FRESCA FARMS

PROPOSED FARMING ACTIVITIES, PORTION 39 & 40 OF THE FARM BLAAUWBANK 241 JQ, LETHLABILE, MADIBENG LOCAL MUNICIPALITY, NORTHWEST PROVINCE

Phase 1 – Heritage Impact Assessment

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PGS HERITAGE

+ 27 (0) 12 332 5305 | +27 (0) 86 675 8077 | contact@pgsheritage.co.za | PO Box 32542, Totiusdal, 0134

Offices in South Africa, Kingdom of Lesotho and Mozambique

Head Office:
906 Bergarend Streets
Waverley, Pretoria,
South Africa

Directors: HS Steyn, PD Birkholtz, W Fourie

Declaration of Independence

I, Wouter Fourie, declare that –

- 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;

HERITAGE CONSULTANT: PGS Heritage (Pty) Ltd

CONTACT PERSON: Wouter Fourie

Tel: +27 (0) 12 332 5305

Email: wouter@pgsheritage.com

SIGNATURE: _____

Report Title	Proposed Farming Activities, Portion 39 & 40 of the farm Blaauwbank 241 JQ, Lethlabile, Madibeng Local Municipality, Northwest Province		
Control	**Name**	**Signature**	**Designation**
Author	Wouter Fourie		Senior Archaeologist – PGS Heritage

DETAILS OF CLIENT:

CLIENT: **Ecosphere Environmental management Services**

CONTACT PERSON: **C Greyling**
Tel: +27 084 284 3333
Email: info@ecosphere.co.za

EXECUTIVE SUMMARY

PGS Heritage (Pty) Ltd (PGS) was appointed by Ecosphere (Pty) Ltd to undertake a Heritage Impact Assessment (HIA) for the proposed farming activities on Portions 39 & 40 of the farm Blaauwbank 241 JQ, Lethlabile, Madibeng Local Municipality, Northwest Province.

An archaeological and historical desktop study was undertaken to provide a historical framework for the project area and surrounding landscape (refer to **Chapter 5**). This was augmented by an assessment of previous archaeological and heritage studies completed for the surrounding landscape. Furthermore, an assessment was made of the early editions of the relevant topographic maps.

During the fieldwork the remains of three large archaeological settlements were identified. The northern section (**Le13** and **Le14**) of one site was already impacted by bush clearing activities and planting activities already occurred at **Le14**.

In all likelihood the two identified areas at **Le11** and **Le12** are part of the same large LIA Early Farming Community (EFC) settlement that continues up to points **Le13** and **Le14** covering a total area of approximately 800m x 200m. The cultural remains associated with this settlement includes numerous ash middens, low stone walling, grain bin platforms as well as some exposed burned clay floors or the remains of hut rubble. Ethnographic research in the early part of the 20th century (Breutz, 1934) has linked this area to the Bakwena ba Mogôpa and Bapo ba Mogale as it lies between the tribe's main historical settlement areas at Jericho (15km north) and Mamogaleskraal 6km southwest.

This EFC settlement extent over approximately 2 ha with some ephemeral indications of cultural material extending even further to the east. The size and preservation of the remains of material cultural adds to the cultural significance of the site and can be rated as having a **medium-high heritage significance grading and** of local significance IIIB.

Palaeontology

According to the SAHRIS palaeontological sensitivity map, the proposed project area falls within a high zero sensitivity zone and n further studies will be required.

Impact Statement

The proposed farming activities will result in the clearing of extensive tract of vegetation for cultivating vegetables and planting of orchards. Some of this activities have already impacted on sections of the archaeological site at **Le13** and **Le14**. The whole of the farm portion and will eventually be directly impact on and destroy the identified sites.

The impact significance before mitigation on the archaeological sites at **Le11** to **Le14** will be Very High negative. *The impact of the proposed development will be local in extent*. **The possibility of the impact occurring is that it will happen.** The expected duration of the impact is assessed as permanent. Implementation of the recommended mitigation measures will reduce this impact rating to an acceptable MODERATE negative impact.

Recommendations

The following mitigation measures are listed in **Table 19** below.

Table E 1 - Heritage management recommendations.

Area and site no.	Mitigation measures
General project area	• Implement a chance to find procedures in case possible heritage finds are uncovered.
Archaeological Structures **Le13-14**	• Documentation of the structures and features must be done after issuing of a permit under s35 of the NHRA • The documentation must include mapping, layout sketches and test excavation to determine the cultural affinity and temporal scale of the archaeological features • An application for destruction will then need to be submitted to SAHRA by the developer with the backing of the report emanating from the documentation work • Upon issuing of the destruction permit the specific site can be destroyed and bush clearing continue in those specific areas
Archaeological Structures **Le11-12**	• A 30m No-Go-Buffer-Zone be recommended for the larger stone wall sites. • The extent of the site must be identified by a qualified archaeologist and markers placed to determine the 30 meter buffer where no bush clearing can be done. • In the event that this site cannot be avoided the process as described for site Le13-14 must be followed.

Conclusions

During the heritage walk through survey, several heritage resources were identified within the proposed farming landscape on portion 39 and 40 of the farm Blaauwbank 241 JQ. The overall impact of the proposed project, on the heritage resources identified during this report, is seen as acceptably low after the recommendations have been implemented and therefore, impacts can be mitigated to acceptable levels allowing for the development to be authorised.

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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

Cultural Landscapes Terminology

"perceptual qualities" Aspects of a landscape which are perceived through the senses, specifically views and aesthetics.

"cultural landscape" A representation of the combined worlds of nature and of man illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal (World Heritage Committee, 1992). Includes and extends beyond the study site boundaries.

"cultural landscape area" These are single unique areas which are the discrete geographical areas of a particular landscape type. Each will have its own individual character and identity, even though it shares the same generic characteristics with other areas of the same type.

"study site" The study site is assumed to include the area within the boundaries of the proposed development

"characteristics" elements, or combination of elements, which make a particular contribution to distinctive character.

"elements" individual components which make up the landscape, such as trees and fences.

"landscape character" A distinct, and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.

"landscape character assessment" This is the process of identifying and describing variation in the character of the landscape. It seeks to identify and explain the unique combination of elements and features (characteristics) that make landscapes distinctive. This process results in the production of a Landscape Character Assessment.

"sense of place" The unique quality or character of a place, whether natural, rural or urban. It relates to uniqueness, distinctiveness or strong identity.

"scenic route" A linear movement route, usually in the form of a scenic drive, but which could also be a railway, hiking trail, horse-riding trail or 4x4 trail.

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 influences 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

Earlier Stone Age

The archaeology of the Stone Age between ~300 000 and 3 300 000 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.

Later Stone Age

The archaeology of the last 40 000 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 40 000-300 000 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.

Site

Site in this context refers to an area place where a heritage resource is located and not a proclaimed heritage site as contemplated under s27 of the NHRA.

Table 1 – List of abbreviations used in this report

Abbreviations	Description
AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
BA	Basic Environmental Assessment
BGG	Burial Grounds and Graves
CMP	Conservation Management Plan
CRM	Cultural Resource Management
EA	Environmental Authorisation
ECO	Environmental Control Officer
EFC	Early Farming Communities
EIA	Environmental Impact Assessment
EIA practitioner	Environmental Impact Assessment Practitioner
ESA	Earlier Stone Age
GN	Government Notice
GPS	Global Positioning System
HIA	Heritage Impact Assessment
HMP	Heritage management plan
I&AP	Interested & Affected Party
LIA	Late Iron Age
LSA	Late Stone Age
MSA	Middle Stone Age
NCW	Not Conservation Worthy
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
PGS	PGS Heritage (Pty) Ltd
PIA	Palaeontological Impact Assessment
SADC	Southern African Development Community
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System

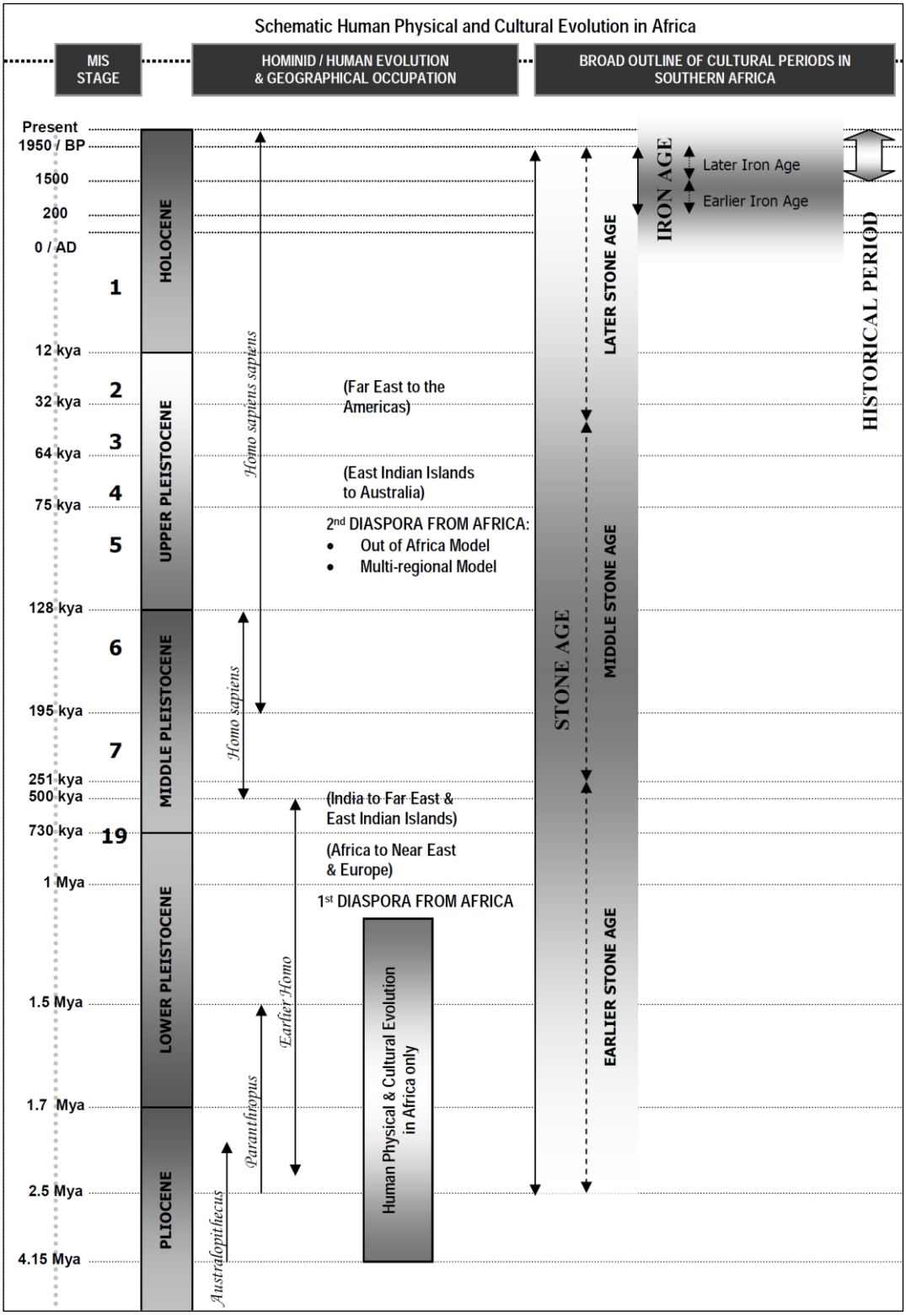

Figure 1 – Human and Cultural Timeline in Africa (Morris, 2008)

1 INTRODUCTION

PGS Heritage (Pty) Ltd (PGS) was appointed by Ecosphere (Pty) Ltd to undertake a Heritage Impact Assessment (HIA) for the proposed farming activities on Portions 39 & 40 of the farm Blaauwbank 241 JQ, Lethlabile, Madibeng Local Municipality, Northwest Province.

