatedly victim to Trekker raids, demands and various acts of cruelty under the leadership of the Potgieters, joined a growing network of resistance against the Trekkers. In 1854 the Trekkers, who were also finding it increasingly difficult*

to exert their control over Sekwati's Pedi (Delius & Trapido 1983: 62), shifted their trade route from the Strydpoort to the Makapanspoort (Potgieter 1958: 3), and in doing so triggered a cycle of violence and resistance between themselves and the Ndebele." (Schoeman 2010:67).

When news of the attacks reached Commandant-General Piet Potgieter at his farm near present-day Modimolle, he set about calling up a commando. Within a relatively short period of time his commando numbered 150 men from essentially the Schoemansdal (Zoutpansberg) Voortrekkers. However, he realised that more men were required, and requested the assistance of Commandant-General Marthinus Wessel Pretorius of the Magaliesberg (Rustenburg) Voortrekkers. The news of the attacks reached Pretorius on 25 September 1854, and he immediately started calling up his men. By 14 October 1854 his commando numbered 334 men, with whom he proceeded northwards to assist Commandant-General Piet Potgieter. For reasons not presently clear, the combined Voortrekker force of nearly 500 men ignored the Langa Ndebele and proceeded to attack the Kekane Ndebele of Mokopane at their defensive stronghold known today as Makapan's Caves. The Voortrekkers placed the cave under siege, which lasted from 25 October to 21 November 1854. By the end of the siege, nearly 2 000 members of the Kekana Ndebele had lost their lives (Jackson 1983). Schoeman (2010) states that a number of Ndebele women and children were also captured during the siege. On the Voortrekker side, Naidoo (1987) indicates that two Voortrekkers were killed during the siege and a number wounded. One of those Voortrekkers killed during the siege was Commandant-General Piet Potgieter, and it was his name that was commemorated in the naming of the nearby town that was established in September 1858, namely Piet Potgietersrust.

After the lifting of the siege, the Voortrekkers proceeded to Fothane Hill to attack the Langa Ndebele. However, fearing reprisals from the Voortrekkers, Mankopane and his Langa Ndebele had fled from Fothane Hill to a flat-topped and steep-sided mountain named Magagamatala on the present-day farm Ruigtevley 710 LR. Magagamatala is located approximately 49km north-west of the present study area.

Moordkoppie (Fothane Hill) is the closest of the three attacks of September 1854 to the present study area. Jackson (1983) states that the scene of the attack on Hermanus Potgieter and his party at Fothane Hill took place in proximity to where the Kgabare Primary School is located today. This school appears to be located approximately 10km west by north-west of the present study area.

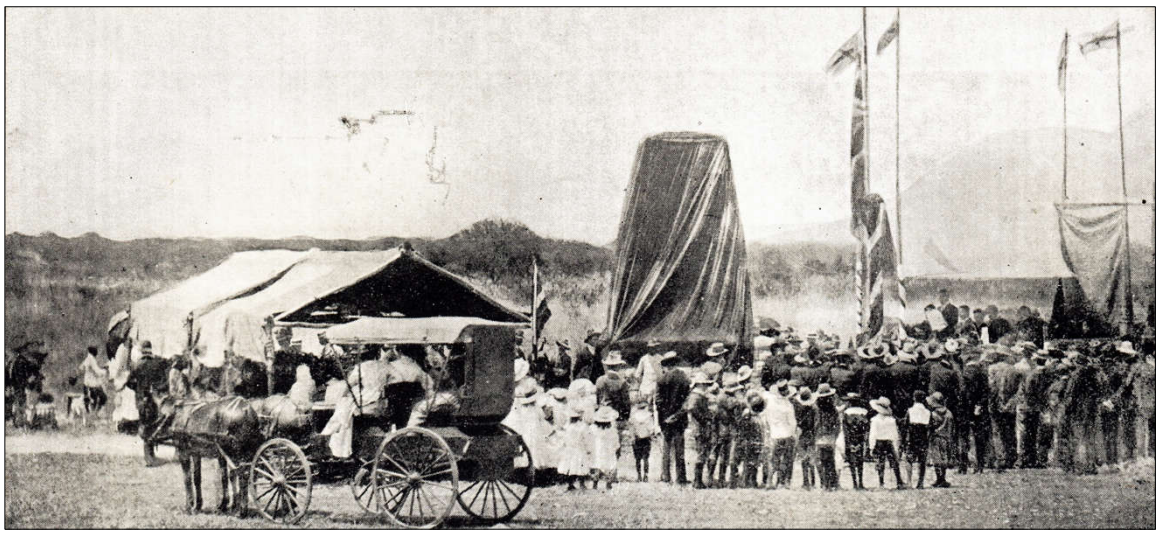

Figure 14 – Historic photograph depicting the unveiling of the memorial to the Voortrekkers who had lost their lives at Moordkoppie, Moorddrift and Pruizen. This monument was erected and unveiled in the square adjacent to the town hall of Potgietersrus in 1909 (Combrink 1954:18).

5.2.4 Establishment of Piet Potgietersrust and the conflict between the Langa Ndebele and the Transvaal Republic

In September 1858 the Volskraad approved the establishment of a new town that was to be named Piet Potgietersrust in honour of Commandant-General Piet Potgieter (the son of Commandant-General Andries Hendrik Potgieter) who was killed during the siege of Mokopane (see the section above). In December 1860 Commandant-General Stephanus Schoeman announced that the laying out of the town would commence on 10 December 1860. Work on the development of the town proceeded slowly, and by 21 January 1861 only a water furrow had been dug. By September 1862, however, a number of residents had settled down in the newly established town (Bergh 1999).

The establishment and early existence of the town of Piet Potgietersrust became synonymous with the conflict between the Langa Ndebele of Chief Mankopane and the Transvaal Republic. The first serious battle between the two groups took place on 14 April 1858, when in retaliation for incursions and attacks by Mankopane's men, his mountain stronghold named Magagmatala was attacked by a force commanded by Commandant-General Stephanus Schoeman. During the attack, the later President of the *Zuid-Afrikaansche Republiek,* Commandant S.J.P. (Paul) Kruger played a crucial role and the Langa Ndebele suffered a devastating defeat. In the words of Jackson (1983:18) "…*it is said that some 800 of Mankopane's subjects were killed that night*." As a result of the attack of 14 April 1858, Mankopane moved his capital to Thutlwane Hill on the farm Kromkloof 744 LR. Thutlwane is located approximately 35.8km north-west of the present study area (Jackson 1983).

In January 1868 the town of Piet Potgietersrust was attacked by the Kekana Ndebele of Mogemi, who acted as regent for Mokopane II. His attack on the town was supported by Mankopane's Langa Ndebele. The increasing conflict between the two sides came to a head on 2 March 1868, when a Boer Commando commanded by Commandant Paul Kruger laid siege to Mogemi and his followers

at Sefakaulo Hill near Piet Potgietersrust. In the time that Sefakaulo Hill was under siege, Mankopane's men raided a number of farms in the surroundings of the town. Realising the threat posed by Mankopane, and concluding that he did not have the manpower to force Mogemi's surrender, Kruger decided to rather attack Mankopane at Thutlwane. This attack started on 13 June 1868, and continued for a couple of days. Although Kruger's force managed to occupy most of the mountain stronghold at Thutlwane, Chief Mankopane eventually proved victorious in the battle and forced Commandant Kruger, who by now was running low on ammunition and supplies, to order his men back to Piet Potgietersrust (Jackson 1983).

A peace accord between the Boers and the Langa Ndebele was eventually agreed upon on 6 July 1869. However, this provided little stimulus for the growth and development of Piet Potgietersrust. By 1870 the entire white population of town had been evacuated *inter alia* due to the effects of Malaria. The evacuation and abandonment of the town continued from 1870 until 1890, when Piet Potgietersust was re-occupied (Bergh 1999).

On 30 May 1877, a few years after the evacuation of the white population of Piet Potgietersrust, Chief Mankopane passed away at Thutlwane. He was buried here the following day, and his son Masebe succeeded as chief of the Langa Ndebele on 3 June 1877 (Jackson 1983).

Figure 15 – Historic photograph of various chiefs from the then Zoutpansberg District who were called to a meeting in Pretoria with Captain Oscar Dahl in August 1881. Chief Masebe of the Langa Ndebele is standing behind Dahl and to his right, with Chief Mokopane II of the Kekana Ndebele standing left of Dahl (De V. Pienaar, 1990:166).

Between 1883 and 1886 a war raged between the Langa Ndebele of Masebe and the Kekana Ndebele of Mokopane II. While the exact localities for the various events associated with this war

are not presently known, at least one of the battles appear to have taken place along the Mogalakwena River. On this occasion, Masebe's forces slept at Fothane Hill (Moordkoppie) the night before the battle. The war came to an end when State President Paul Kruger visited these parts and ordered Masebe and Mokopane II to appear before him, upon which he insisted that they make peace (Jackson 1983).

From 1890 onwards, and under the leadership of Commandant Henning Pretorius, the town was of Piet Potgietersrus developed and expanded (Bergh 1999). Incidentally, Commandant Pretorius was an early owner of two of the farms from within the study area, namely Utrecht and Overysel.

5.2.5 Establishment of 'Native Locations' in the Surroundings of the Study Area

After the dramatic defeat of the British forces under command of Major General Sir George Pomeroy Colley to the Boers at the Battle of Majuba on 27 February 1881, the First Boer War (also known as the Tranvsaal War of Independence) came to an end. The formal peace agreement between the British Government and Boers was signed on 5 April 1881 in Pretoria and became known as the Pretoria Convention. The agreement was ratified by the Transvaal Volksraad on 3 August 1881 and was superceded by the London Convention of 1884.

Three sections from the Pretoria Convention are of importance for the present study. These sections are provided verbatim below, and deal with the creation of a so-called 'Native Location Commission' which had to reserve or proclaim defined locations within the Transvaal Republic for the various black groups who lived within its borders. The three sections are as follows:

XIII. Natives will be allowed to acquire land, but the grant or transfer of such land will in every case be made to, and registered in the name of, the Native Location Commission, hereinafter mentioned, in trust for such natives.

XXI. Forthwith, after the taking effect of this Convention, a Native Location Commission will be constituted, consisting of the President (or in his absence the Vice-President) of the State, or some one deputed by him, the Resident, or some one deputed by him, and a third person to be agreed upon by the President (or the Vice-president, as the case may be) and the Resident; and such Commission will be a standing body for the performance of the duties hereinafter mentioned.

XXII. The Native Location Commission will reserve to the native tribes of the State such locations as they may be fairly and equitably entitled to, due regard being had to the actual occupation of such tribes. The Native Location Commission will clearly define the boundaries of such locations, and for that purpose will, in every instance, first of all ascertain the wishes of the parties interested in such land. In case land already granted in individual titles shall be required for the purpose of any location, the owners will receive such compensation, either in other land or in money, as the Volksraad shall determine. After the boundaries of any location have been fixed no fresh grant of

land within such location will be made, nor will the boundaries be altered without the consent of the Location Commission. No fresh grants of land will be made in the districts of Waterberg, Zoutpansberg, and Lijdenberg, until the locations in the said districts respectively shall have been defined by the said Commission (www.sahistory.org.za).

