The Buffelspoort Solar Photovoltaic (PV) Energy Facility and the OHL Grid Corridor, on Portions 75 and 134 of the Farm Buffelspoort 343 JQ, between Buffelspoort and Mooinooi, in the North West Province

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, Michelle Sachse, declare that –
- General declaration:
- I act as the independent heritage practitioner in this application
- I will perform the work relating to the application objectively, 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 concerning 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

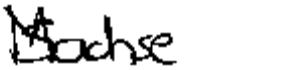
- I do not have and will not have any vested interest (either business, financial, personal, or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;

HERITAGE CONSULTANT: PGS Heritage (Pty) Ltd

CONTACT PERSON: Michelle Sachse – Heritage Specialist

Tel: +27 (0) 12 332 5305

Email: michelle@pgsheritage.co.za

SIGNATURE: 

ACKNOWLEDGEMENT OF RECEIPT

Report Title	Heritage Impact Assessment report for the Buffelspoort Solar Photovoltaic (PV) Energy Facility and the OHL Grid Corridor, on Portions 75 and 134 of the Farm Buffelspoort 343 JQ, between Buffelspoort and Mooinooi, in the North West Province		
Control	**Name**	**Signature**	**Designation**
Author	M Sachse		PGS Heritage - Archaeologist
Co-author and Internal Review	W Fourie		PGS Heritage - Project Manager/Archaeologist
Reviewed	N Masondo		Savannah Environmental – Senior Environmental Consultant

CLIENT: Savannah Environmental (Pty) Ltd

CONTACT PERSON: Nkhensani Masondo
Tel: +27 (0)11 656 3237
Cell: +(27) 066 334 7166
Email: nkhensani@savannahsa.com

SIGNATURE: _____

The Heritage Impact Assessment Report has been compiled considering the National Environmental Management Act (Act No. 107 of 1998) (NEMA): Appendix 6 of the Environmental Impact Assessment (EIA) Regulations of 2014 (as amended, 2017) requirements for specialist reports as indicated in the table below.

Requirements of Appendix 6 – GN R326 EIA Regulations of 7 April 2017	**Relevant section in the report**
1.(1) (a) (i) Details of the specialist who prepared the report	Page ii of Report – Contact details and company
(ii) The expertise of that person to compile a specialist report including a curriculum vita	Section 1.2 – 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 1.1
(cA) An indication of the quality and age of base data used for the specialist report	N/A
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development, and levels of acceptable change;	Section 5
(d) The duration, date, and season of the site investigation and the relevance of the season to the outcome of the assessment	Section 4.4
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used	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
(g) An identification of any areas to be avoided, including buffers	Section 4
(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 4.3
(i) A description of any assumptions made and any uncertainties or gaps in knowledge;	Section 1.3
(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 4
(k) Any mitigation measures for inclusion in the EMPr	Section 6
(l) Any conditions for inclusion in the environmental authorization	Section 6
(m) Any monitoring requirements for inclusion in the EMPr or environmental authorization	Section 6
(n)(i) A reasoned opinion as to whether the proposed activity, activities, or portions thereof should be authorised and	Sections 6 and 7
(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 6
(o) A description of any consultation process that was undertaken during carrying out the study	Informal consultation in fieldwork.
(p) A summary and copies if any comments that were received during any consultation process	Not applicable. To date, no comments regarding heritage resources that require input from a specialist have been raised.
(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.	No protocols or minimum standards for HIAs or PIAs

EXECUTIVE SUMMARY

PGS Heritage (Pty) Ltd was appointed by Savannah Environmental (Pty) Ltd to undertake a Heritage Impact Assessment (HIA) that forms part of the Environmental Impact Assessment (EIA) and Environmental Management Programme (EMPr) for the proposed Buffelspoort Solar Photovoltaic (PV) Energy Facility and OHL Grid Corridor on Portions 75 and 134 of the farm Buffelspoort 343 JQ, between Buffelspoort and Mooinooi, in the North West Province.

This HIA aims to evaluate the possible impacts on heritage resources present within the proposed Development Footprint for the proposed Buffelspoort Solar PV Energy Facility and OHL Grid Corridor.

The HIA has shown that the Project Site and larger landscape of Buffelspoort and Mooinooi have heritage resources with a **HIGH** to **LOW** heritage grading.

Fieldwork

The fieldwork component of the study was aimed at identifying tangible remains of archaeological, historical, and heritage significance. The fieldwork was undertaken by way of intensive walkthroughs of the Project Site. The fieldwork was conducted on 28 April 2022. The fieldwork team had to return to the Development Area two separate times (6 May 2022 and 26 May 2022) as the client extended the planned layout of the Development Area after the initial survey was completed. The fieldwork team consisted of two archaeologists from PGS Heritage (Michelle Sachse and Nicholas Fletcher) and a field assistant (Xander Fourie).

During the fieldwork, a total of seven (7) heritage features and resources were identified (**Figure 33**). These consist of one (1) burial ground with approximately 100 graves (**BFP-02**), three (3) localities with recent historic structures (**BFP-04, BFP-06, and BFP-07),** and one (1) kraal (**BFP-05**), two (2) archaeological sites (**BFP-01 and BFP-03**) were identified.