1.1 Scope of the Study

The aim of this HIA is to identify possible heritage sites and finds that may occur in the proposed development area and to assess the impact of the proposed development on these identified heritage sites. The study also aims to inform the owners to manage the identified heritage resources responsibly, 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 report was compiled by PGS. The staff at PGS has a combined experience of nearly 90 years in the heritage consulting industry and has extensive experience in managing HIA processes. PGS will only undertake heritage assessment work where the staff has the relevant expertise and experience to undertake that work competently.

The project team consisted of:

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

Nicholas Fletcher, archaeologist, he holds a BA(Hon) Archaeology and has submitted his MA in archaeology.

Wynand van Zyl, archaeologist, is registered with the Association of Southern African Professional Archaeologists (ASAPA) as a Professional Archaeologist. He holds a BA(Hon) Archaeology.

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. Various factors account for this, including the subterranean nature of some archaeological sites, as well as the density of vegetation cover found in some areas. As such, should any heritage features and/or objects not included in the present study be located or observed, a heritage specialist must immediately be contacted. Such observed or located heritage features and/or objects may not be disturbed or removed in any way, until such time that the heritage specialist has been able to assess as to the significance of the site (or material) in question. This applies to graves and cemeteries as well. If any graves or burial places are identified or exposed during the development, the procedures and requirements pertaining to graves and burials will apply as set out below.

1.4 Legislative Context

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

1.4.1 *Statutory Framework: The National Heritage Resources (Act 25 of 1999)*

The NHRA has applicability, as the study forms part of an overall HIA in terms of the provisions of Section 34, 35, 36 and 38 of the NHRA and forms part of a heritage scoping study that serves to identify key heritage resources, informants, and issues relating to the palaeontological, archaeological, built environment and cultural landscape, as well as the need to address such issues during the impact assessment phase of the HIA process.

1.4.2 *Section 34 – Structures*

According to Section 34 of the NHRA, no person may alter, damage or destroy any structure that is older than 60 years, and which forms part of the site's built environment, without the necessary permits from the relevant provincial heritage authority.

1.4.3 *Section 35 – Archaeology, Palaeontology and Meteorites*

According to Section 35 (Archaeology, Palaeontology and Meteorites) and Section 38 (Heritage Resources Management) of the NHRA, Palaeontological Impact Assessments (PIA) and Archaeological Impact Assessments (AIA) are required by law in the case of developments in areas underlain by potentially fossiliferous (fossil-bearing) rocks, especially where substantial bedrock excavations are envisaged, and where human settlement is known to have occurred during prehistory and the historic period.

1.4.4 *Section 36 – Burial Grounds & Graves*

A section 36 permit application is made to the SAHRA or the competent provincial heritage authority which protects burial grounds and graves that are older than 60 years and must conserve and

generally care for burial grounds and graves protected in terms of this section, and it may make such arrangements for their conservation as it sees fit. SAHRA must also identify and record the graves of victims of conflict and any other graves which it deems to be of cultural significance and may erect memorials associated with these graves and must maintain such memorials. A permit is required under the following conditions:

Permit applications for burial grounds and graves older than 60 years should be submitted to the South African Heritage Resources Agency:

- destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of the conflict, or any burial ground or part thereof which contains such graves.
- destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
- bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.
- SAHRA or a provincial heritage resources authority may not issue a permit for the destruction or damage of any burial ground or grave referred to in subsection (3)(a) unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant.

1.4.5 *Section 38 - HIA as a Specialist Study within the EIA in Terms of Section 38(8)*

A NHRA Section 38 (Heritage Impact Assessments) application to MP-PHRA is required when the proposed development triggers one or more of the following activities:
the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
the construction of a bridge or similar structure exceeding 50 m in length;
any development or other activity which will change the character of a site,
exceeding 5 000 m2 in extent; or
involving three or more existing erven or subdivisions thereof; or
involving three or more erven or divisions thereof which have been consolidated within the past five years; or
the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
the re-zoning of a site exceeding 10 000 m2 in extent; or
any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority
In this instance, no heritage impact assessment for the property has been undertaken in terms of the NEMA and EIA Regulations (2014, and as amended in 2017).

In this instance, the heritage assessment for the property is to be undertaken as a component of the EIA for the project. Provision is made for this in terms of Section 38(8) of the NHRA, which states that:

- An HIA report is required to identify, and assess archaeological resources as defined by the NHR Act, assess the impact of the proposal on the said archaeological resources, review alternatives and recommend mitigation (see methodology above).

Section 38 (3) Impact Assessments are required, in terms of the statutory framework, to conform to basic requirements as laid out in Section 38(3) of the NHRA. These are:

- The identification and mapping of heritage resources in the area affected;
- The assessment of the significance of such resources;
- The assessment of the impact of the development on the heritage resources;
- An evaluation of the impact on the heritage resources relative to sustainable socio/economic benefits;
- Consideration of alternatives if heritage resources are adversely impacted by the proposed development;
- Consideration of alternatives; and
- Plans for mitigation.

1.4.6 *Notice 648 of the Government Gazette 45421*

Although minimum standards for archaeological (2007) and palaeontological (2012) assessments were published by SAHRA (2016), Government Notice (GN) 648 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 GN are listed in **Table 2** and the applicable section in this report noted.

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Table 2 - Reporting requirements for GN648.

GN 648	Relevant section in report	Where not applicable in this report
2.2 (a) a desktop analysis, using satellite imagery	Section 4 and 5	-
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 and 5	-
2.3(a) confirms or disputes the current use of the land and environmental sensitivity as identified by	Section 1 and 5	-

GN 648	Relevant section in report	Where not applicable in this report
the national web-based environmental screening tool		
2.3(b) contains a motivation and evidence (e.g., photographs) of either the verified or different use of the land and environmental sensitivity	Section 4 provides a description of the current use and confirms the status in the screening report	-

An assessment of the Environmental Screening tool provides the following sensitivity ratings for archaeological resources that fall within the proposed project area rated as Low (**Figure 2**), while palaeontological resources are rated as Very High to Moderate (**Figure 3).**

Figure 2 - Environmental screening tool's depiction of the archaeological and heritage sensitivity of the study area and surroundings.

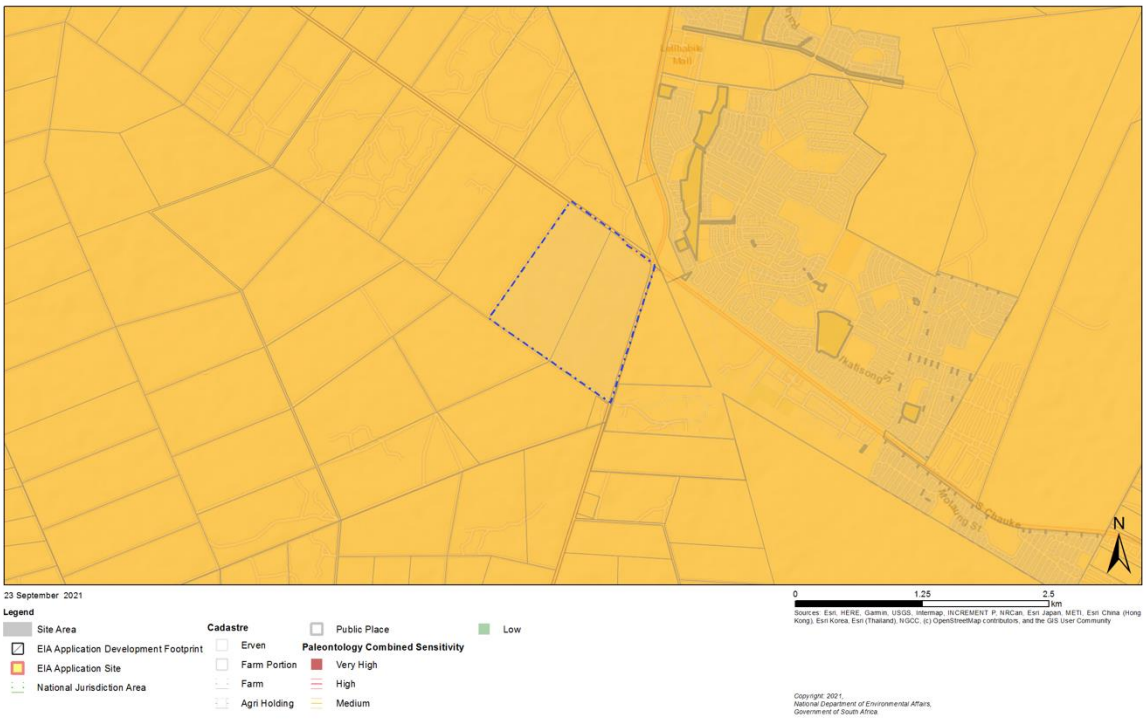

Figure 3 - Environmental screening tool's depiction of the paleontological sensitivity of the study area and surroundings.

1.4.7 *NEMA – Appendix 6 requirements*

The HIA report has been compiled considering the National Environmental Management Act (Act No. 107 of 1998) (NEMA) and Environmental Impact Assessment (EIA) Regulations (2014, and as amended in 2017). **Table 3** of this report sets out the relevant sections as listed in Appendix 6 of the EIA Regulations (2017), which describes the requirements for specialist reports. For ease of reference, **Table 3** provides cross-references to the report sections where these requirements have been addressed. It is important to note, that where something is not applicable to this HIA, this has been indicated in the table below.

Table 3 - Reporting requirements as per NEMA, as amended, Appendix 6 for specialist reports.