The Transvaal Location Commission as it is sometimes referred to, existed between 1881 and the outbreak of hostilities during the South African War in 1899. Initially, its members were Paul Kruger (Vice-President of the *Zuid-Afrikaansche Republiek*), George Hudson (British Resident in the Transvaal Republic) and H.J. Schoeman. Later, Kruger was replaced by the Superintendent of Native Affairs, General P.J. (Piet) Joubert with Fritz Stiemens as the Commission Secretary.

After the Pretoria Convention was replaced by the London Convention in 1884, the members of the commission also changed. By 1891, the work of the commission was replaced by a meeting that was called in every district of the Transvaal Republic and which was attended by the relevant district's magistrate, commandant field-cornets (Bergh 1999).

In May 1882, shortly after the adoption of the Pretoria Convention, the Executive Council of the *Zuid-Afrikaansche Republiek* was instructed by the Location Commission to already decide which black groups would be allocated locations. Only 17 black groups were included in this initial list, and in terms of the surroundings of the present study area this list included the Langa Ndebele as well as the Kekana Ndebele of Mugombhane (Makapan) (Bergh 1999).

On 26 May 1890 the Location Commission visited Potgietersrus, and found that Chief Mugombhane had passed away a few months before. As a result, the commission met and negotiated with the regent Ntala (known to the commission members as Willem Makapan). The Location Commission proceeded to demarcate the farms Makalakaskop 2324, Knapdaar 1548 (portion), Tweefontein 1033 (portion), Rietfontein 1562, Turfspruit 2323 and Pietpotgietersrust 2247 (portion) as a location for the Kekana Ndebele.

In January 1894 the Location Commission declared that the Mogalakwena River would define the south-western boundary of the reservation, through which small sections of the following farms were added to the reservation: De Hoogedoorn 706, Blinkwater 707 and Lisbon 2366.

At the same time, the portion of the farm Pietpotgietersrust 2247 that was originally included, was now excluded from the reservation (Bergh, 1999).

Figure 16 – Historic photograph of a meeting between an official of the Transvaal Republic and a person believed to be Chief Mugombhane of the Kekana Ndebele (Cartwright & Cowan 1978:10). The Location Commission visited the Langa Ndebele between 10 and 13 June 1890.

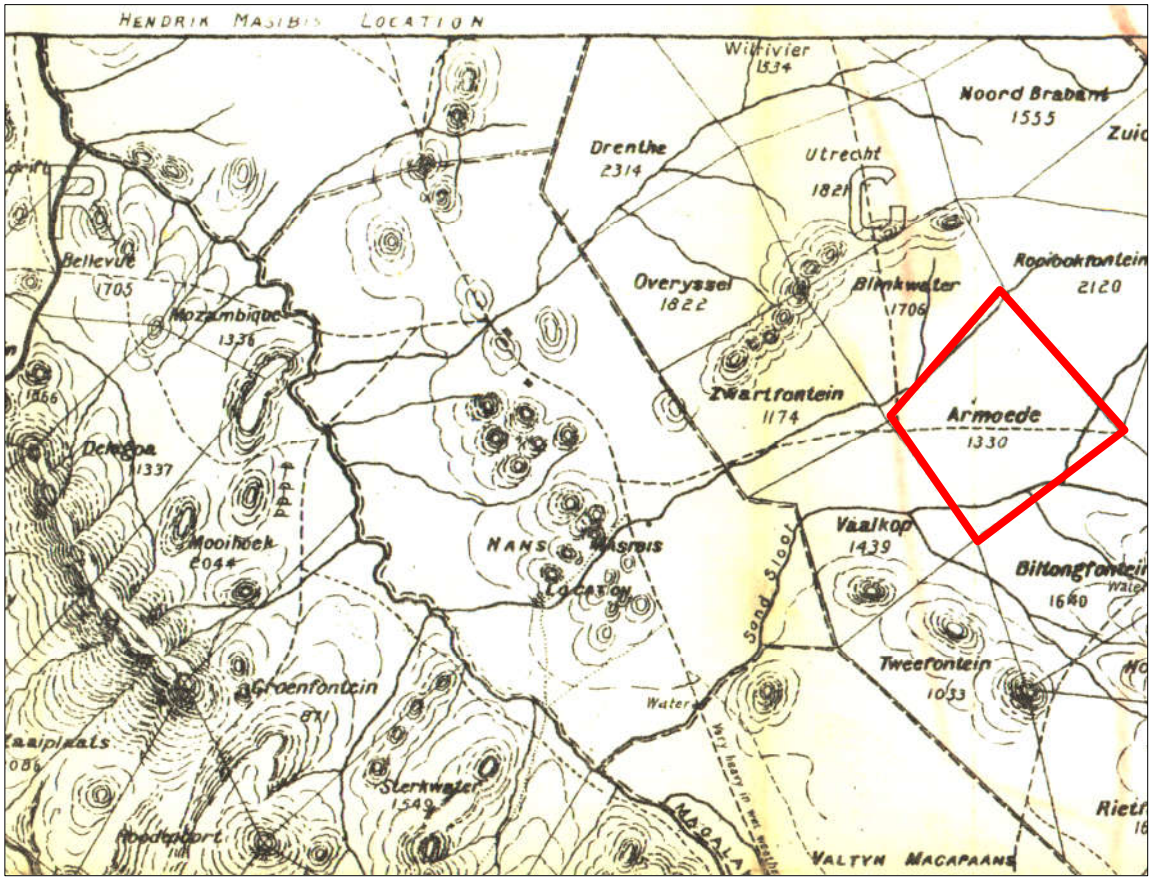

Figure 17 – Detail view of the Nylstroom-Pietersburg Sheet of the Major Jackson Map Series that was compiled during the South African War. This particular sheet is the revised edition dated to June 1901. The boundaries of the three 'native locations' located closest to the study area are shown in stippled line. The farm Armoede is marked in red.

5.2.6 From Location to Lebowa: the Study Area and Surroundings from c. 1890 into the Twentieth Century

The partition of the Langa Ndebele into sections falling under the two sons of Mapela had a profound impact on this Nguni group. The southern section of the overall location that was allocated to the Langa Ndebele in 1890, was established as the land of Chief Hans Masibi and his followers whereas the northern section of the location was given to Chief Backenberg Masibi. Incidentally, the southern section included Fothane Hill where the old capital of Chief Mapela was once located. As a result, this southern chiefdom became known as *ba ga Mapela* (those of Mapela's place) (Jackson 1983).

Jackson (1983:39) makes the following interesting comment regarding the composition of the two partitioned Langa Ndebele groups. He states that "…*almost all the Sotho subjects of the Langa supported Hans, whereas the majority of the Langa clansmen supported Bakenberg. In this way, the chiefdom that went to Hans comprised a high percentage of people of alien (mainly Sotho) stock and a small percentage of Lange clansmen*."

With the partition of the Langa Ndebele, Chief Hans Masibi moved his capital from his father's seat of residence at Thutlwane to the eastern foot of Mogope Hill. Mogope Hill is located approximately 4.1km west by south-west of the present study area, and the Mapela capital was situated here from 1890 to 1957 (Jackson 1983).

The years of the partition saw conflict between the Mapela on the one side and followers of Chief Backenberg Masibi on the other. Raids and attacks were undertaken from both sides during these years and lasted until April 1901, when the British Army occupied Pietersburg (present-day Polokwane) and ordered the two chiefs to stop fighting. During the period of war and bloodshed associated with the partition, Chief Hans Masibi had four of his uncles who had supported his brother's succession, shot at Raphaga Hill. This event took place in 1900. Raphaga Hill is located approximately 3.3km south-west of the study area.

After the death of Chief Hans Masibi on 29 November 1905, his uterine brother Marcus Masibi was appointed as regent. On 8 August 1913, the farm Zwartfontein 818 LR was registered in the name of Chief Marcus in trust for the Mapela people. The farm was purchased by the people of Mapela (Jackson 1983). As a result, the section of the study area falling within the farm Zwartfontein became the property of the Mapela in 1913.

The Mapela chiefdom purchased the farms Bavaria 678 LR, Blinkwater 680 LR and Scirappes 681 LR in 1926. The funds for the purchase of the three farms came from the sale of the mineral rights of the farm Zwartfontein 818 LR, where platinum had been mined for some time (Jackson 1983). The present study area includes a section of this farm.

Figure 18 - Chief Hans Masibi, the ruler of the Langa Ndebele and Mapela from 1890 to 1905 (Jackson 1983:38).

In 1941, during the reign of Nkgalabe Johannes Masibi, the farms Blinkwater 820 LR, Leyden 804 LR, Overysel 815 LR and Vaalkop 819 LR, which had been purchased by the South African Development Trust, were transferred to the Mapela in exchange for three farms, namely Bavaria, Blinkwater and Scirapps (Jackson 1983). In this way, the sections of the study area falling within the farms Blinkwater and Overysel became the property of the Mapela in 1941.

The apartheid-created bantustan or "homeland" of Lebowa was given internal self-government on 2 October 1972, with its capital initially at Seshego and later at Lebowakgomo (Bergh 1999). It is expected that during the existence of Lebowa, all the farms from within the study area fell or came to fall within the boundaries of this bantustan. In 1994, all the former bantustans were fully incorporated into South Africa again.

5.3 Archival and Historical Maps

An assessment of available archival and historical maps was undertaken as a way to establish a historic layering for the study area. These historic maps are also valuable resources in identifying possible heritage sites and features located within the study area.

5.3.1 First Edition of the 2328DD Limburg Topographic Sheet

This section deals with the First Edition of the 2328DD Limburg Topographical Sheet. This map sheet was based on aerial photography undertaken in 1965, was surveyed in 1970 and drawn in 1971 by the Trigonometrical Survey Office.

Overlays of the study area over this map sheet are provided in the image below. The following observations can be made from this overlay:

- Significant sections of the study area are depicted as cultivated lands;
- The settlement of Armoede is not yet shown immediately north of the central component of the study area boundaries; and
- No heritage features are depicted within the study area boundaries.