Archaeological Resources

The two archaeological sites identified, are characterised by large areas of stone walling **(BFP-01 and BFP-03)**. Site **BFP-01** consists of a long continuous stone wall running along a raised outcrop, although no other cultural material was identified within the proposed Development Footprint. The developer has excluded this site employing buffers put in place for the layout of the solar energy facility. Site **BFP-03** is a large stone wall site with numerous stone-walled enclosures. It appears the area was already disturbed as it now functions as a feeding ground for the game in the area. There is evidence of some of the stone walling being destroyed whereas others still appear to be in their original state, no other cultural material was identified in the area. It is located just outside (at the north-eastern corner) of the proposed Development Footprint.

The possibility of the archaeological resources impacted by the proposed Buffelspoort Solar PV Energy Facility and OHL Grid Corridor cannot be excluded, and the Project can potentially have a **HIGH** impact without and **LOW** with mitigation.

Burial Grounds and Graves

A single burial ground consisting of approximately 100 graves was identified at site **BFP-02**. The site was indicated to the fieldwork team by the owner of the property. The informal graveyard lies just outside (west) the proposed Development Area. Although the area is overgrown by vegetation, some of the graves are still identifiable and consist mainly of stone-packed or stone-lined grave dressings, except for a few concrete or marble grave dressing features. Due to the cultural and religious significance of burial grounds, the site is graded as **Grade IIIA**.

The possibility of the burial ground being impacted by the proposed Buffelspoort Solar PV Energy Facility and OHL Grid Corridor cannot be excluded, and the Project can potentially have a **HIGH** impact without mitigation. Implementation of the recommended management and mitigation measures can reduce the impact rating to **LOW**.

Historical Structures

The recent historic structures (**BFP-04, BFP-06, and BFP-07**) and the kraal (**BFP-05**) are all younger than 60 years and vary in preservation. They are all currently abandoned. The structures and remains of structures are not conservation worthy and contain no cultural or scientific value and are consequently graded as **not conservation worthy (NCW)**.

The impact on the recent historic structures identified during the fieldwork can potentially have a **LOW** significance before and after the implementation of the proposed mitigation measures.

Palaeontology

According to the PalaeoMap of the South African Heritage Resources Information System (SAHRIS), the Palaeontological Sensitivity of the area is **zero/Insignificant**. As such, no paleontological studies are required.

General

The HIA concludes that the heritage resources are present within the Development Footprint of the Buffelspoort Solar PV Energy Facility and OHL Grid Corridor. The initial projected impact is rated as **LOW** to **HIGH** on these heritage resources before mitigation measures.

Through the combination of the various environmental, cultural, and socio-economic sensitivities, the client can develop a layout option that will reduce the impact on the heritage resources.

The developer shared a new proposed layout within the Development Area, which has a reduced impact on the heritage resource identified to **LOW**.

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TERMINOLOGY AND ABBREVIATIONS

Archaeological resources

This includes:

- material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains, and artificial features and structures;
- rock art, being any form of painting, engraving, or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
- wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters, or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;
- features, structures, and artefacts associated with military history which are older than 75 years and the site on which they are found.

Cultural significance

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

Development

This means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way result in a change to the nature, appearance, or physical nature of a place or 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 work 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

Development Area

The Development Area is the area that was assessed by specialists and is ~77ha in extent. Sensitive features have been identified with the development area, which will ultimately inform the location of the development footprint within the development area.

Development Footprint

The footprint is the area that will be cleared and the area where infrastructure will ultimately be placed.

Early Stone Age

The archaeology of the Stone Age between 700 000 and 2 500 000 years ago.

Fossil

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

Heritage

That which is inherited and forms part of the National Estate (historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999).

Heritage resources

This means any place or object of cultural significance and can include (but not limited to) as stated under Section 3 of the NHRA,

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

Holocene

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

Late Stone Age

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

Late Iron Age (Early Farming Communities)

The archaeology of the last 1 000 years up to the 1800's, associated with iron-working and farming activities such as herding and agriculture.

Middle Stone Age

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

Palaeontology

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

Project Site

Includes the footprint areas for the proposed solar PV array, substations, all associated infrastructure such as laydown areas, etc., and the proposed grid corridor (OHL).

Study Area

The broader geographic area within which the Project is proposed.