Requirements of Appendix 6 – GN R326 EIA Regulations of 7 April 2017	Relevant section in report	Comment where not applicable.
1.(1) (a) (i) Details of the specialist who prepared the report	Page 2 of Report – Contact details and company	-
(ii) The expertise of that person to compile a specialist report including a curriculum vita	Section 1 – refer to **Appendix C**	-
(b) A declaration that the person is independent in a form as may be specified by the competent authority	Page ii of the report	-
(c) An indication of the scope of, and the purpose for which, the report was prepared	Section 1 and 2	-
(cA) An indication of the quality and age of base data used for the specialist report	Section 3, 4 and 5	-

Requirements of Appendix 6 – GN R326 EIA Regulations of 7 April 2017	Relevant section in report	Comment where not applicable.
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 6 and 7	-
(d) The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment	Section 3 and 4	-
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used	Section 3 and Appendix A and B	-
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 4 and 5	-
(g) An identification of any areas to be avoided, including buffers	Section 4, 7 and 8	-
(h) A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Section 2 and 4	
(i) A description of any assumptions made and any uncertainties or gaps in knowledge;	Section 1	-
(j) A description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives, on the environment	Section 7 and 8	
(k) Any mitigation measures for inclusion in the EMPr	Section 4, 6 and 7	
(l) Any conditions for inclusion in the environmental authorisation		Non required
(m) Any monitoring requirements for inclusion in the EMPr or environmental authorisation	Section 4, 5 and 7	
(n)(i) A reasoned opinion as to whether the proposed activity, activities or portions thereof should be authorised and	Section 8	
(n)(iA) A reasoned opinion regarding the acceptability of the proposed activity or activities; and		
(n)(ii) If the opinion is that the proposed activity, activities 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	Section 8	-
(o) A description of any consultation process that was undertaken during the course of carrying out the study		Not applicable. A public consultation process was handled as part of the BA process.
(p) A summary and copies if any comments that were received during any consultation process		Not applicable.
(q) Any other information requested by the competent authority.		Not applicable.
(2) Where a government notice by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	NEMA Appendix 6 and GN648 SAHRA guidelines on HIAs, PIAs and AIAs	

2 PROJECT DESCRIPTION

2.1 Site Location

Table 4 - Site Information

Study Area Coordinates	Central coordinate at: E27.82110, S25.48865
Location	The site is located approximately 15km north-east of Brits
Property	The portion 39 and 40 of the farm Blaauwbank 241 JQ
Topographic Map	2527BD

2.2 Project Description

Fresca Farms is planning to remove vegetation from areas deemed optimal for farming activities such as planting orchards.

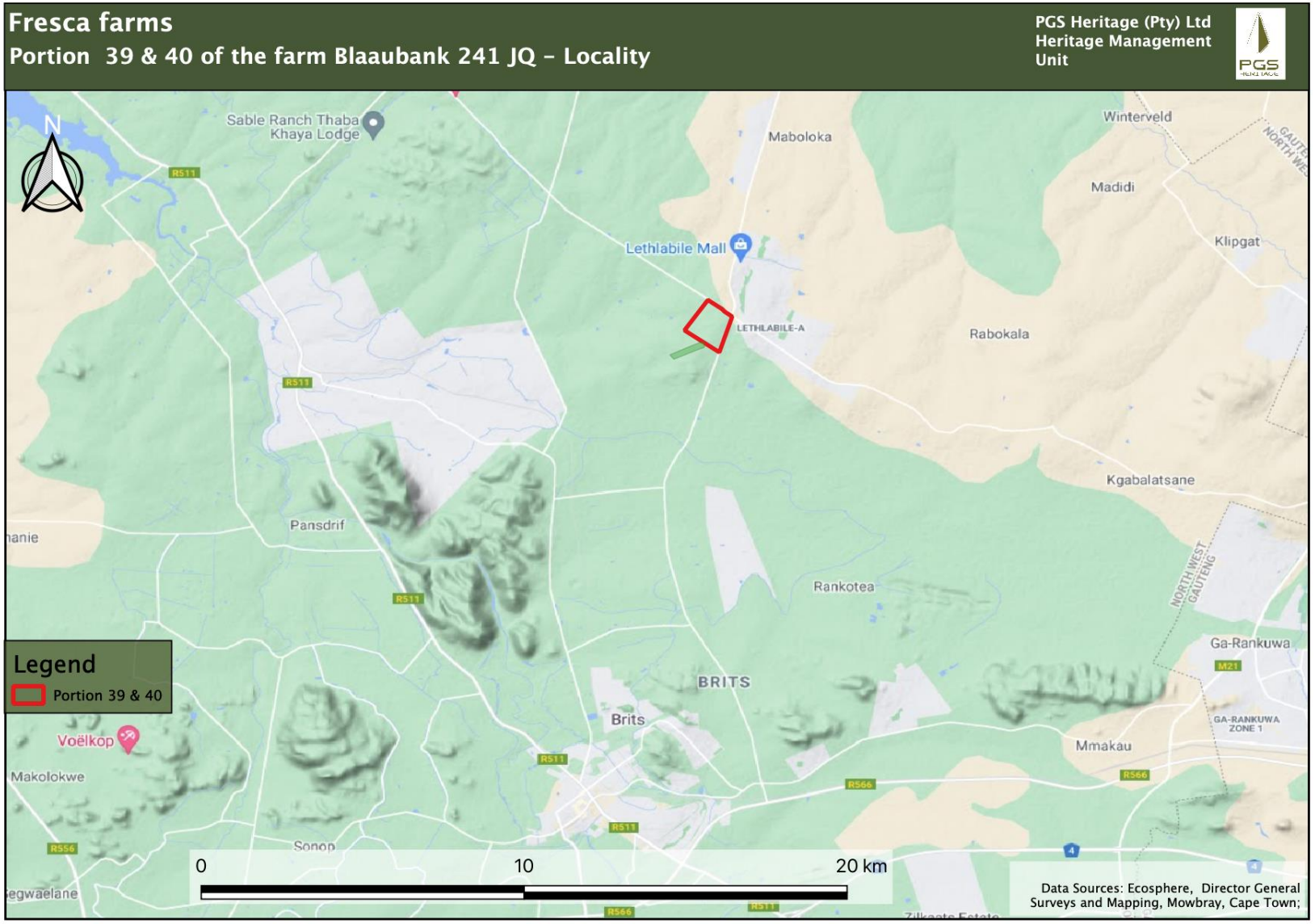

Figure 4 - Locality plan depicting the study area within its surroundings.

3 METHODOLOGY

3.1 Methodology for Assessing Heritage Site Significance

The HIA process consisted of three steps:

Step I – Desktop Study: An archaeological and historical background study was undertaken using available sources. Previous archaeological and heritage studies from the study area and surroundings were also accessed using the South African Heritage Resources Information System (SAHRIS) of SAHRA. Furthermore, an assessment was made of the early editions of the relevant topographic maps.

Step II – Physical Survey: The fieldwork undertaken for this study was undertaken by PGS. The current fieldwork comprised of an intensive field survey of the study area undertaken primarily by foot and vehicle over the course of two days by an experienced fieldwork team from PGS consisting of archaeologists (Nicholas Fletcher and Wynand van Zyl). The fieldwork was undertaken between Monday, 26 and 30 August 2021.

Step III – The final step involved the recording and documentation of relevant heritage resources, report writing as well as mapping and recommendations.

The significance of heritage sites was based on five main criteria (refer to **Appendix A**):

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
- the 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

4 CURRENT STATUS QUO

The study area of Portion 4 is characterised by dense vegetation growth over a fairly flat undulating are slightly sloping towards the north.

5 DESKTOP STUDY FINDINGS

5.1 Archaeological and Historical Overview of the Study Area and Surroundings

Date	Description
The Study Area and Surroundings during the Stone Age	
The South African Stone Age is the longest archaeologically-identified phase identified in human history and lasted for millions of years.	
2.5 million to 250 000 years ago	The Earlier Stone Age is the first and oldest phase identified in Southern Africa's archaeological history and comprises two technological phases. The earliest of these technological phases is known as Oldowan which is associated with crude flakes and hammer stones and dates to approximately 2 million years ago. The second technological phase in the Earlier Stone Age of Southern Africa is known as the Acheulian and comprises more refined and better made stone artefacts such as the cleaver and bifacial handaxe. The Acheulian phase dates back to approximately 1.5 million years ago. No Earlier Stone Age sites are known from the study area or its immediate surroundings.
250 000 to 40 000 years ago	The Middle Stone Age (MSA) dates to between 250 000 to 40 000 years BP. MSA dates of around 250 000 BP originate from sites such as Leopards Kopje in Zambia, while the late Pleistocene (125 000 BP) yields a number of important dated sites associated with modern humans (Deacon & Deacon, 1999). The MSA is characterised by flake and blade industries, the first use of grindstones, wood and bone artefacts, personal ornaments, use of red ochre, circular hearths and a hunting and gathering lifestyle. A number of Middle Stone Age lithics were identified during an archaeological survey undertaken in the general surroundings of the study area by Huffman (1991).
40 000 years ago, to the historic past	The Later Stone Age is the third phase identified in South Africa's archaeological history. It is associated with an abundance of very small stone artefacts known as microliths. In Southern Africa, the Later Stone Age is characterised by the appearance of rock art in the form of paintings and engravings. The Magaliesberg Mountains located a short distance south of the study area Is well known for its Stone Age history, and especially so the Later Stone Age (Carruthers, 2000). A number of researchers have undertaken excavations of these sites, including Professor Revil mason, Mr Robbie Steel and Dr Lyn Wadley. The Later Stone Age sites from this area include open sites such as Xanadu as well as rock shelter and cave sites such as Kruger Cave and Jubilee Shelter (Bergh, 1999). Additionally, Later Stone Age lithics were identified in the general surroundings of the study area during an archaeological survey undertaken by Van der Walt (2009).
The Study Area and Surroundings during the Iron Age – Early Farming Communities	

Date	Description
The arrival of early farming communities (EFC) during the first millennium, heralded in the start of the Iron Age for South Africa. The Iron Age is that period in South Africa's archaeological history associated with pre-colonial farming communities who practiced cultivation and pastoralist farming activities, metal working, cultural customs such as lobola and whose settlement layouts show the tangible representation of the significance of cattle (known as the Central Cattle Pattern) (Huffman, 2007). The tangible remains of the EFC during the Iron Age are frequently identified in the general surroundings of the study area, and these may include potsherds, stonewalled settlements, grinding stones and metal smelting and forging sites. During the period between AD 1650 and AD 1900 the area north of the Magaliesberg Mountains, from Rustenburg in the west to Onderstepoort in the east, was characterised by thousands of stonewalled settlements located along the bases of the granite outcrops of the area. These settlements represented the spheres of influence of various Sotho-Tswana chiefdoms, including the Kgatla, Po, Kwena and Fokeng (Nienaber & Steyn, 2002). An assessment of the different histories of these groups suggest that it was especially the Bakwena ba Mogôpa and Bapo ba Mogale who were associated with the surroundings of the study area.	
Early Iron Age **AD150-AD750**	Two Early Iron Age ceramic facies can be identified within the vicinity of Brits. Firstly, the Bambata ceramic facies was identified at the site known as Jubilee shelter in the Magaliesberg which dates to between AD150 - AD750 and is associated with the Kalundu tradition though no settlements were ever found relating to this facies within the region (Wadley 1996). Secondly the Mzonjani ceramic facies associated with the Urewe tradition which can be found at the site known as Broederstroom which is a settlement located in the Magalies Valley which dates to between AD450 – AD750 (Huffman 2007, Manson 1981, Wadley 1996).
Middle Iron Age **AD1000-AD1300**	The Middle Iron Age in the surrounding area is represented by the Eiland ceramic facies which dates to between AD 1000 – AD 1300 and is associated with the Kalundu tradition (Evers 1988, Huffman 2007). Eiland ceramics can also be found on the settlements of communities in the Limpopo valley that produce Mapungubwe facies ceramics. This hints to regional trade occurring across the Soutpansberg mountain range at sites like Mapungubwe and Mutamba (Antonites 2012, Calabrese 2007: 24). Hall (1981) has also identified the Eiland facies at Rooikrans in the Boschoffsberg valley and at Rhenosterkloof 3 in the Sand River Valley. While a variation of the Eiland facies can also be found in southeastern Botswana and is known as the Broadhurst facies (Denbow 1981, Biemond 2017)
AD 1600 – AD 1750	The origins of the Bakwena ba Mogôpa can be traced back to a place named Rathatheng, near the junction of the Marico and Crocodile (Odi or Oori) Rivers, where the Bakwena ba Mogôpa were known to have settled as early as AD 1600. During the mid-seventeenth century, the Bakwena ba Mogôpa moved from Rathateng to Lokwadi (Zandrivierspoort) near the foot of the Phalane Mountains. During the first half of the eighteenth century, the Bakwena ba Mogôpa moved to the Mabjanamatswane Hills, north-east of modern-day Brits. While these hills are located approximately 10km north of the present study area, the sphere of influence of the Bakwena ba Mogôpa during this time stretched from the Crocodile River in the west to the Apies River in the east, and from the Pienaars River in the north to the Hennops River in the south (Breutz, 1953) (Mogapi, 1996). This means that the present study area would have been located in proximity to the western boundary of this vast area.