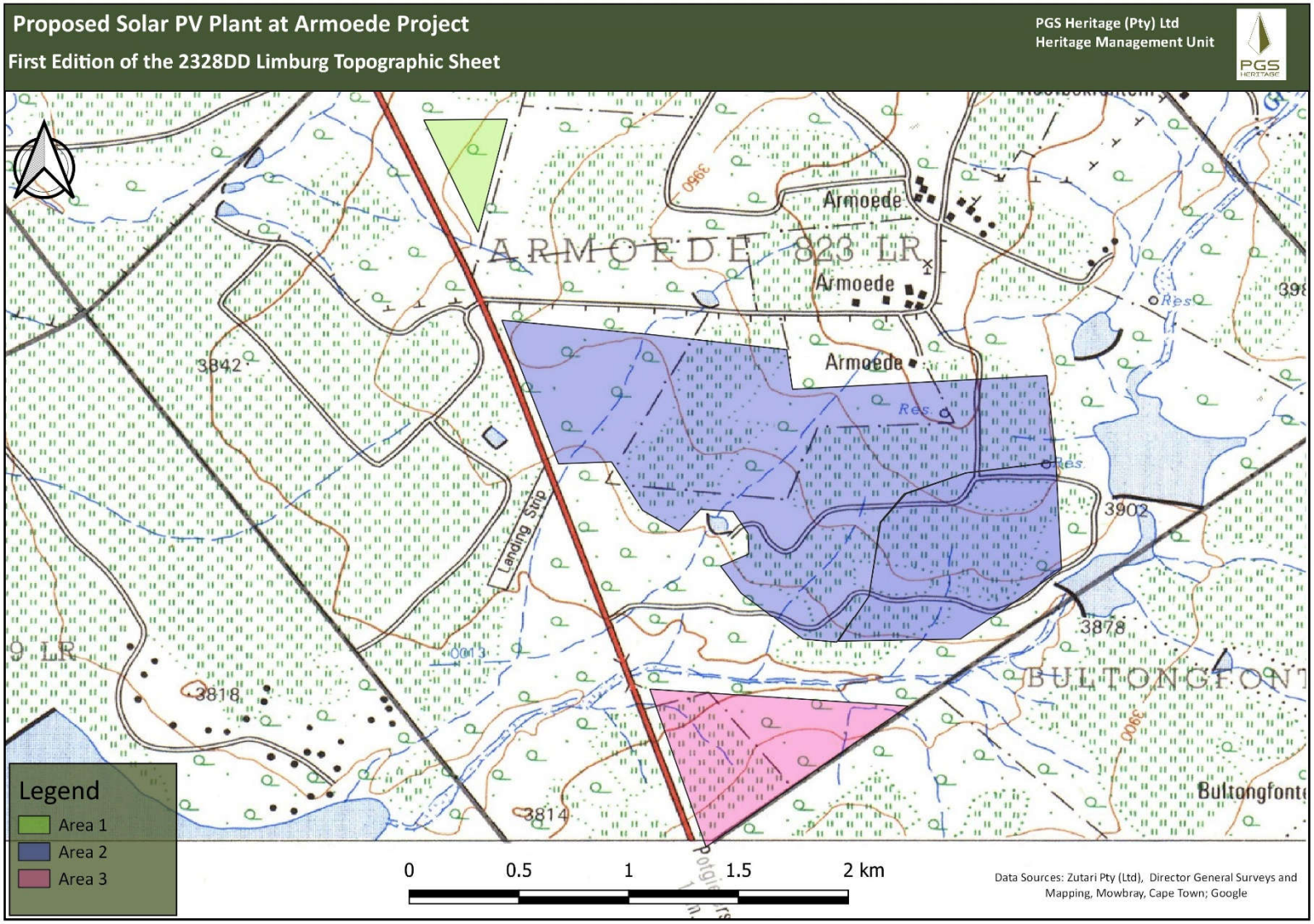

Figure 19 – Detail view of the depiction of the study area on the First Edition of the 2328DD Topographical Map Sheet. This sheet was surveyed in 1970.

5.3.2 Second Edition of the 2328DD Limburg Topographic Sheet

This section deals with the Second Edition of the 2328DD Limburg Topographical Sheet. This map sheet was compiled in 1983 by the Chief Directorate: Surveys and Land Information.

Overlays of the study area over this map sheet are provided in the image below. The following observations can be made from this overlay:

- No heritage features are depicted within the study area boundaries.

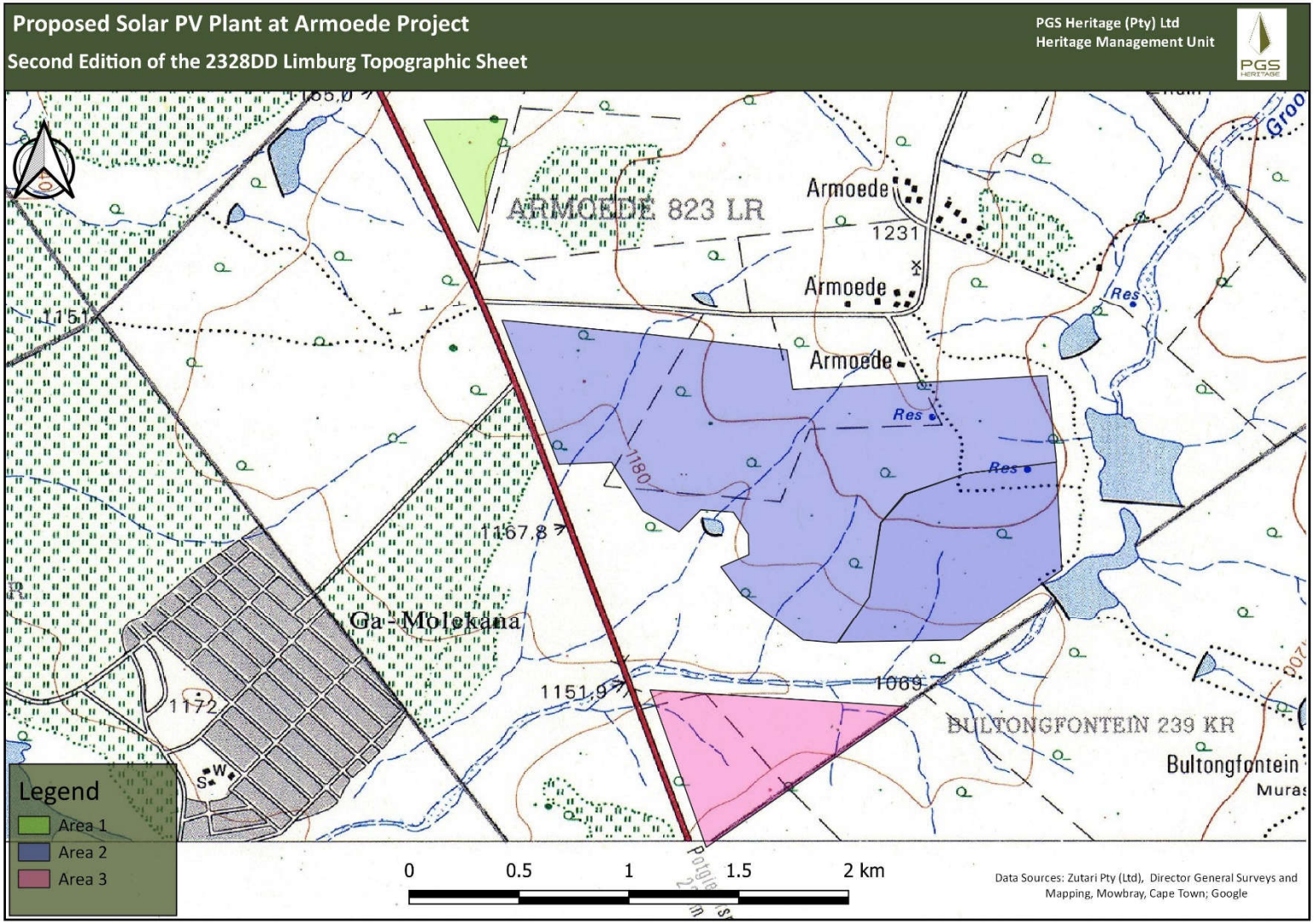

Figure 20 – Detail view of the depiction of the study area on the Second Edition of the 2328DD Topographical Map Sheet. This sheet was compiled in 1983.

5.4 Previous Heritage Impact Assessment Reports from the Study Area and Surroundings

An assessment of the South African Heritage Resources Information System (SAHRIS) of SAHRA was undertaken to establish whether any previous archaeological and heritage impact assessments had revealed archaeological and heritage sites within, and in close proximity, to the present study area footprints.

This assessment has revealed that a number of previous studies had been undertaken in the surroundings of the study area, with various heritage and archaeological site types identified.

All these previous studies located on the SAHRIS system will be briefly discussed in chronological order below. In each case, the results of each study are shown in bold.

- PISTORIUS. J. C. 2002. A cultural heritage impact assessment for the proposed new open pit for prust on the farm Zwartfontein 818lr In The Northern Province Of South Africa. Amendment To The Prust Environmental Management Programme Report (EMPR). **Heritage resources consisting of the ruins of dwellings and old abandoned mines were discovered in and near the proposed new open pit area. Six sites with graves and the ruins of dwellings dating from the relatively recent past also occur in and near the open pit area.**

- ROODT, F. 2008. Phase 1 Heritage Resources Scoping Report Mogalakwena Bulk Water Supply Scheme - Phase 1 of Zone 1 Mokopane: Limpopo. **No historical or archaeological resources were uncovered in this assessment except for several burial grounds.**

- ROODT, F. 2008. Phase 1 Heritage Impact Assessment (Scoping & Evaluation) Landfill and Salvage Yard, Anglo Platinum: Mogalakwena Section, Limpopo. **A low significance MSA stone tool scatter was uncovered in this assessment.**

- COETZEE, F.P. 2011. Cultural Heritage Survey of the Proposed Provincial Road Deviation (P4380) Project for the Mogalakwena Platinum Mine, near Mokopane, Mogalakwena Municipality, Limpopo Province. **Several historical structures and burial grounds were uncovered in this assessment.**

- MURIMBIKA, E. 2012. Proposed Eskom Platreef Power Line and Substation Project within Mogalakwena Local Municipality, Waterberg District in Limpopo Province: Archaeological and Heritage Impact Assessment Report. **Low significance historical homestead remains as well as several burial grounds were uncovered in this assessment.**

- ROODT, F. 2012. Phase 1 Heritage Resource Impact Assessment (Scoping & Evaluation): Maruteng Waste Water Treatment Works Mokopane, Limpopo. **No heritage resources were uncovered in this assessment.**

- HUTTEN, M. 2013. Proposed Water Supply Infrastructure for the Residential Clusters of Tshamahansi, Sekuruwe, Seema, Phafola, Maala Perekisi, Witrivier and Millennium Park in the Mogalakwena Local Municipality, Waterberg District, Limpopo Province. **A living heritage site was uncovered in this assessment.**

- HUTTEN, M. 2014. Proposed Development of a Shopping Centre on Portion 1 of the Farm Kroonstad 468 LR, west of Marken in the Mogalakwena Local Municipality, Waterberg District, Limpopo Province. **No heritage resources were uncovered in this assessment.**

- VAN DER WALT, J. 2016. Archaeological Impact Assessment for the Proposed Bulk Water Supply Pipelines from Pruissen to Piet-Se-Kop Reservoir, as Part of the Mogalakwena Water Master Plan, Mogalakwena Municipality Area, Limpopo Province. **Low significance Iron Age remains as well as some MSA stone tool scatters were uncovered in this assessment.**

- VAN SCHALKWYK, J. 2017. Phase 1 Cultural Heritage Impact Assessment: the proposed development of the Mogalakwena Mini Water Scheme Pipeline, Waterberg District Municipality, Limpopo Province. **Scattered surface occurrences of Middle Stone Age stone tools and flakes were identified in a few areas across the pipeline route, four graves, and the remains of old homesteads.**

- ROODT, F. 2017. Proposed filling station and shopping complex at Bakenberg. Mogalakwena Local Municipality. Waterberg District. Limpopo Province. **A stone-walled settlement of the Langa Ndebele was uncovered just outside of the proposed study area in this assessment. This stonewalled site is located approximately 16km north-west of the present study area on top of Basogadi Hill, just outside of Bakenberg. The site exhibits the typical stone-walled settlement pattern for the area and according to local residents, the site is ancestral to the Langa Ndebele.**

- VAN DER WALT, J. 2017. Heritage Impact Assessment (Required under Section 38(8) of the NHRA (No. 25 of 1999) Mogalakwena Municipality Water Master Plan: Phase 2A Bulk Water Supply Zone 1, Waterberg District Municipality, Limpopo Province. **Middle Stone Age stone tool scatters, Late Iron Age structural remains, historical stone-walled structural remains and several burial grounds were uncovered in this assessment.**
- VAN DER WALT, J. 2017. Heritage Impact Assessment for the proposed water supply pipelines and associated infrastructure, as part of the Mogalakwena Water Master Plan, Mokopane Area, Waterberg District Municipality. **During the survey, Iron Age Scatters**

(FS 1 and 2), stone-walled enclosures (MIW 4 and 5) as well as three grave/ burial sites (MIW 1-3) were recorded.