Date	Description
AD 1700	The Bapo ba Mogale, an early Nguni migrant group, resided along the banks of the Crocodile (Odi or Oori) river during this time (Breutz, 1953). Their settlements along the banks of this river would likely have been in the general surroundings of the present study area, albeit more likely along the western bank of the river than the eastern bank. Within a few years, the Bapo ba Mogale moved in a western direction to the area known as Makolokwe (either the present-day farm Wolwekraal or the present-day farm Kareepoort) (Breutz, 1953).
AD 1750 – Early 1800s	During the middle of the eighteenth century, the Bakwena ba Mogôpa moved from the Mabjanamatswane Hills in an eastern direction to settle at Mangwatladi (or Lengwatladi) east of the Apies River. They stayed here for a number of years moving back to the Mabjanamatswane Hills. Bakwena ba Mogôpa later settled in this same area at Mamogaleskraal (Gwate) at the foot of a hill named Thaba ya Morena (Breutz, 1953) (Mogapi, 1996). As mentioned above, the Mabjanamatswane Hills are located approximately 10km north of the present study area.
AD 1770 – Early 1800s	During this time, the Bapo ba Mogale settled along the northern slopes and foot of Tlhogokgolo (Wolhuterskop). The kgosi of the Bapo during this time was Moerane (Breutz, 1953). Wolhuterskop is located approximately 14km west by south-west of the present study area. This period is remembered in the Bapo oral traditions as a time of great wealth when large herds of cattle were owned by the Bapo ba Mogale.
AD 1817 - AD 1823	A Pedi force under Maleleku invaded the areas surrounding the Magaliesberg Mountains. After an unsuccessful attack against the Bakwena ba Mogôpa near the Apies River, the Pedi attacked the Bapo in the vicinity of Wolhuterskop. Although they were defeated as well, the Pedi managed to retire from the battle with a large number of captured cattle as well as women and children who were enslaved during the battle. The heir to the Po throne, Mohale Mohale, was a child at the time and although he was also almost captured in the battle, he was hidden in a kloof and managed to escape discovery. The name of the Magaliesberg Mountains is derived from Mohale Mohale's name (Breutz, 1953) (Carruthers, 2000).
AD 1827 - AD 1832	The Khumalo Ndebele (Matabele) of Mzilikazi moved from their settlements along the Vaal River into the surroundings of the study area and started attacking the communities who were residing here (Bergh, 1999). They crossed over the Magaliesberg Mountain at present-day Commandonek, and according to Carruthers (2000) first attacked the Bakwena ba Mogôpa settlement located near present-day Zilkaatsnek. Although the Kwena defended themselves against the Matabele onslaught over the course of three separate battles, they were defeated in the end. Their surrender to Mzilikazi came at a very high cost, with their chief More and his son Segwati both executed and all the Kwena cattle confiscated. Additionally, the Kwena men were forced to join the ranks of the Matabele army, and those who refused were "…*impaled on stakes or had their ears and eyes removed*." (Carruthers, 2000:240). Mzilikazi then attacked the Po at Wolhuterskop, and dispersed them (Breutz, 1953).

Date	Description
	After the defeat of these and other groups living along the northern foot of the Magaliesberg Mountains, Mzilikazi and his Khumalo Ndebele settled themselves along these parts between 1827 and 1832. He had three royal residences built along the mountain range, their localities providing an estimate of the area controlled and settled by the Matabele during these five years. The three Matabele royal residences were built at Kungwini (at the foot of the Wonderboom Mountain), Hlahlandlela (near present-day Rustenburg) and Dinaneni (near present-day Zilkaatsnek). Zilkaatsnek, where the main settlement of the Bakwena ba Mogôpa and one of three Matabele royal residences were located, is situated approximately 5km south-east of the present study area. As a result of the Matabele invasion of the period between 1827 and 1832, both the Bakwena ba Mogôpa and Bapo ba Mogale were scattered across the landscape, and in some cases across Southern Africa.
The Study Area and Surroundings during the Historical Period	
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 mass flood of white immigrants during the 1830s, when a 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 later to be known as Voortrekkers (Visagie, 2011). As the Historical Period carried on, the general surroundings of the study area underwent significant changes and development during the twentieth century, including extensive development in the form of granite and iron mining, railway and transportation development as well as the establishment of nearby towns such as Brits.	
1836	The first Voortrekker parties started crossing over the Vaal River (Bergh, 1999).
1840	The first Voortrekker to establish himself permanently in the general vicinity of the study area, did so in 1840. His name was Albert Venter and the farm on which he settled was De Kroon, in the direct vicinity of present-day Brits. Another known early Voortrekker who established himself in this area, was P.J. Fourie (De Beer, 1975).
1840s - 1850s	Increasing numbers of Voortrekkers started establishing themselves permanently in the general vicinity of the study area during this time (De Beer, 1975). During this period the first contacts between these new arrivals and the black people residing in this wider area took place. According to Bergh (2005), in particular with regards to the Rustenburg District located west of the study area, these early contacts resulted in the setting aside of land by the Voortrekker leadership for some of the black groups such as the Bafokeng. Mbenga (1997) also indicates that the relationship between the Voortrekkers and the Bakgatla were initially similarly amicable. However, within a short period the relationship between the Voortrekkers and the black groups living in these areas became increasingly strained. For example, Bergh (2005) states that the Bafokeng were eventually dispossessed of their farms. The system of unpaid labour enforced by the Voortrekkers on the local black groups would certainly have deteriorated the relationship further. See for example Morton (1992). The permanent settlement of white farmers in the area, resulted in the proclamation of individual farms and the establishment of permanent farmsteads.

Date	Description
c. 1850	In approximately 1850, the Bakwena ba Mogôpa moved to present-day Lesotho (Mogapi, 1996). This significant movement away from the surroundings of the study area, can almost certainly be attributed to their defeat at the hands of the Matabele two decades or so before as well as the establishment of permanent settlement and government in these parts. Similarly, the Bapo ba Mogale under their Kgosi Mogale Mogale also moved to present-day Lesotho (Carruthers, 2000).
1857	The Pretoria District was established in this year. The study area was to fall within the Pretoria District for the next 71 years. It was only in 1928, with the establishment of the Brits District, that the study area fell in a different district (Bergh, 1999).
1862	Kgosi Mogale Mogale returned from Basutoland and bought the farm Boschfontein. This created focal point for the Bapo to re-establish themselves after the disastrous Matabele invasion roughly three decades before (Breutz, 1953).
1868	In 1868 the Bakwena ba Mogôpa returned from Basutoland to what was by then the Zuid-Afrikaansche Republiek. At first, they returned to the areas north-east of Brits, but shortly thereafter they moved to Mantabole (Bethanie) and Makolokwe (Wolwekraal). These two areas are to this day still associated with the Bakwena ba Mogôpa (Mogapi, 1996).
1899 – 1902	On 11 October 1899 war broke out between Britain and the two Boer republics of the Orange Free State and Transvaal (Zuid-Afrikaansche Republiek). The Magaliesberg Mountains had strategic significance to both sides because of its closeness to Pretoria (and Krugersdorp) as well as the fact that the main access routes between Pretoria and the western part of the old Zuid-Afrikaansche Republiek (including the town of Rustenburg) passed through its valleys. As a result, a number of skirmishes and battles took place in the wider surroundings, including the Battle of Dwarsvlei (11 July 1900), the First Battle of Silkaatsnek (11 July 1900), the Battle of Nooitgedacht (13 December 1900) as well as the Second Battle of Silkaatsnek (2 August 1900) (Copley & Panagos, 1998) (Van Vollenhoven & Van der Walt, 2002). The two battles of Silkaatsnek took place approximately five kilometres south-east of the present study area and represent the closest known battles to the present study area during the course of the war. As part of the so-called 'scorched earth' policy initiated by Lord Kitchener, many Boer farmhouses were destroyed. This would certainly also have been true for the surroundings of the study area as well. Another aspect characteristic of the 'scorched earth' policy was the system of concentration camps (also referred to as refugee camps) in which Boer as well as Black women and children were held. The closest of any of these camps to the present study area, was the one at Modimolle and which was in existence from May 1901 to March 1902. This camp was established by the British authorities and used for the keeping of Boer women and children, resulted in the death of 525 persons, 429 of whom were under the age of 15 years (www.angloboerwar.com). The Anglo-Boer War came to an end with the signing of the Peace Treaty of Vereeniging in May 1902.
1906 - 1910	The railway line between Pretoria North and Rustenburg was constructed during this time (Bergh, 1999). At its closest point this railway line is located approximately 4.5km north of the study area.

Date	Description
April 1923	Construction on the Hartebeestpoort Dam was completed in this year (Brits Town Council, 1974).
23 October 1923	The establishment of the town of Brits was published in the government gazette on this day (Brits Town Council, 1974).
1927	Construction of the Hartebeespoort Dam irrigation system comprising a network of canals and furrows commenced in 1921 and was completed in 1927 (Brits Town Council, 1974). It is known that both the construction of the dam and canal system provided work for semi-literate white people (Carruthers, 2007). Once completed, the canal system provided significant stimulation for the growth of the agricultural sector of the Brits district and surrounding area.
1928	The Brits district was established in this year. The study area now fell within this district (Bergh, 1999).

5.2 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. Topographic maps (1:50 000) for various years (1943 and 1980) were assessed to observe the development of the area, as well as the location of possible historical structures and burial grounds. The maps were also used to assess the possible age of structures located, to determine whether they could be considered as heritage sites. Map overlays were created showing the possible heritage sites identified within the areas of concern, as can be seen below.