- BRIKHOLTZ, P. AND SMEYATSKY, I. 2019. Heritage Impact Assessment for the Mogalakwena Mine Expansion Project near Mokopane, Limpopo Province. **The fieldwork resulted in the identification of a total of seventy-one (71) archaeological and heritage sites. Eleven sites containing confirmed graves and burial grounds, four sites containing possible graves, two sites containing relocated burial grounds which may still contain graves, twenty-eight black homesteads, one historic farmstead, twelve stone age sites, one possible rain-making site, one late iron age stonewalled site, eight sites comprising historic to recent stonewalling, one site comprising a single lower grinding stone, one site comprising a rock boulder associated with cupules and stonewalling and one site comprising a rubbing post.**

  BRIKHOLTZ, P. 2019. Heritage Screening Assessment for the proposed Solar PV Plant at Armoede, near Mokopane, Limpopo Province. T**he fieldwork resulted in the identification of five sites, including three MSA sites, a possible grave, and a historical structure.**

- BRIKHOLTZ, P. AND DE BRUYN, C. 2020. Heritage impact assessment for the proposed Mogalakwena Mine Integrated Permitting Project near Mokopane, Limpopo Province. **No evidence for any archaeological or heritage sites could be identified.**

5.5. Heritage Screening

A Heritage Screening Report was compiled by the Department of Environmental Affairs National Web-based Environmental Screening Tool as required by Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended (32). According to the Heritage screening report, the project area has a combined High-Medium heritage sensitivity.

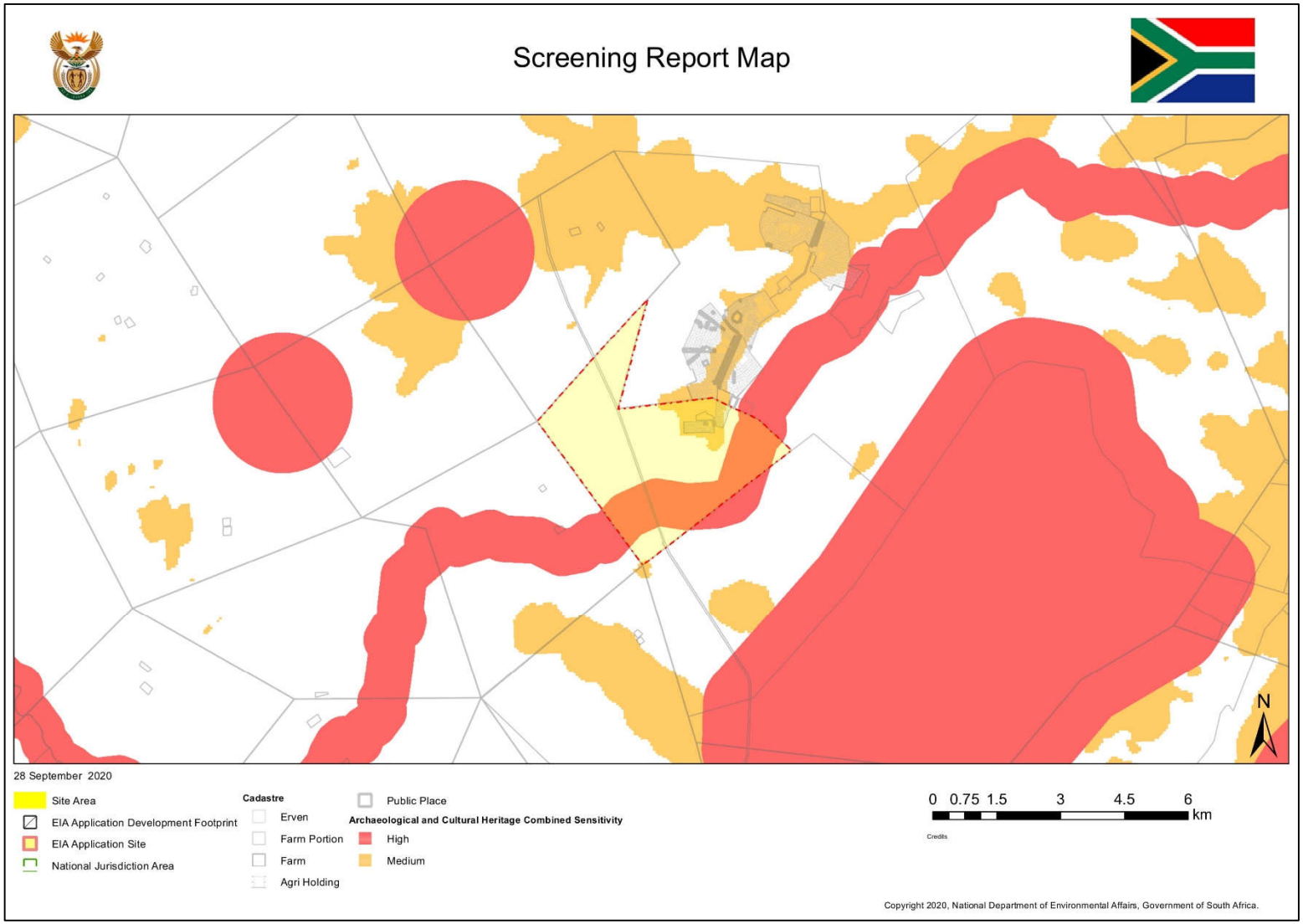

Figure 21 - Heritage Screening Map. Source: Department of Environmental Affairs.

6 FIELDWORK FINDINGS

6.1 Introduction

The fieldwork component of the study was aimed at identifying tangible remains of archaeological, historical and heritage significance. The fieldwork was undertaken by way of intensive walkthroughs of the study area. These intensive walkthroughs were undertaken by experienced archaeological fieldwork team over the course of several days. The fieldwork was undertaken from Monday, 21 September 2020 to Wednesday, 23 September 2020. This fieldwork team consisted of an archaeologist (Cherene de Bruyn) and field technician (Thomas Maluadzi).

It should be noted that the southern section (Area 3) was only assessed during the Heritage Screening Assessment undertaken in 2019. The inclusion of this section for the purposes of the present report was only indicated by the client after the submission of this current report to the client. As this section was not assessed intensively during the fieldwork, a revisit to the field must be undertaken before this report can be completed. This revisit will be focussed on intensively assessing this southern section in the field. This said, if no development is envisaged for the southern section, the revisit would not be required.

Throughout the fieldwork, hand-held GPS devices were used to record the tracklogs showing the routes followed by the two archaeological fieldwork teams. All sites identified during the fieldwork were photographically and qualitatively recorded, and their respective localities documented using a hand-held GPS device.

The fieldwork undertaken resulted in the identification of a total of seven (7) sites. These were numbered from MGSP 6 to MGSP 12. The reason for this is that the same numbering system as the one used for the 2019 screening project was used for the current study. With five sites identified during the previous screening assessment (none of which are located within the current study area), the site numbering for this assessment started at MGSP 6.

The distribution of these identified sites in relation to the study area boundaries is shown on one of the maps appearing below.

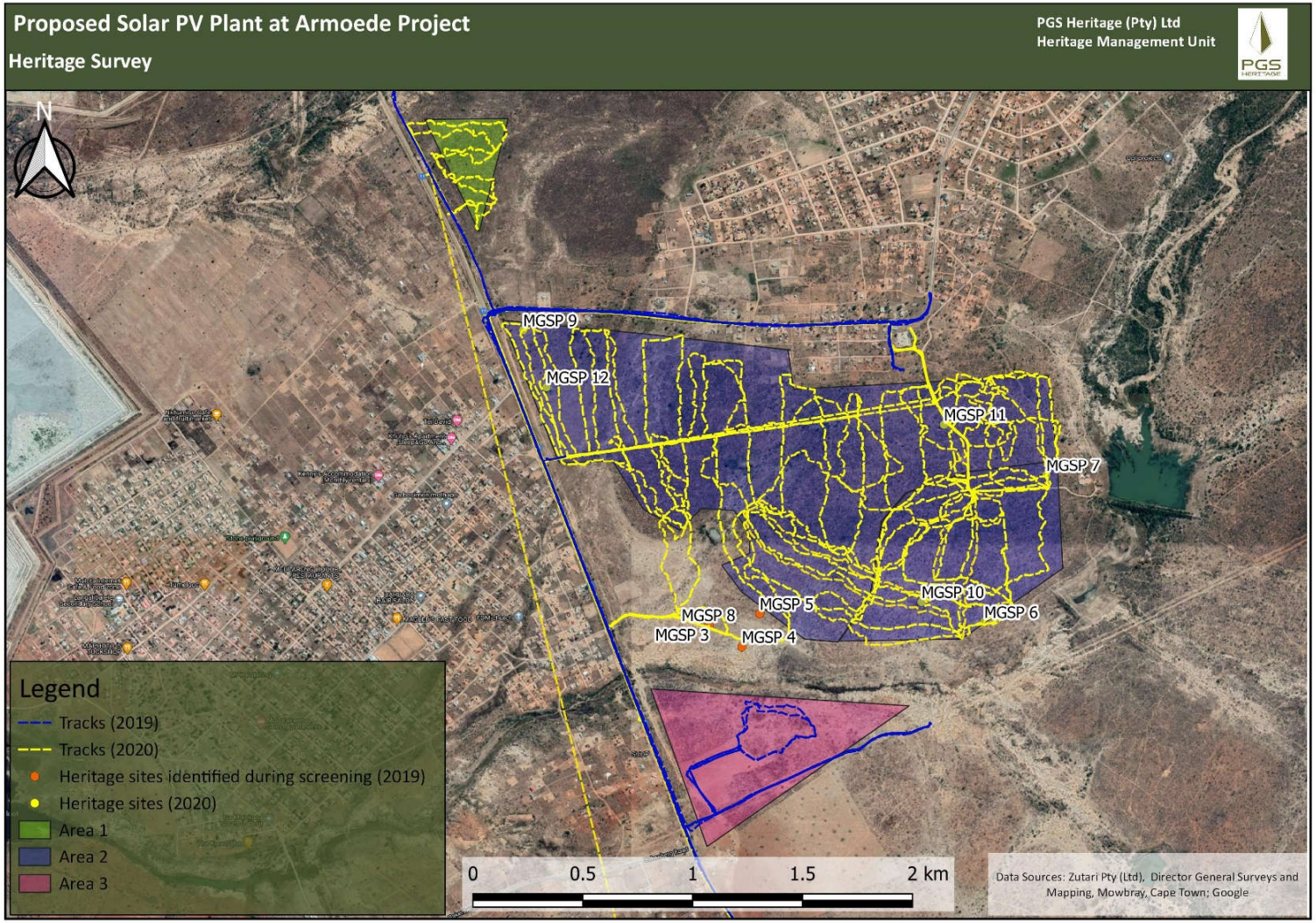

Figure 22 – Google Earth image depicting the tracklogs that were recorded in the field. Tracks from the 2020 survey are depicted in yellow line, while the tracks recorded during the 2019 screening survey are depicted by the blue line. The three components of the study area are also shown.