The relevant topographical maps include:

- First Edition 2527BD Jericho Topographic Sheet, surveyed and drawn by the Trigonometrical Survey Office in 1963.
- Second Edition 2527BD Jericho Topographic Sheet published by the Chief Director of Surveys and Mapping. Printed by the Government Printer in 1979.

5.2.1 *First Edition Topographical map 2527BD Jericho*

The figures below depict a section of First Edition 2527BD Jericho Topographic Sheet, surveyed and drawn by the Trigonometrical Survey Office in 19463 (**Figure 5**).

From the map, the project area and surrounding area was used as part of farming and agricultural activities. No heritage features are located within the project area.

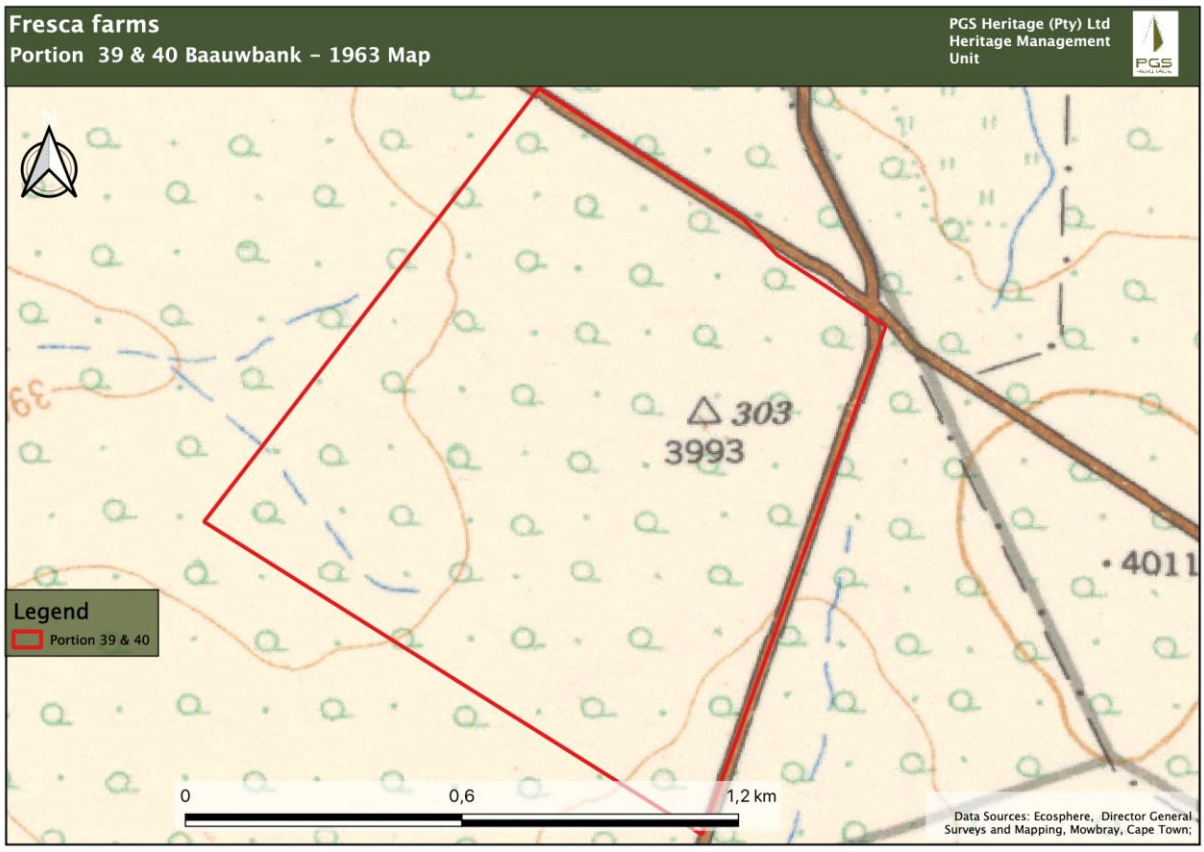

Figure 5 - Section of the First Edition 2527BD Jericho depicting a section of the Farm Blaauwbank on which the project area is located (red polygon).

5.2.2 *Second Edition Topographical map 2527DB Brits*

The figures below depict a section of the Second Edition 2527BD Jericho Topographic Sheet published by the Chief Director of Surveys and Mapping. Printed by the Government Printer in 1979 (**Figure 6**).

From the map, the project area and surrounding area was used as part of farming and agricultural activities. It is evident that the study area had no know structures up to 1979.

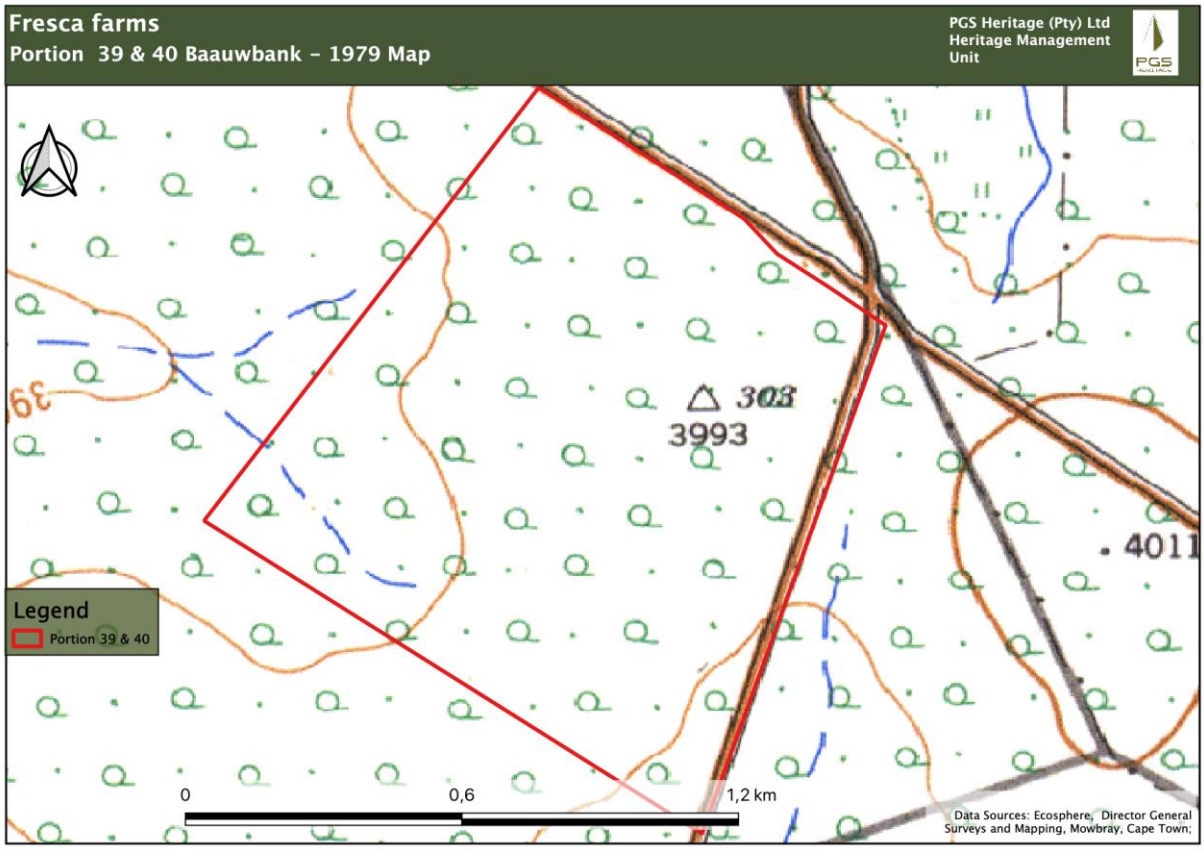

Figure 6 - Section of the Second Edition 2527BD Jericho depicting a section of the Farm Blaauwbank

5.3 Heritage Screening

5.2.3 *Previous Heritage Impact Assessment Reports from the Study Area and Surroundings*

An assessment of the SAHRIS of SAHRA was undertaken to establish whether any previous archaeological and heritage impact assessments had revealed archaeological and heritage sites within the present study area components. Previous reports were also made available by the client.

This assessment has revealed that only one HIA was conducted by Birkholtz (2007) for the development of a new Madibeng township. The study identified various recent historic mud stone structures.

6 FIELDWORK FINDINGS

6.1 Introduction

The fieldwork undertaken for this study was undertaken by PGS. The current fieldwork comprised of an intensive field survey of the study area undertaken primarily by foot and vehicle over the course of two days by an experienced fieldwork team from PGS. The fieldwork was undertaken from 26 to 27 August 2021.

During the fieldwork, hand-held GPS devices were used to record tracklogs (**Figure 7**). These recorded track logs show the routes followed by the fieldwork team on site. The recorded tracklogs are also shown on maps depicted on the subsequent pages.

During the fieldwork the remains of three large archaeological settlements were identified. The northern section (**Le13** and **Le14**) of one site was already impacted by bush clearing activities and planting activities already occurred at **Le14**.

In all likelihood the two identified areas at **Le11** and **Le12** are part of the same large LIA Early Farming Community (EFC) settlement that continues up to points **Le13** and **Le14** covering a total area of approximately 800m x 200m. The cultural remains associated with this settlement includes numerous ash middens, low stone walling, grain bin platforms as well as some exposed burned clay floors or the remains of hut rubble.

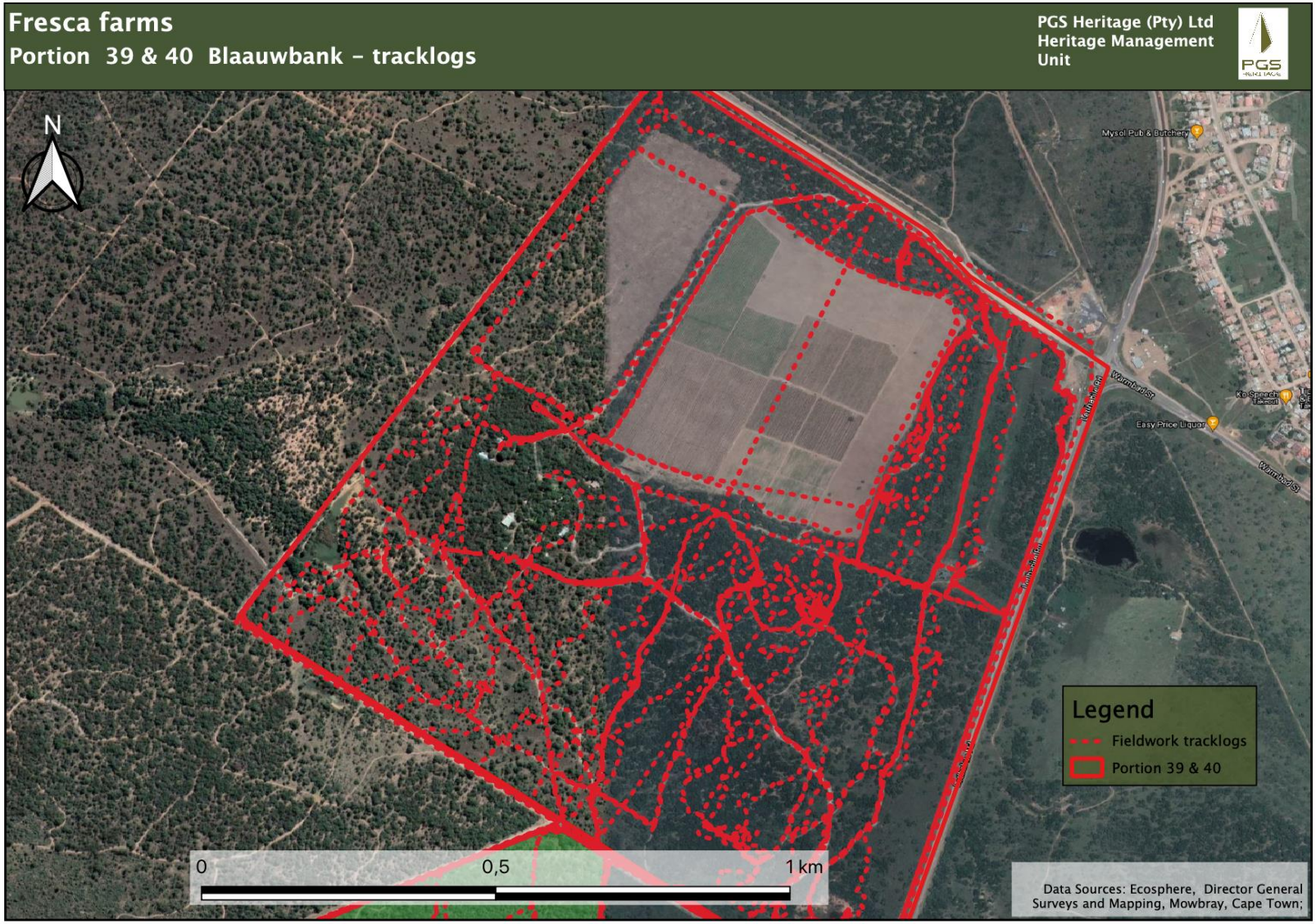

Figure 7 - Google Earth image depicting the study area in red with the recorded tracklogs in red

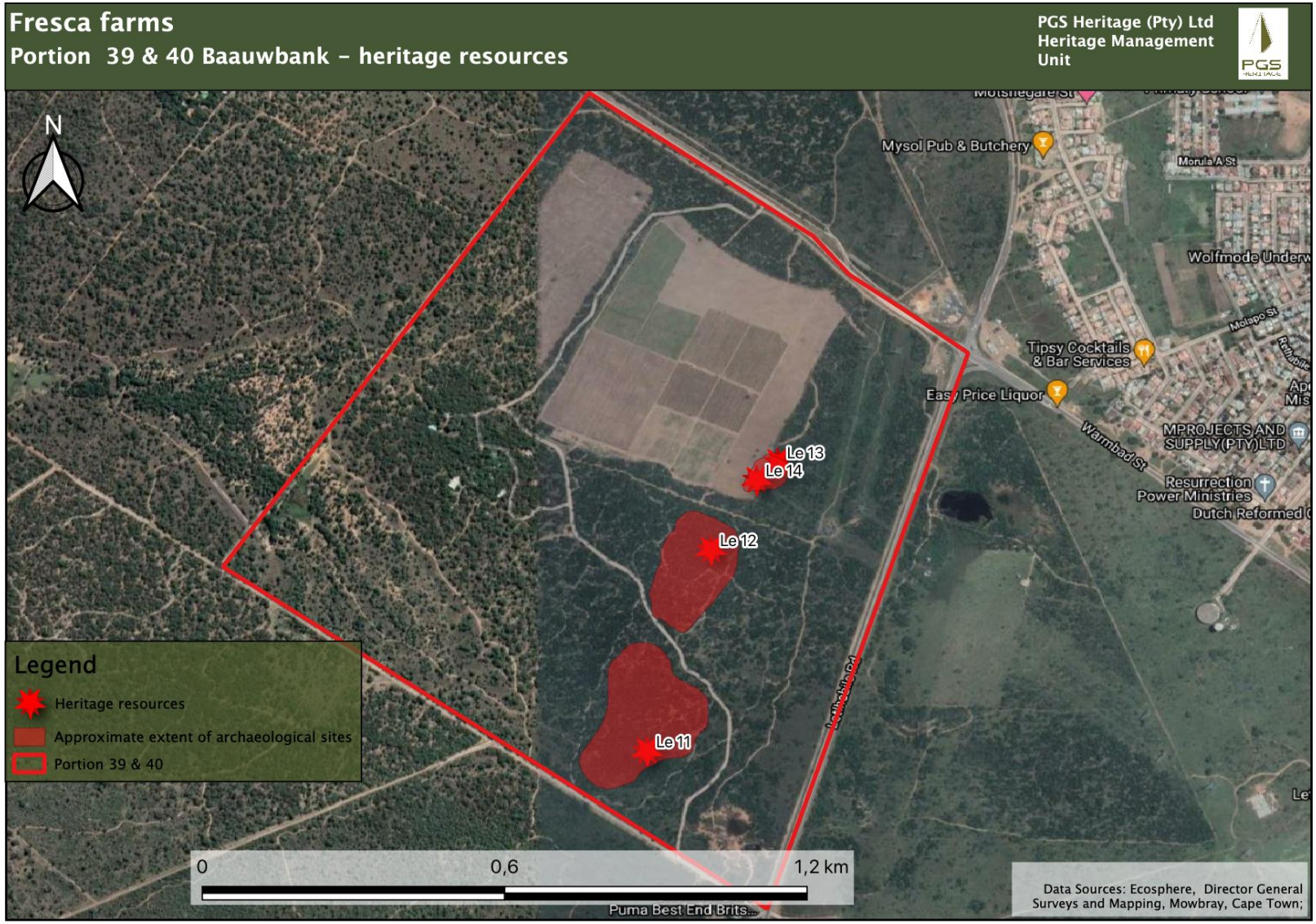

Figure 8 – Map indicating Heritage features as well as a general delineation of the extent of the archaeological sites

Table 5 - Sites identified during the heritage survey.

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
Le11	-25.49366	27.82151	The site is a Late Iron Age settlement and is approximately 60m x 40m in size. The site consists of low informal stone walling, four middens, and a lower grinding stones. There is a low density ceramic scatter throughout the site. The presence of stone walling and middens indicates that the settlement is related to a LIA Early Farming community. The general locality alludes to an association with the Bakwena ba Mogôpa and Bapo ba Mogale who were associated with the surroundings of the study area.	Medium	IIIB

Figure 9 – Stones packed in two circles

Figure 10 – Low wall feature

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
			 *Figure 11 – Low informal walling feature*		
			 *Figure 12 – Ceramics collected during site assessment*		
Le12	-25.48969	27.82277	The site is a Late Iron Age settlement and is approximately 150m x 100m in size. The site consists of low informal stone walling a few grain bin basses and multiple middens. There is also a hut floor which can be identified through pieces of daga eroding out of a road.	Medium	IIIB

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 13 – Stones packed in two circles

Figure 14 – Low wall feature

Figure 15 – Low wall feature

Figure 16 – Low wall feature

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
 *Figure 17 – possible grainbin platforms*			 *Figure 18 – Burned clay floor*		
Le13 **Le14**	-25.48796 -25.48831	27.82409 27.82367	The site is a Late Iron Age settlement and is approximately 70m x 90m in size. There is a road and brush barrier that cuts through the site from north to east. There is a midden situated 5m east of the road with a light ceramic scatter occurring throughout the area that has been cleared. (**Figure 19** to **Figure 22**). A further midden of 10x10m was identified at **Le14** where it was exposed during bush clearing in preparation of cultivated fields (**Figure 23**). Cultural material consists of some ceramics and faunal material and an upper grinding stone (**Figure 24**).	Medium	IIIB

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 19 – Southern view of site at Le13

Figure 20 - Disturbed midden at Le13

Figure 21 – Eastern view of the site extent at Le13

Figure 22 – Artifacts found in midden deposit at Le13

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
 *Figure 23 – Eastern view of the site at Le14*			 *Figure 24 – Some cultural remains from midden at Le14*		

6.2 Palaeontology

According to the Palaeontological Sensitivity Map of SAHRIS (**Figure 25**), the proposed project area falls within a zero palaeontological sensitivity zone and as such no further palaeontological studies will be required (**Table 6**).

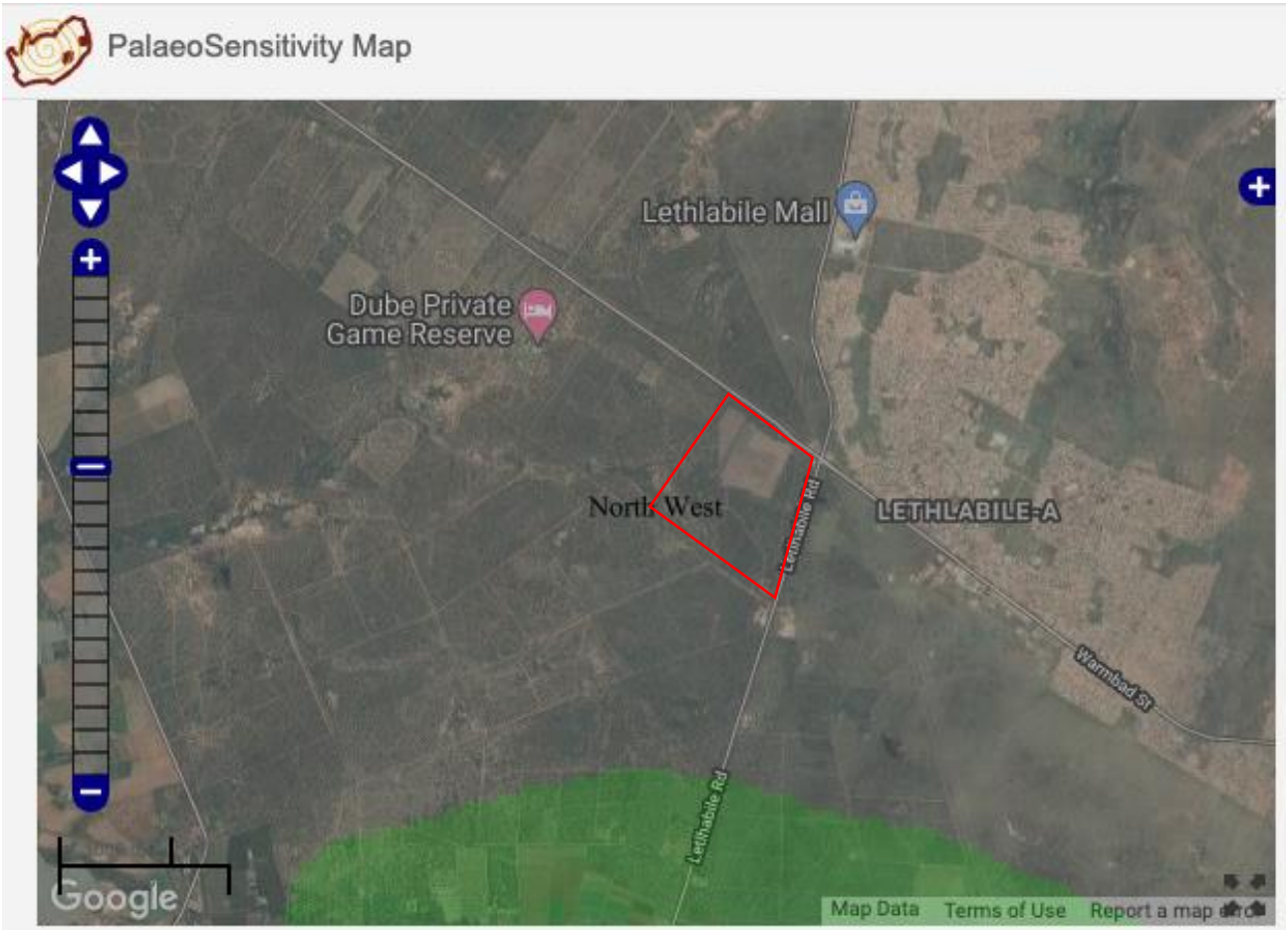

Figure 25 - Extract of the 1:250 000 SAHRIS PalaeoMap (Council of Geosciences). The approximate location of the proposed development is indicated by the red polygon.