6.2 Heritage Sites identified during the Fieldwork

6.2.1 MGSP 6

GPS Coordinates:

S 23.990624
E 28.975772

Type: Water Trough

Description:

A water trough runs through Area 2. It most likely functioned to supply water to the farm and animals.

Significance:

The site is reasonably well preserved but its exact age is not known. Based on information that is presently available, the site is deemed to be of **Generally Protected C (GP. C)** or **Low Significance**.

Site Extent:

The feature is approximately 1.5km in length.

Impact Assessment and Mitigation*:*

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.

Figure 23 - General view of a section of the trough at site MGSP 6. This view of a section of the trough was taken in Area 2. The scale is in 10cm increments.

Figure 24 – View of a structure associated with the trough at site MGSP 6. The scale is in 10cm increments.

6.2.2 MGSP 7

GPS Coordinates:

S 23.984041
E 28.978550

Type: Remains of a Structure and Reservoir

Description:

Site MGSP 7 consist of the remains of the foundations of a structure as well as a reservoir. The round reservoir It appears as if the water trough identified at MGSP 6 once connected to the reservoir. The reservoir is currently used as an enclosure for pigs.

A reservoir is located close to the location of MGSP 7 on the First Edition of the 2328DD Topographical Map Sheet that was surveyed in 1970.

Significance:

The site is preserved and doubt exists as to whether it is older than 60 years or not. As a result, based on information that is presently available, the site is deemed to be of **Generally Protected C (GP. C)** or **Low Significance**. This significance level may change should further information come to light indicating that the structure is older than 60 years.

Site Extent:

The site is 42m x 28m in extent.

Impact Assessment and Mitigation*:*

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.

Figure 25 – General view of site MGSP 7. The scale is in 10cm increments.

Figure 26 - View of the remains of a structure at site MGSP 7, as it was found in Area 2. The scale is in 10cm increments.

Figure 27 – General view of the reservoir at site MGSP 7, as it was found in Area 2. The scale is in 10cm increments.

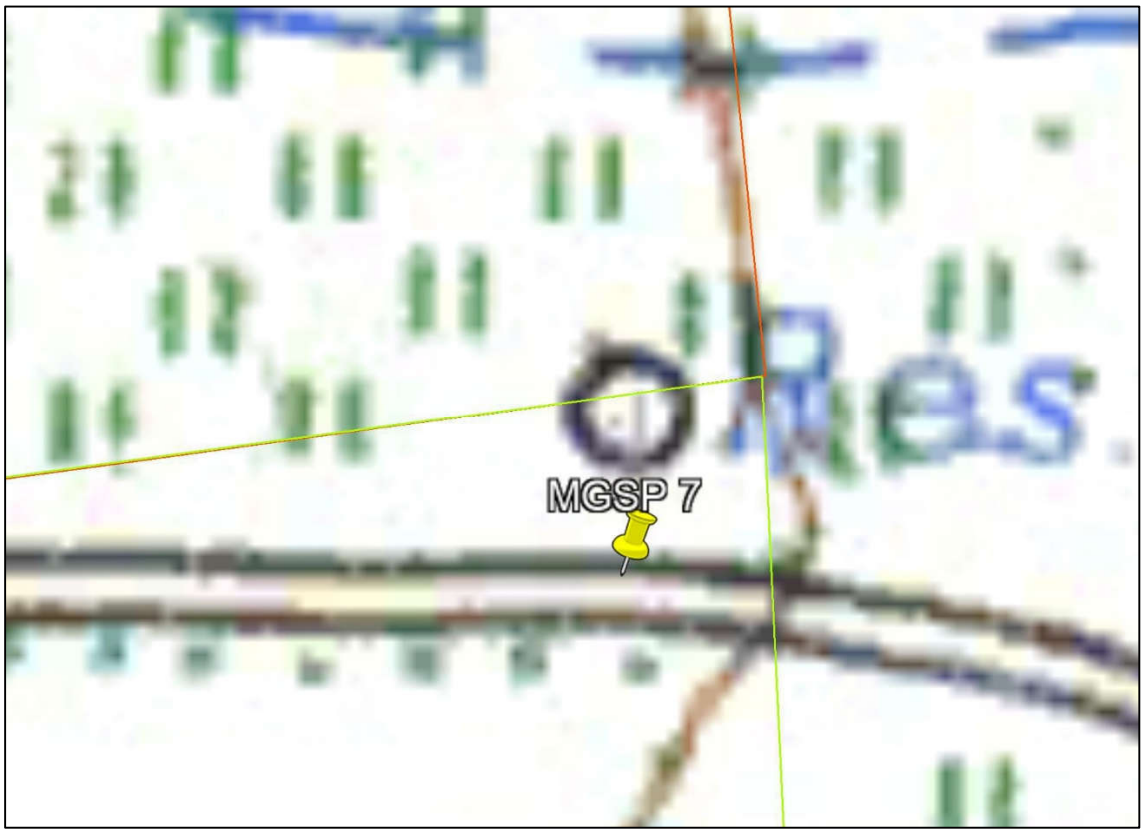

Figure 28 – Map indicating the location of MGSP 7 near a reservoir identified on the First Edition of the 2328DD Topographical Map Sheet.

6.2.3 MGSP 8

GPS Coordinates:

S 23.990756
E 28.963434

Type: Grave

Description:

Site MGSP 8 consists of a grave. The grave contains a headstone and dressing.

During the 2019 Screening Assessment (Birkholtz 2019), an oval, loosely packed stone-lined feature was identified near this location (refer site MGSP 3). Site MGSP 3 was defined as a possible grave. During the present survey, no other oval, loosely packed stone-lined features were observed in proximity to this grave. This suggests that the family of the deceased likely placed a headstone and dressing on the oval, loosely packed stone-lined feature identified in 2019.

It is important to note that site MGSP 8 falls outside the current project area. The site is located approximately 250m south-west of Area 2 and will not be impacted upon by the proposed development.

Significance:

All graves have high levels of emotional, religious and in some cases historical significance. As such the site is of **Generally Protected A (GP. A)** or **High/Medium Significance**.

Site Extent:

The site is 10m x 10m in extent.

Impact Assessment and Mitigation*:*

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.

Figure 29 – General view of site MGSP 8.

Figure 30 – Closer view of the grave at site MGSP 8. The scale is in 10cm increments.

6.2.4 MGSP 9

GPS Coordinates:

S 23.977524
E 28.955145

Type: Ruins of a House

Description:

Site MGSP 9 is comprised of the ruins of a house. The site is located 120m east of the N11 and most likely formed part of the Ga-Sekhaolelo settlement nearby.

It is possible for stillborn babies to have been buried in association with this structure. Past experience has shown that in some cases stillborn babies were buried in close proximity to such homesteads and especially along the sides of the parents' dwelling. This seems to be especially true for older sites. As this site was abandoned, no direct information with regards to the presence (or not) of stillborn graves are currently available.

Significance:

Until such time that the presence of graves here has been confirmed or disproved, the site must be viewed as containing graves. All graves have high levels of emotional, religious and in some cases historical significance. As such the site is of **Generally Protected A (GP. A)** or **High/Medium Significance**. This indicates that the site may not be impacted upon without prior mitigation.

Site Extent:

The site is 10m x 10m in extent.

Impact Assessment and Mitigation*:*

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.

Figure 31 – General view of site MGSP 9. The scale is in 10cm increments.

6.2.5 MGSP 10

GPS Coordinates:

S 23.989723
E 28.972971

Type: Contemporary Homestead with Livestock Enclosure.

Description:

Site MGSP 10 consists of a contemporary homestead with livestock enclosure. The site is located in Area 2.

It is possible for stillborn babies to have been buried in association with this structure. Past experience has shown that in some cases stillborn babies were buried in close proximity to such homesteads and especially along the sides of the parents' dwelling. This seems to be especially true for older sites. As this site was abandoned, no direct information with regards to the presence (or not) of stillborn graves are currently available.

Significance:

Until such time that the presence of graves here has been confirmed or disproved, the site must be viewed as containing graves. All graves have high levels of emotional, religious and in some cases historical significance. As such the site is of **Generally Protected A (GP. A)** or **High/Medium Significance**. This indicates that the site may not be impacted upon without prior mitigation.

Site Extent:

The site is 50m x 50m in extent.

Impact Assessment and Mitigation*:*

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.

Figure 32 – General view of site MGSP 10. The scale is in 10cm increments.

Figure 33 - General view of the house structure found at site MGSP 10. The scale is in 10cm increments.

6.2.6. MGSP 11

GPS Coordinates:

S 23.981757
E 28.973971

Type: Remains of a Reservoir

Description:

Site MGSP 11 consists of the remains of a circular reservoir. It would appear that the water trough identified at MGSP 6 once connected to this reservoir as well.

A reservoir is located close to the location of MGSP 7 on the First Edition of the 2328DD Topographical Map Sheet that was surveyed in 1970.

Significance:

The site is reasonably well preserved but its exact age is not known. Based on the information that is presently available, the site is deemed to be of **Generally Protected C (GP. C)** or **Low Significance.**

Site Extent:

The site is 10m x 15m in extent.

Impact Assessment and Mitigation*:*

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.

Figure 34 – General view of site MGSP 11. The scale is in 10cm increments.

Figure 35 – Interior view of the remains of the reservoir found at site MGSP 11. The scale is in 10cm increments.

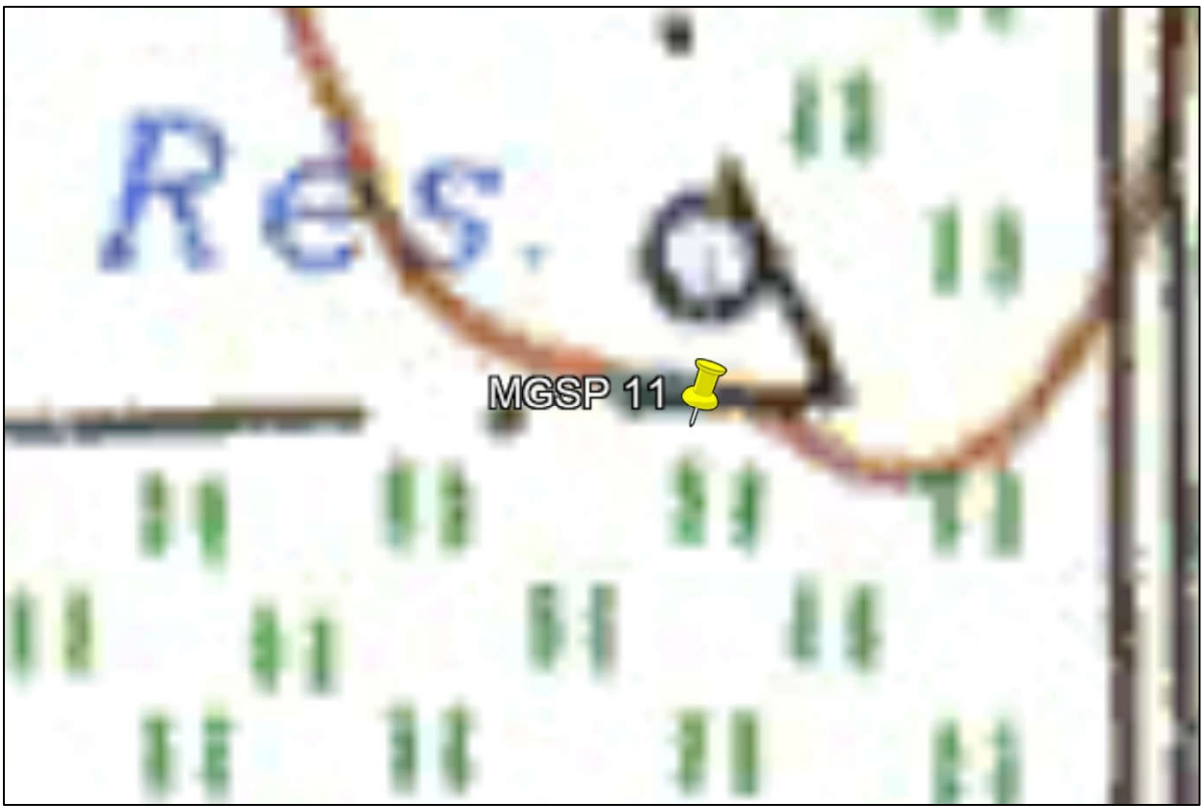

Figure 36 - Map indicating the position of site MGSP 11 near a reservoir identified on the First Edition of the 2328DD Topographical Map Sheet.

6.2.6. MGSP 12

GPS Coordinates:

S 23.980078
E 28.956190

Type: Contemporary Shed

Description:

Site MGSP 12 consists of a contemporary brick shed. A second structure, which appears to under construction is located approximately 20m north of the shed.

The site is located approximately 800m south-west of the settlement at Ga-Sekhaolelo.

Significance:

The structures are younger than 60 years and not of heritage significance. As a result, based on information that is presently available, the site is deemed to be of **Generally Protected C (GP. C)** or **Low Significance**.

Site Extent:

The site is 80m x 50m in extent.

Impact Assessment and Mitigation*:*

See Chapter 7 for impact assessment calculations and Chapter 8 for required mitigation measures.

Figure 37 – General view of site MGSP 12. The brick shed can be seen on the right with the structure currently under construction visible on the left.

Figure 38 – Closer view of the contemporary brick structure.

7 IMPACT OF PROPOSED DEVELOPMENT ON HERITAGE

7.1 General Observations

In this section, an assessment will be made of the impact of the proposed development on the identified heritage sites.

The following general observations will apply for the impact assessment undertaken in this report:

- The impact assessment methodology utilised in this section was provided by the client and is outlined and explained in more detail in **Section 3.2** of this report.

- Heritage sites assessed to have a low heritage significance are not included in these impact risk assessment calculations. The reason for this is that sites of low significance will not require mitigation. These sites are MGSP 6, MGSP 7, MGSP 11 and MGSP 12.

- Site MGSP 8 is located some distance outside of the development footprint areas. As a result, no impact is expected from the proposed development on this site. This means that no impact assessment will be undertaken for this site.

7.2 Assessment of the Impact on Homesteads which may contain unmarked stillborn, baby and infant graves.

In this section, the unmitigated impact of the proposed development on sites MGSP 9 and MGSP 10.

While the structural remains of the homesteads have little heritage significance, past experience has shown that in some cases unmarked stillborn, baby and infant graves were buried in close proximity to homesteads. These stillborn, baby and toddler graves were frequently buried along the sides, or underneath, the parents' dwelling. This possible risk is included in the impact assessment calculations shown below.

It is expected that should the development proceed without any mitigation; this site will be destroyed.

In the table below, an assessment of the pre-mitigation and post-mitigation impacts is undertaken and calculated.

Table 11 - Assessment of the Impact on Homesteads which may contain unmarked stillborn, baby and infant graves.

IMPACT DESCRIPTION: Homesteads which may contain possible unmarked stillborn, baby and infant graves unmarked graves				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
PRE-MITIGATION				
Dimension	**Rating**	**Motivation**		
Duration	Medium-term (1)		Consequence: Moderately detrimental (-4)	Significance: Very high - negative
Extent	Local (1)			
Intensity	Moderate – negative (-2)			
Probability	Fairly likely (2)			
MITIGATION:				
See Section 8				
POST-MITIGATION				
Dimension	**Rating**	**Motivation**		
Duration	Medium-term (1)		Consequence: Negligible (-1)	Significance: Low - negative
Extent	Site-Specific (0)			
Intensity	Low – negative (1)			
Probability	Unlikely (1)			

8 REQUIRED MITIGATION MEASURES

8.1 Introduction

In this chapter, required mitigation measures for each of the sites affected by the proposed development will be outlined.

As shown in **Chapter 7**, no mitigation is required for sites with a Low Significance. This means that no mitigation is required for sites MGSP 6, MGSP 7, MGSP 11 and MGSP 12.

Site MGSP 8 is located some distance outside of the development footprint areas, and. no impact is expected from the proposed development on this site as such no mitigation is required. However, if the proposed development falls within 30m of MGSP 8, the mitigation measures described below will apply.

In terms of the remaining sites for which mitigation is required, site-specific mitigation measures are provided below.

8.2 Required Mitigation Measures for the Identified Sites

8.2.2 Required Mitigation for Homesteads which may contain possible unmarked stillborn, baby and infant graves.

These sites are MGSP 9 and MGSP 10.

The impact significance calculations undertaken in **Chapter 7** have shown that the significance of the unmitigated impact of the proposed development on these 2 sites is estimated to be of Very High Significance. As a result, mitigation measures are required for these sites.

The following initial mitigation measure is required:

- A social consultation process to assess whether any local residents or the wider public is aware of the presence of graves at these sites.

Depending on the outcome of the social consultation process, three different outcomes would be the result, namely:

- Outcome 1: The social consultation absolutely confirms that no graves are located here.
- Outcome 2: The social consultation absolutely confirms that graves are located here.
- Outcome 3: The social consultation does not yield any confident results.

The following mitigation measures would be required for sites falling under Outcome 1:

- No further grave-related mitigation would be required.

The following mitigation measures would be required for sites falling under Outcome 2:

- A grave relocation process must be undertaken.
- A detailed social consultation process, at least 60 days in length, comprising the attempted identification of the next-of-kin in order to obtain their consent for the relocation.
- Bilingual site and newspaper notices indicating the intent of the relocation.
- Permits from all the relevant and legally required authorities.
- An exhumation process that keeps the dignity of the remains and family intact.
- An exhumation process that safeguards the legal rights of the families as well as that of the mining company.
- The process must be done by a reputable company well versed in the mitigation of graves.

The following mitigation measures would be required for sites falling under Outcome 3:

- Test excavations to physically confirm the presence or absence graves.
- If no evidence for graves is found, the site will fall within Outcome 1 as outlined above. This means that no further mitigation measures would be required.
- If evidence for graves is found, the site will fall within Outcome 2 as outlined above. This means that a full grave relocation process must be implemented.

Additionally, the following mitigation measures must be undertaken for all these sites:

- All structures and site layouts from each site must be recorded using standard survey methods. The end result would be site layout plans for all these sites.
- A mitigation report must be compiled for these sites within which all the mitigation measures and its findings will be outlined. The recorded drawings from the previous item must also be included in this mitigation report.
- The completed mitigation report must be submitted to the relevant heritage authorities.

9 CONCLUSIONS AND RECOMMENDATIONS

9.1 Introduction

PGS Heritage (Pty) Ltd was appointed by Zutari Pty (Ltd) to undertake a Heritage Impact Assessment (HIA) for a Proposed Solar PV Plant at Armoede, near Mokopane, Limpopo Province. The study area is located on sections of the farm Armoede 823 LR and falls under the Mapela Traditional Authority and the Mogalakwena Local Municipality, Limpopo Province. The applicant is Anglo American Platinum.

9.2 General Desktop Study

An archival and historical desktop study was undertaken to provide a historic framework for the project area and surrounding landscape. This was augmented by a study of available historical and archival maps. The desktop study revealed that the surroundings of the study area is characterised by a long and significant history. The assessment of the available historical maps did not reveal the presence of any heritage features.

9.3 Associated Reports and Processes

PGS Heritage (Pty) Ltd compiled a Heritage Screening Assessment was undertaken for the same project in 2019. The study area for this 2019 screening study and the current report are in the same general area. The screening level fieldwork was undertaken by an experienced team comprising professional archaeologist Polke Birkholtz and fieldwork assistant Derrick James. The fieldwork was undertaken on Wednesday, 2 October and Thursday, 3 October 2019. The fieldwork was aimed at establishing whether any significant heritage resources are located within the study area. Despite the fact that only a screening level site visit was undertaken, the fieldwork resulted in the identification of five (5) sites.

9.4 Fieldwork

The fieldwork component of the study was aimed at identifying tangible remains of archaeological, historical and heritage significance. The fieldwork was undertaken by way of intensive walkthroughs of the study area. These intensive walkthroughs were undertaken by experienced archaeological fieldwork team over the course of several days. The fieldwork was undertaken from Monday, 21 September 2020 to Wednesday, 23 September 2020. This fieldwork team consisted of an archaeologist (Cherene de Bruyn) and field technician (Thomas Mulaudzi).