Table 6 - SAHRIS Palaeosensitivity rating table.

Colour	Sensitivity	Required Action
RED	VERY HIGH	Field assessment and protocol for finds is required.
ORANGE/YELLOW	HIGH	A desktop study is required and based on the outcome of the desktop study; a field assessment is likely.
GREEN	MODERATE	The desktop study is required.
BLUE	LOW	No palaeontological studies are required however a protocol for finds is required.
GREY	INSIGNIFICANT/ZERO	No palaeontological studies are required.
WHITE/CLEAR	UNKNOWN	These areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

7 IMPACT ASSESSMENT

7.1 Methodology for Impact Assessment

The impact significance rating process serves two purposes: firstly, it helps to highlight the critical impacts requiring consideration in the management and approval process; secondly, it shows the primary impact characteristics, as defined above, used to evaluate impact significance.

The impacts will be ranked according to the methodology described below. Where possible, mitigation measures will be provided to manage impacts. To ensure uniformity, a standard impact assessment methodology will be utilised so that a wide range of impacts can be compared with each other. The impact assessment methodology makes provision for the assessment of impacts against the following criteria:

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

A combined quantitative and qualitative methodology was used to describe impacts for each of the assessment criteria. A summary of each of the qualitative descriptors along with the equivalent quantitative rating scale for each of the criteria is given in **Table 7**.

Table 7 – Quantitative rating and equivalent descriptors for the impact assessment criteria

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

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

7.2 Significance Assessment

Significance rating (importance) of the associated impacts embraces the notion of extent and magnitude but does not always clearly define these since their importance in the rating scale is very relative. For example, the magnitude (i.e., the size) of area affected by atmospheric pollution may be extremely large (1 000 km^2) but the significance of this effect is dependent on the concentration or level of pollution. If the concentration is great, the significance of the impact would be HIGH or VERY HIGH, but if it is diluted it would be VERY LOW or LOW. Similarly, if 60 ha of a grassland type are destroyed the impact would be VERY HIGH if only 100 ha of that grassland type were known. The impact would be VERY LOW if the grassland type was common. A more detailed description of the impact significance rating scale is given in **Table 8** below.

Table 8 – Description of the significance rating scale

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

7.3 Spatial Scale

The spatial scale refers to the extent of the impact i.e., will the impact be felt at the local, regional, or global scale. The spatial assessment scale is described in more detail in **Table 9.**

Table 9 – Description of the significance rating scale

RATING		DESCRIPTION
5	Global/National	The maximum extent of any impact.
4	Regional/Provincial	The spatial scale is moderate within the bounds of impacts possible and will be felt at a regional scale (District Municipality to Provincial Level).
3	Local	The impact will affect an area up to 10 km from the proposed site.
2	Study Site	The impact will affect an area not exceeding the Eskom property.
1	Proposed site	The impact will affect an area no bigger than the ash disposal site.

7.4 Duration Scale

To accurately describe the impact, it is necessary to understand the duration and persistence of an impact in the environment. The temporal scale is rated according to criteria set out in **Table 10**.

Table 10 – Description of the temporal rating scale

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

RATING		DESCRIPTION
3	Medium/High term	The environmental impact identified will operate for the duration of life of facility.
4	Long term	The environmental impact identified will operate beyond the life of operation.
5	Permanent	The environmental impact will be permanent.

7.5 Degree of Probability

Probability or likelihood of an impact occurring will be described as shown in **Table** 11 below.

Table 11 – Description of the degree of probability of an impact occurring

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

7.6 Degree of Certainty

As with all studies it is not possible to be 100% certain of all facts, and for this reason a standard "degree of certainty" scale is used as discussed in **Table 12**. The level of detail for specialist studies is determined according to the degree of certainty required for decision-making. The impacts are discussed in terms of affected parties or environmental components.

Table 12 – Description of the degree of certainty rating scale

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

7.7 Quantitative Description of Impacts

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

$$\textbf{\textit{Impact Risk}} = \frac{SIGNIFICANCE + Spatial + Temporal}{3} * \frac{Probability}{5}$$

An example of how this rating scale is applied is shown in **Table 13**.

Table 13 – Example of Rating Scale

Impact	Significance	Spatial Scale	Temporal Scale	Probability	Rating
	LOW	Local	Medium/High-term	Could Happen	
Impact to air	2	3	3	3	1.6

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

The impact risk is classified according to five classes as described in the **Table 14** below.

Table 14 – Impact Risk Classes

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

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

7.8 Statement of Heritage significance

During the fieldwork the remains of three large archaeological settlements were identified. The northern section (**Le13** and **Le14**) of one site was already impacted by bush clearing activities and planting activities already occurred at **Le14**.

In all likelihood the two identified areas at **Le11** and **Le12** are part of the same large LIA Early Farming Community (EFC) settlement that continues up to points **Le13** and **Le14** covering a total area of approximately 800m x 200m. The cultural remains associated with this settlement includes numerous ash middens, low stone walling, grain bin platforms as well as some exposed burned clay floors or the remains of hut rubble. Ethnographic research in the early part of the 20th century (Breutz, 1934) has linked this area to the Bakwena ba Mogôpa and Bapo ba Mogale as it lies between the tribe's main historical settlement areas at Jericho (15km north) and Mamogaleskraal 6km southwest.

This EFC settlement extent over approximately 2 ha with some ephemeral indications of cultural material extending even further to the east. The size and preservation of the remains of material cultural adds to the cultural significance of the site and can be rated as having a **medium-high heritage significance grading and** of local significance IIIB.

7.9 Heritage Impacts

The proposed farming activities will result in the clearing of extensive tract of vegetation for cultivating vegetables and planting of orchards. Some of this activities have already impacted on sections of the

archaeological site at **Le13** and **Le14**. The whole of the farm portion and will eventually be directly impact on and destroy the identified sites.

The impact significance before mitigation on the archaeological sites at **Le11** to **Le14** will be Very High negative. *The impact of the proposed development will be local in extent*. **The possibility of the impact occurring is that it will happen.** The expected duration of the impact is assessed as permanent. Implementation of the recommended mitigation measures will reduce this impact rating to an acceptable MODERATE negative impact (refer to **Table 15** and **Table 16**).

Table 15 – Impact assessment table – Destruction of archaeological features that were rated as IIIA/B – pre-mitigation

IMPACT	IMPACT DIRECTION	SIGNIFICANCE	SPATIAL SCALE	TEMPORAL SCALE	PROBABILITY	RATING
Impact on archaeological sites	Negative	VERY HIGH	Local	Permanent	Very Likely	
		5	3	5	4	3,47

Table 16 – Impact assessment table – Destruction of archaeological features that were rated as IIIA/B – post mitigation

IMPACT	IMPACT DIRECTION	SIGNIFICANCE	SPATIAL SCALE	TEMPORAL SCALE	PROBABILITY	RATING
Impact on archaeological sites	Negative	MODERATE	Local	Permanent	Could happen	
		3	3	5	3	2,20

7.10 Management recommendations and guidelines

7.11 Construction phase[1]

It is possible that cultural material will be exposed during construction and may be recoverable, keeping in mind delays can be costly during construction and as such must be minimised. Development surrounding infrastructure and construction of facilities results in significant disturbance, however, foundation holes do offer a window into the past, and it thus may be possible to rescue some of the data and materials. It is also possible that substantial alterations will be implemented during this phase of the project, and these must be catered for. Temporary infrastructure developments, such as construction camps and laydown areas, are often changed or added to the project as required. In general, these are low impact developments as they are superficial, resulting in little alteration of the land surface, but still need to be catered for.

During the bush clearing phase, it is important to recognize any significant material being unearthed, making the correct judgment on which actions should be taken. It is recommended that the following chance find procedure should be implemented.

7.12 Chance finds procedure

- An appropriately qualified heritage practitioner/archaeologist must be identified to be called upon in the event that any possible heritage resources or artefacts are identified.
- Should an archaeological site or cultural material be discovered during construction (or operation), the area should be demarcated, and construction activities halted.
- The qualified heritage practitioner/archaeologist will then need to come out to the site and evaluate the extent and importance of the heritage resources and make the necessary recommendations for mitigating the find and the impact on the heritage resource.
- The contractor therefore should have some sort of contingency plan so that operations could move elsewhere temporarily while the materials and data are recovered.
- Construction can commence as soon as the site has been cleared and signed off by the heritage practitioner/archaeologist.

7.13 Possible finds during construction and operation (mining activities)

The study area occurs within a greater archaeological site as identified during the desktop and fieldwork phase. Bush clearance and trenching could uncover the following:

- High density concentrations of Iron Age artefact such as pottery
- Human remains
- Stone walling

[1] *Construction in this case refers to bush clearing, trenching, and planting of orchards*

7.14 Timeframes

It must be kept in mind that mitigation and monitoring of heritage resources discovered during construction activity will require permitting for collection or excavation of heritage resources and lead times must be worked into the construction time frames. **Table 17** gives guidelines for lead times on permitting.