Sections of the study are located in very inaccessible, often densely overgrown areas. Throughout the fieldwork, hand-held GPS devices were used to record the tracklogs showing the routes followed by the two archaeological fieldwork teams.

The fieldwork undertaken resulted in the identification of a total of seven (7) sites. These were numbered from MGSP 6 to MGSP 12. The reason for this is that the same numbering system as the one used for the 2019 screening project was used for the current study. With five sites identified during the previous screening assessment (none of which are located within the current study area), the site numbering for this assessment started at MGSP 6. The identified sites comprised the following:

- **MGSP 6**: A water trough that runs through Area 2;
- **MGSP 7**: The ruins of a reservoir and structure;
- **MGSP 8:** A single grave;
- **MGSP 9**: The ruins of a house;
- **MGSP 10**: A contemporary homestead with livestock enclosure;
- **MGSP 11**: The ruins of a reservoir; and
- **MGSP 12**: A shed.

It should be noted that the southern section (Area 3) was only assessed during the Heritage Screening Assessment undertaken in 2019. The inclusion of this section for the purposes of the present report was only indicated by the client after the submission of this current report to the client. As this section was not assessed intensively during the fieldwork, a revisit to the field must be undertaken before this report can be completed. This revisit will be focussed on intensively assessing this southern section in the field. This said, if no development is envisaged for the southern section, the revisit would not be required.

9.5 Impact Assessment and Mitigation

An overlay of the identified archaeological and heritage sites over the proposed development footprint areas was made to assess the impact of the proposed development on these identified archaeological and heritage sites. Both pre-mitigation and post-mitigation impact assessments were undertaken. Please refer **Chapter 7** for the impact assessment calculations. A series of site-specific mitigation measures are outlined in **Chapter 8** of this report.

9.6 Fieldwork Coverage at Area 3

The southern section (Area 3) was only assessed during the Heritage Screening Assessment undertaken in 2019. The inclusion of this section for the purposes of the present report was only indicated by the client after the submission of this current report to the client. The following recommendations are required to address this:

- As Area 3 was not assessed intensively during the fieldwork, a revisit to the field must be undertaken before this report can be completed. This revisit will be focussed on intensively assessing this southern section in the field. This said, if no development is envisaged for the southern section, the revisit would not be required.

9.7 Conclusions

While the unmitigated impact of the proposed development is expected to result in Medium to High negative impacts in terms of the identified heritage fabric of the study area, the resources identified are not considered to be conservation worthy. With mitigation successfully completed, the impact of the proposed development on the identified heritage sites will result in Low to Medium negative impacts. As a result, on the condition that the recommendations made in this report are adhered to, no heritage reasons can be given for the development not to continue.

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10.3 Historical Topographic Maps

All the historic topographical maps used in this report were obtained from the Directorate: National Geo-spatial Information of the Department of Rural Development and Land Reform in Cape Town.

10.4 Internet

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10.5 Google Earth

At least some of the aerial depictions of the study área were obtained using Google Earth.

Appendix A

HERITAGE MANAGEMENT GUIDELINES

1. General Management Guidelines

1. The National Heritage Resources Act (Act 25 of 1999) states that, any person who intends to undertake a development categorised as-

   (a) the construction of a road, wall, transmission line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
   (b) the construction of a bridge or similar structure exceeding 50m in length;
   (c) any development or other activity which will change the character of a site-

      (i) exceeding 5 000 m^2 in extent; or
      (ii) involving three or more existing erven or subdivisions thereof; or
      (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
      (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

   (d) the re-zoning of a site exceeding 10 000 m^2 in extent; or
   (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

In the event that an area previously not included in an archaeological or cultural resources survey is to be disturbed, the SAHRA needs to be contacted. An enquiry must be lodged with them into the necessity for a Heritage Impact Assessment.

2. In the event that an additional heritage assessment is required, it is advisable to utilise a qualified heritage practitioner, preferably registered with the Cultural Resources Management Section (CRM) of the Association of Southern African Professional Archaeologists (ASAPA). This survey and evaluation must include:

   (a) The identification and mapping of all heritage resources in the area affected;
   (b) An assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6 (2) or prescribed under section 7 of the National Heritage Resources Act;
   (c) An assessment of the impact of the development on such heritage resources;
   (d) An evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
   (e) The results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;

(f) If heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and

(g) Plans for mitigation of any adverse effects during and after the completion of the proposed development.

3. In the event that a possible find is discovered during construction, the following steps must be taken:

(a) All activities must be halted in the area of the discovery and a qualified archaeologist contacted;

(b) The archaeologist needs to evaluate the finds on site and make recommendations towards possible mitigation measures;

(c) If mitigation is necessary, an application for a rescue permit must be lodged with SAHRA; and

(d) After mitigation, an application must be lodged with SAHRA for a destruction permit. This application must be supported by the mitigation report generated during the rescue excavation. Only after the permit is issued may such a site be destroyed.

4. In the case where a grave is identified during construction, the following measures must be taken:

a. Upon the accidental discovery of graves, a buffer of at least 20 meters should be implemented;

b. If graves are accidentally discovered during construction, activities must cease in the area and a qualified archaeologist be contacted to evaluate the find;

c. To remove the remains, a permit must be applied for from SAHRA and other relevant authorities. The local South African Police Services must immediately be notified of the find; and

d. Where it is recommended that the graves be relocated, a full grave relocation process that includes a comprehensive social consultation must be followed. Such a grave relocation process must include the following:

(i) A detailed social consultation process that aims to trace the next-of-kin and obtain their consent for the relocation of the graves, that will be at least 60 days in length;

(ii) Site notices indicating the intent of the relocation;

(iii) Newspaper notices indicating the intent of the relocation;

(iv) Permits from the relevant permitting authorities, including the local authority; the Provincial Department of Health; the South African Heritage Resources Agency (SAHRA) (if the graves are older than 60 years or unidentified and thus presumed older than 60 years) etc.

(vii) An exhumation process that keeps the dignity of the remains intact;

(viii) The whole process must be done by a reputable company that is well versed in relocations; and

(ix) The exhumation process must be conducted in such a manner as to safeguard the legal rights of the families as well as that of the mining company.

PGS Heritage can be contacted on the way forward in this regard.

Table 12: Roles and responsibilities of archaeological and heritage management.

ROLE	RESPONSIBILITY	IMPLEMENTATION
A responsible specialist needs to be allocated and should attend all relevant meetings, especially when changes in design are discussed, and liaise with SAHRA.	The client	Archaeologist and a competent archaeological support team
If chance finds and/or graves or burial grounds are identified during construction or operational phases, a specialist must be contacted for evaluation.	The client	Archaeologist and a competent archaeological support team
Comply with defined national and local cultural heritage regulations on management plans for identified sites.	The client	Environmental Consultancy and the Archaeologist
Consult the managers, local communities and other key stakeholders on mitigation of archaeological sites.	The client	Environmental Consultancy and the Archaeologist
Implement additional programs, as appropriate, to promote the safeguarding of our cultural heritage.	The client	Environmental Consultancy and the Archaeologist
If required, conservation or relocation of burial grounds and/or graves according to the applicable regulations and legislation.	The client	Archaeologist, and/or competent authority for relocation services
Ensure that recommendations made in the Heritage Report are adhered to.	The client	The client
Provision of services and activities related to the management and monitoring of significant archaeological sites.	The client	Environmental Consultancy and the Archaeologist
After the specialist/archaeologist has been appointed, comprehensive feedback reports should be submitted to relevant authorities during each phase of development.	Client and Archaeologist	Archaeologist

Appendix B

Project team CV's

Name: *Polke Doussy Birkholtz*

Date & Place of Birth: *9 February 1975 – Klerksdorp, North West Province, South Africa*

Place of Tertiary Education & Dates Associated:

Institution: University of Pretoria
Qualification: BA (Cum Laude) - Bachelor of Arts Specializing in Archaeology, History & Anthropology
Date: 1996

Institution: University of Pretoria
Qualification: BA Hons (Cum Laude) - Bachelor of Arts with Honours Degree Specializing in Archaeology
Date: 1997

Qualifications:

BA	-	Degree specialising in Archaeology, History and Anthropology
BA Hons	-	Professional Archaeologist

Memberships:

Association of Southern African Professional Archaeologists (ASAPA)
Professional Member of the CRM Section of ASAPA

Overview of Post Graduate Experience:

1997 – 2000 – Member/Archaeologist – Archaeo-Info
2001 – 2003 – Archaeologist/Heritage Specialist – Helio Alliance
2000 – 2008 – Member/Archaeologist/Heritage Specialist – Archaeology Africa
2003 - Present – Director / Archaeologist / Heritage Specialist – PGS Heritage

Languages: English: Speak, Read & Write & Afrikaans: Speak, Read & Write

Total Years' Experience: 19 Years

Experience Related to the Scope of Work:

- Polke has worked as a **HERITAGE SPECIALIST / ARCHAEOLOGIST / HISTORIAN** on more than 300 projects and acted as **PROJECT MANAGER** on almost all of these projects. His experience includes the following:

    - Development of New Sedimentation and Flocculation Tanks at Rand Water's Vereeniging Pumping Station, Vereeniging, Gauteng Province. Heritage Impact Assessment for *Greenline*.
    - EThekwini Northern Aqueduct Project, Durban, KwaZulu-Natal. Heritage Impact Assessment for *Strategic Environmental Focus*.
    - Johannesburg Union Observatory, Johannesburg, Gauteng Province. Heritage Inventory for *Holm Jordaan*.
    - Development at Rand Water's Vereeniging Pumping Station, Vereeniging, Gauteng Province. Heritage Impact Assessment for *Aurecon*.
    - Comet Ext. 8 Development, Boksburg, Gauteng Province. Phase 2 Heritage Impact Assessment for *Urban Dynamics*.
    - Randjesfontein Homestead, Midrand, Gauteng Province. Baseline Heritage Assessment with Nkosinathi Tomose for Johannesburg City Parks.
    - Rand Leases Ext. 13 Development, Roodepoort, Gauteng Province. Heritage Impact Assessment for *Marsh*.
    - Proposed Relocation of the Hillendale Heavy Minerals Plant (HHMP) from Hillendale to Fairbreeze, KwaZulu-Natal. Heritage Impact Assessment for *Goslar Environmental*.
    - Portion 80 of the farm Eikenhof 323 IQ, Johannesburg, Gauteng Province. Heritage Inventory for *Khare Incorporated*.
    - Comet Ext. 14 Development, Boksburg, Gauteng Province. Heritage Impact Assessment for *Marsh*.
    - Rand Steam Laundries, Johannesburg, Gauteng Province. Archival and Historical Study for *Impendulo* and *Imperial Properties*.
    - Mine Waste Solutions, near Klerksdorp, North West Province. Heritage Inventory for *AngloGold Ashanti*.
    - Consolidated EIA and EMP for the Kroondal and Marikana Mining Right Areas, North West Province. Heritage Impact Assessment for *Aquarius Platinum*.
    - Wilkoppies Shopping Mall, Klerksdorp, North West Province. Heritage Impact Assessment for the *Center for Environmental Management*.
    - Proposed Vosloorus Ext. 24, Vosloorus Ext. 41 and Vosloorus Ext. 43 Developments, Ekurhuleni District Municipality, Gauteng Province. Heritage Impact Assessment for *Enkanyini Projects*.
    - Proposed Development of Portions 3, 6, 7 and 9 of the farm Olievenhoutbosch 389 JR, City of Tshwane Metropolitan Municipality, Gauteng Province. Heritage Impact Assessment for *Marsh*.
    - Proposed Development of Lotus Gardens Ext. 18 to 27, City of Tshwane Metropolitan Municipality, Gauteng Province. Heritage Impact Assessment for *Pierre Joubert*.