Table 17 - Lead times for permitting and mobilisation

Action	Responsibility	Timeframe
Preparation for field monitoring and finalisation of contracts	The contractor and service provider	1 month
Application for permits to do necessary mitigation work	Service provider – Archaeologist and SAHRA	3 months
Documentation, excavation and archaeological report on the relevant site	Service provider – Archaeologist	3 months
Handling of chance finds – Graves/Human Remains	Service provider – Archaeologist and SAHRA	2 weeks
Relocation of burial grounds or graves in the way of construction	Service provider – Archaeologist, SAHRA, local government and provincial government	6 months

7.15 Heritage Management Plan for EMPr implementation

Table 18 - Heritage Management Plan for EMPr implementation

Area and site no.	Mitigation measures	Phase	Timeframe	The responsible party for implementation	Monitoring Party (frequency)	Target
General project area	• Implement a chance to find procedures in case possible heritage finds are uncovered.	Construction and operation	During construction and operation	Applicant Heritage Specialist	During bush clearing	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 34-36 and 38 of NHRA
Archaeological Structures **Le13-14**	• Documentation of the structures and features must be done after issuing of a permit under s35 of the NHRA • The documentation must include mapping, layout sketches and test excavation to determine the cultural affinity and temporal scale of the archaeological features • An application for destruction will then need to be submitted to SAHRA by the developer with the backing of the report emanating from the documentation work • Upon issuing of the destruction permit the specific site can be destroyed and bush clearing continue in those specific areas	Pre-Construction	Pre-construction	Applicant Archaeologist	Until destruction	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35 of NHRA
Archaeological Structures **Le11-12**	• A 30m No-Go-Buffer-Zone be recommended for the larger stone wall sites. • The extent of the site must be identified by a qualified archaeologist and markers placed to determine the 30 meter buffer where no bush clearing can be done. • In the event that this site cannot be avoided the process as described for site Le13-14 must be followed.	Pre-construction, implemented for future phases	Pre-construction	Applicant Archaeologist	None	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35 of NHRA

8 CONCLUSIONS AND RECOMMENDATIONS

PGS was appointed by Ecosphere (Pty) Ltd to undertake an HIA for the proposed farming activities on Portion 39 and 40 of the farm Blaauwbank 241 JQ, Lethlabile, Madibeng Local Municipality, Northwest Province.

An archaeological and historical desktop study was undertaken to provide a historical framework for the project area and surrounding landscape (refer to Chapter 5). This was augmented by an assessment of previous archaeological and heritage studies completed for the surrounding landscape. Furthermore, an assessment was made of the early editions of the relevant topographic maps.

During the fieldwork the remains of three large archaeological settlements were identified. The northern section (**Le13** and **Le14**) of one site was already impacted by bush clearing activities and planting activities already occurred at **Le14**.

In all likelihood the two identified areas at **Le11** and **Le12** are part of the same large LIA Early Farming Community (EFC) settlement that continues up to points **Le13** and **Le14** covering a total area of approximately 800m x 200m. The cultural remains associated with this settlement includes numerous ash middens, low stone walling, grain bin platforms as well as some exposed burned clay floors or the remains of hut rubble. Ethnographic research in the early part of the 20th century (Breutz, 1934) has linked this area to the Bakwena ba Mogôpa and Bapo ba Mogale as it lies between the tribe's main historical settlement areas at Jericho (15km north) and Mamogaleskraal 6km southwest.

This EFC settlement extent over approximately 2 ha with some ephemeral indications of cultural material extending even further to the east. The size and preservation of the remains of material cultural adds to the cultural significance of the site and can be rated as having a **medium-high heritage significance grading and** of local significance IIIB.

8.1 Palaeontology

According to the SAHRIS palaeontological sensitivity map, the proposed project area falls within a high zero sensitivity zone and n further studies will be required.

8.2 Impact Statement

The proposed farming activities will result in the clearing of extensive tract of vegetation for cultivating vegetables and planting of orchards. Some of this activities have already impacted on sections of the archaeological site at **Le13** and **Le14**. The whole of the farm portion and will eventually be directly impact on and destroy the identified sites.

The impact significance before mitigation on the archaeological sites at **Le11** to **Le14** will be Very High negative. *The impact of the proposed development will be local in extent*. **The possibility of the impact occurring is that it will happen.** The expected duration of the impact is assessed as permanent. Implementation of the recommended mitigation measures will reduce this impact rating to an acceptable MODERATE negative impact.

8.3 Recommendations

The following mitigation measures are listed in **Table 19** below.

Table 19 - Heritage management recommendations.

Area and site no.	Mitigation measures
General project area	• Implement a chance to find procedures in case possible heritage finds are uncovered.
Archaeological Structures **Le13-14**	• Documentation of the structures and features must be done after issuing of a permit under s35 of the NHRA • The documentation must include mapping, layout sketches and test excavation to determine the cultural affinity and temporal scale of the archaeological features • An application for destruction will then need to be submitted to SAHRA by the developer with the backing of the report emanating from the documentation work • Upon issuing of the destruction permit the specific site can be destroyed and bush clearing continue in those specific areas
Archaeological Structures **Le11-12**	• A 30m No-Go-Buffer-Zone be recommended for the larger stone wall sites. • The extent of the site must be identified by a qualified archaeologist and markers placed to determine the 30 meter buffer where no bush clearing can be done. • In the event that this site cannot be avoided the process as described for site Le13-14 must be followed.

8.4 Conclusions

During the heritage walk through survey, several heritage resources were identified within the proposed farming landscape on portion 39 and 40 of the farm Blaauwbank 241 JQ. The overall impact of the proposed project, on the heritage resources identified during this report, is seen as acceptably low after the recommendations have been implemented and therefore, impacts can be mitigated to acceptable levels allowing for the development to be authorised.

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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.

Internet

www.sanbi.org

https://screening.environment.gov.za/screeningtool/#/pages/welcome

http://cdngiportal.co.za/photocentres/OTHER_SCALES_PAN/353_Ermelo/353_005_07733.jpg

Google Earth

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

Appendix A

Heritage Assessment Methodology

The applicable maps, tables and figures, are included as stipulated in the NHRA (no 25 of 1999), the NEMA (no 107 of 1998). The HIA process consisted of three steps:

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

Step II – Physical Survey: A physical survey was conducted by vehicle through the proposed project area by a qualified heritage specialist. The survey was conducted over one day (21 August 2019), aimed at locating and documenting sites falling within and adjacent to the proposed development footprint.

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

The significance of heritage sites was based on four main criteria:

- Site integrity (i.e., primary vs. secondary context),
- Amount of deposit, range of features (e.g., stonewalling, stone tools and enclosures),
- Density of scatter (dispersed scatter)
    - Low - <10/50m2
    - Medium - 10-50/50m2
    - High - >50/50m2
- Uniqueness; and
- Potential to answer present research questions.

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

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

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

Site Significance

Site significance classification standards use is based on the heritage classification of s3 in the NHRA and developed for implementation keeping in mind the grading system approved by SAHRA for

archaeological impact assessments. The update classification and rating system as developed by Heritage Western Cape (2016) is implemented in this report

Site significance classification standards prescribed by the Heritage Western Cape Guideline (2016), were used for the purpose of this report (Error! Reference source not found. and Error! Reference source not found.**)**.

Table A 1: Rating system for archaeological resources

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
I	Heritage resources with qualities so exceptional that they are of special national significance. Current examples: Langebaanweg (West Coast Fossil Park), Cradle of Humankind	May be declared as a National Heritage Site managed by SAHRA. Specific mitigation and scientific investigation can be permitted in certain circumstances with sufficient motivation.	Highest Significance
II	Heritage resources with special qualities which make them significant, but do not fulfil the criteria for Grade I status. Current examples: Blombos, Paternoster Midden.	May be declared as a Provincial Heritage Site managed by PHRA-NW. Specific mitigation and scientific investigation can be permitted in certain circumstances with sufficient motivation.	Exceptionally High Significance
III	Heritage resources that contribute to the environmental quality or cultural significance of a larger area and fulfils one of the criteria set out in section 3(3) of the Act but that does not fulfil the criteria for Grade II status. Grade III sites may be formally protected by placement on the Heritage Register.		
IIIA	Such a resource must be an excellent example of its kind or must be sufficiently rare. Current examples: Varschedrift; Peers Cave; Brobartia Road Midden at Bettys Bay	Resource must be retained. Specific mitigation and scientific investigation can be permitted in certain circumstances with sufficient motivation.	High Significance
IIIB	Such a resource might have similar significances to those of a Grade III A resource, but to a lesser degree.	Resource must be retained where possible where not possible it must be fully investigated and/or mitigated.	Medium Significance
IIIC	Such a resource is of contributing significance.	Resource must be satisfactorily studied before impact. If the recording already done (such as in an HIA or permit application) is not sufficient, further recording or even mitigation may be required.	Low Significance
NCW	A resource that, after appropriate investigation, has been determined to not have enough heritage significance to be retained as part of the National Estate.	No further actions under the NHRA are required. This must be motivated by the applicant or the consultant and approved by the authority.	No research potential or other cultural significance

Table A 2: Rating system for built environment resources

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
I	Heritage resources with qualities so exceptional that they are of special national significance. Current examples: Robben Island	May be declared as a National Heritage Site managed by SAHRA.	Highest Significance
II	Heritage resources with special qualities which make them significant in the context of a province or region, but do not fulfil the criteria for Grade I status. Current examples: St George's Cathedral, Community House	May be declared as a Provincial Heritage Site managed by PHRA-NW	Exceptionally High Significance
II	Such a resource contributes to the environmental quality or cultural significance of a larger area and fulfils one of the criteria set out in section 3(3) of the Act but that does not fulfil the criteria for Grade II status. Grade III sites may be formally protected by placement on the Heritage Register.		
IIIA	Such a resource must be an excellent example of its kind or must be sufficiently rare. These are heritage resources which are significant in the context of an area.	This grading is applied to buildings and sites that have sufficient intrinsic significance to be regarded as local heritage resources; and are significant enough to warrant that any alteration, both internal and external, is regulated. Such buildings and sites may be representative, being excellent examples of their kind, or may be rare. In either case, they should receive maximum protection at local level.	High Significance
IIIB	Such a resource might have similar significances to those of a Grade III A resource, but to a lesser degree. These are heritage resources which are significant in the context of a townscape, neighbourhood, settlement or community.	Like Grade IIIA buildings and sites, such buildings and sites may be representative, being excellent examples of their kind, or may be rare, but less so than Grade IIIA examples. They would receive less stringent protection than Grade IIIA buildings and sites at local level.	Medium Significance
IIIC	Such a resource is of contributing significance to the environs. These are heritage resources which are significant in the context of a streetscape or direct neighbourhood.	This grading is applied to buildings and/or sites whose significance is contextual, i.e., in large part due to its contribution to the character or significance of the environs. These buildings and sites should, as a consequence, only be regulated if the significance of the environs is sufficient to warrant protective measures, regardless of whether the site falls within a Conservation or Heritage Area. Internal alterations should not necessarily be regulated.	Low Significance
NCW	A resource that, after appropriate investigation, has been determined to not have enough heritage significance to be retained as part of the National Estate.	No further actions under the NHRA are required. This must be motivated by the applicant and approved by the authority. Section 34 can even be lifted by PHRA-NW for structures in this category if they are older than 60 years.	No research potential or other cultural significance

WOUTER FOURIE

Professional Heritage Specialist and Professional Archaeologist and Director PGS Heritage

Summary of Experience

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

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

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

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

Key Qualifications

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

BA - Archaeology, Geography and Anthropology - 1996

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

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

CRM Accreditation (ASAPA) -

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

Key Work Experience

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

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

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

2000-2004 - CEO– Matakoma Consultants

1998-2000 - Environmental Coordinator – Randfontein Estates Limited. Randfontein, Gauteng
1997-1998 - Environmental Officer – Department of Minerals and Energy. Johannesburg, Gauteng

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