- Proposed Development of the site of the old Vereeniging Hospital, Vereeniging, Gauteng Province. Heritage Scoping Assessment for *Lekwa*.
- Proposed Demolition of an Old Building, Kroonstad, Free State Province. Phase 2 Heritage Impact Assessment for *De Beers Consolidated Mines*.
- Proposed Development at Westdene Dam, Johannesburg, Gauteng Province. Heritage Impact Assessment for *Newtown*.
- West End, Central Johannesburg, Gauteng Province. Phase 1 Heritage Impact Assessment for the *Johannesburg Land Company*.
- Kathu Supplier Park, Kathu, Northern Cape Province. Heritage Impact Assessment for *Synergistics*.
- Matlosana 132 kV Line and Substation, Stilfontein, North West Province. Heritage Impact Assessment for *Anglo Saxon Group* and *Eskom*.
- Marakele National Park, Thabazimbi, Limpopo Province. Cultural Resources Management Plan for *SANParks*.
- Cullinan Diamond Mine, Cullinan, Gauteng Province. Heritage Inventory for *Petra Diamonds*.
- Highveld Mushrooms Project, Pretoria, Gauteng Province. Heritage Impact Assessment for *Mills & Otten*.
- Development at the Reserve Bank Governor's Residence, Pretoria, Gauteng Province. Archaeological Excavations and Mitigation for the *South African Reserve Bank*.
- Proposed Stones & Stones Recycling Plant, Johannesburg, Gauteng Province. Heritage Scoping Report for *KV3*.
- South East Vertical Shaft Section of ERPM, Boksburg, Gauteng Province. Heritage Scoping Report for *East Rand Proprietary Mines*.
- Proposed Development of the Top Star Mine Dump, Johannesburg, Gauteng Province. Detailed Archival and Historical Study for *Matakoma.*
- Soshanguve Bulk Water Replacement Project, Soshanguve, Gauteng Province. Heritage Impact Assessment for *KWP*.
- Biodiversity, Conservation and Participatory Development Project, Swaziland. Archaeological Component for *Africon*.
- Camdeboo National Park, Graaff-Reinet, Eastern Cape Province. Cultural Resources Management Plan for *SANParks*.
- Main Place, Central Johannesburg, Gauteng Province. Phase 1 Heritage Impact Assessment for the *Johannesburg Land Company*.
- Modderfontein Mine, Springs, Gauteng Province. Detailed Archival and Historical Study for *Consolidated Modderfontein Mines.*
- Proposed New Head Office for the Department of Foreign Affairs, Pretoria, Gauteng Province. Heritage Impact Assessment for *Holm Jordaan Group*.
- Proposed Modification of the Lukasrand Tower, Pretoria, Gauteng Province. Heritage Assessment for IEPM.

- Proposed Road between the Noupoort CBD and Kwazamukolo, Northern Cape Province. Heritage Impact Assessment for *Gill & Associates*.
- Proposed Development at the Johannesburg Zoological Gardens, Johannesburg, Gauteng Province. Detailed Archival and Historical Study for *Matakoma.*

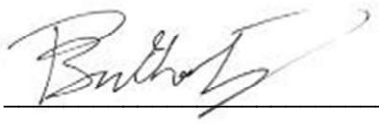
- Polke's **KEY QUALIFICATIONS:**

  - Project Management
  - Archaeological and Heritage Management
  - Archaeological and Heritage Impact Assessment
  - Archaeological and Heritage Fieldwork
  - Archival and Historical Research
  - Report Writing

- Polke's **INFORMATION TECHNOLOGY EXPERIENCE:**

  - *MS Office – Word, Excel, & Powerpoint*
  - *Google Earth*
  - *Garmin Mapsource*
  - *Adobe Photoshop*
  - *Corel Draw*

I, Polke Doussy Birkholtz, hereby confirm that the above information contained in my CV is true and correct.



PD Birkholtz

28 September 2020
Date

PROFESSIONAL CURRICULUM FOR CHERENE DE BRUYN

Name:	Cherene de Bruyn
Profession:	Archaeologist
Date of Birth:	1991-03-01
Parent Firm:	PGS Heritage (Pty) Ltd
Position in Firm:	Archaeologist
Years with Firm:	9 Months
Years' experience:	2
Nationality:	South African
HDI Status:	White Female

EDUCATION:

Name of University or Institution	:	University of Pretoria
Degree obtained:	:	BA
Major subjects	:	Archaeology and Anthropology
Year	:	2010-2012

Name of University or Institution	:	University of Pretoria
Degree obtained	:	BA (Hons)
Major subjects	:	Archaeology
Year	:	2013

Name of University or Institution	:	University of Pretoria
Degree obtained	:	BSc (Hons)
Major subjects	:	Physical Anthropology
Year	:	2015

Name of University or Institution	:	University College London
Degree obtained	:	MA
Major subjects	:	Archaeology
Year	:	2016/2017

Professional Qualifications:

Association of Southern African Professional Archaeologists - Professional Member (#432)

Association of Southern African Professional Archaeologists - CRM Accreditation

- Principal Investigator: Grave relocation
- Field Director: Colonial period archaeology, Iron Age archaeology
- Field Supervisor: Rock art, Stone Age archaeology
- Laboratory Specialist: Human Skeletal Remains

International Association for Impact Assessment South Africa - Member (#6082)
KZN Amafa and Research Institute – Accredited Heritage Practitioner (Since 2020)

Languages:
Afrikaans & English

KEY QUALIFICATIONS

Heritage Impact Assessment Management, Historical and Archival Research, Archaeology, Physical Anthropology, Grave Relocations, Fieldwork and Project Management including *inter alia*

Summary of Experience

Involvement in various grave relocation projects and grave "rescue" excavations in the various provinces of South Africa
Involvement with various Heritage Impact Assessments, within South Africa

- Heritage Impact Assessments for various projects

HERITAGE ASSESSMENT PROJECTS

Below a selected list of Heritage Impact Assessments (HIA) Projects involvement:

- Heritage Impact Assessment for the upgrade of road d4407 between Hluvukani and Timbavati, road d4409 at Welverdiend and road d4416/2 between Welverdiend and road P194/1 in the Bohlabela region of the Mpumalanga Province.
- Heritage Impact Assessment for the proposed Piggery on Portion 46 of the farm Brakkefontien 416, within the Nelson Mandela Bay Municipality, Eastern Cape.
- Heritage Impact Assessment for proposed development On Erf 30, Letamo Town, Farm Honingklip 178 Iq, Mogale Local Municipality, Gauteng Province.
- Heritage Impact Assessment for the proposed Prospecting Right Application on the Farm Reserve No 4 15823 And 7638/1, near St Lucia, within the jurisdiction of the Mfolozi Local Municipality in the King Cetshwayo District Municipality, KwaZulu-Natal Province.
- Heritage Impact Assessment for the proposed mining rights on the Farm Waterkloof 95 located between Griekwastad and Groblershoop in the Pixley Ka Seme District Municipality within the Northern Cape Province.
- Heritage Impact Assessment for the proposed East Coast Gas 400 Kv Power Lines, located in Richards Bay, within the Umhlathuze Local Municipality in the King Cetshwayo District Municipality in the Kwazulu-Natal Province.
- Heritage Impact Assessment for the mining right application for the Farm Woodlands 407, situated in the Free State Province.
- Heritage Impact Assessment for the refurbishments of Lyttelton Primary School, Lyttelton Manor, Centurion, Gauteng Province.
- Heritage Impact Assessment for the amendment of an existing prospecting right and environmental authorization for Bothaville NE Ext A, situated in the Free State Province.

- Heritage Impact Assessment and Integrated Cultural Resources Management Study for The Proposed Mfolozi-Mbewu 765kv Transmission Line, Zululand And King Cetshwayo District Municipality, KwaZulu-Natal.
- Heritage Impact Assessment for the proposed for the Construction of the Bulk Water Supply Pipeline and Feeder Pipes in Dunnottar, Gauteng Province.
- Heritage Impact Assessment the prospecting right and environmental authorisation application for Kroonstad South situated in the Free State Province.
- Archaeological impact assessment for a mining permit application for portion 19 of the farm Syferfontein 303 IP within the city of Matlosana Local Municipality in the North West Province.

GRAVE RELOCATION PROJECTS

Below, a selection of grave relocation projects involvement:

- Report on the relocation of graves. Relocation of four stillborn graves from the Farm Wonderfontein 428 Js, Belfast, Mpumalanga Province.
- Report on the relocation of graves. Relocation of approximately 6 graves from Kwaqubuka Tribal Area, Mtubatuba Local Municipality, Kwa-Zulu Natal Province.Grave exhumation and relocation of 19 graves on erf 3 of Holding 87 North Riding Agricultural Holdings, City of Johannesburg, Gauteng Province.
- Report on the exhumation and reburial report of 16 graves from Doornkop, to Voortrekker Cemetery in Middelburg, Mpumalanga Province
- Report on rescue excavations and skeletal analyses of two archaeological graves inadvertently uncovered in Boitekong, North-West Province.
- Rescue excavation of an unmarked graveyard at Diamond Park, Greenpoint, Kimberley, Northern Cape Province.
- Report on Follow-up site visit excavation and physical anthropological analyses of archaeological human remains transferred from SAPA Victim Identification Centre to Department of Anatomy. Mamelodi East Phase 2 House 566.
- Excavation of human remains from Marulaneng village, Bakenberg Limpopo Province.
- Follow up site visit on human remains found at Bothlokwa (Ramatjowe & Mphakahne), Limpopo Province.
- Follow up site visit on human remains found in Waterpoort, Soutpansberg, Limpopo Province.

EMPLOYMENT SUMMARY:

Positions Held

- 2020 – to date: Archaeologist - PGS Heritage (Pty) Ltd
- 2019: Manager of the NGT ESHS Heritage Department – NGT Holdings (Pty) Ltd
- 2018 – 2019: Archaeologist and Heritage Consultant – NGT Holdings (Pty) Ltd
- 2015-2016: Archaeological Contractor - BA3G, University of Pretoria

- 2014 – 2015: DST-NRF Archaeological Intern, Forensic Anthropological Research Centre

I, Cherene de Bruyn, hereby confirm that the above information contained in my CV is true and correct.

C de Bruyn

28 September 2020

Date