Abbreviations	Description
AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
BA	Basic Environmental Assessment
BBG	Burial Grounds and Graves
BESS	Batter Energy Storage System
BFP	Buffelspoort Site Number
CRM	Cultural Resource Management
DFFE	Department of Forestry, Fisheries and Environment
ECO	Environmental Control Officer
EIA practitioner	Environmental Impact Assessment Practitioner
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
LSA	Late Stone Age
LIA	Late Iron Age
MSA	Middle Stone Age
MIA	Middle Iron Age
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
OHL	Over Head Line
O&M	Operations and Maintenance
PHRA-NW	North West Provincial Heritage Authority
PHS	Provincial Heritage Site
SAHRA	South African Heritage Resources Agency

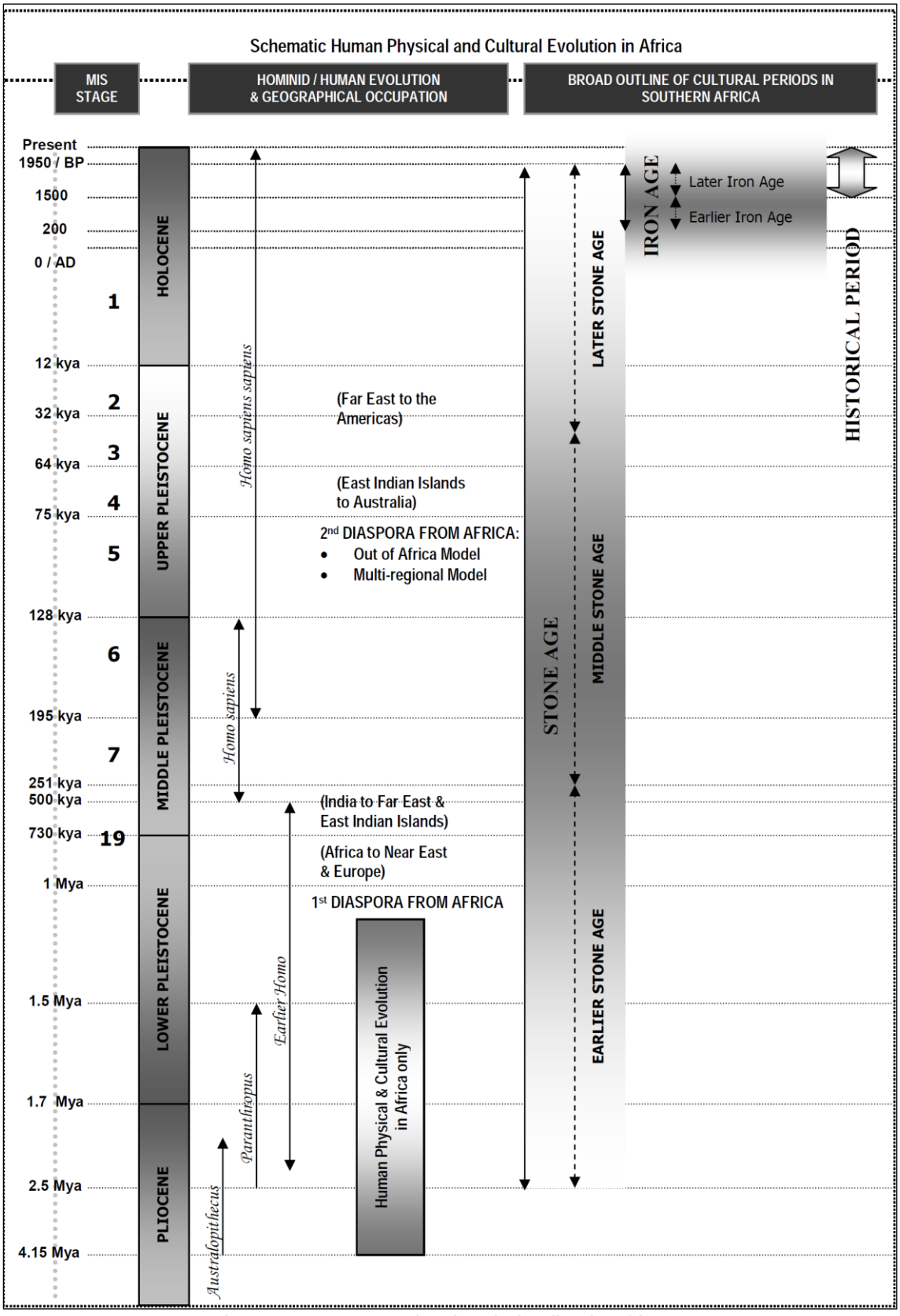


Figure 1 – Human and Cultural Timeline in Africa

1 INTRODUCTION

PGS Heritage (Pty) Ltd was appointed by Savannah Environmental (Pty) Ltd to undertake a Heritage Impact Assessment (HIA) that forms part of the Environmental Impact Assessment (EIA) and Environmental Management Programme (EMPr) for the proposed Buffelspoort Solar PV Energy Facility and OHL Grid Corridor on Portions 75 and 134 of the Farm Buffelspoort 343 JQ, between Buffelspoort and Mooinooi, in the North West Province (hereafter referred to as the "Project").

1.1 Scope of the Study

The study aims to identify possible heritage sites and finds that may occur in the proposed Project Site. The HIA aims to inform the developer, Buffelspoort Solar Project (Pty) Ltd) (BSP), in the layout planning before the finalisation of the infrastructure layout. This is to assist the developer in responsibly managing the identified heritage resources to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act (Act 25 of 1999) (NHRA).

1.2 Specialist Qualifications

This HIA Report was compiled by PGS Heritage.

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

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

Michelle Sachse, the author of this report, is registered with the Association of Southern African Professional Archaeologists (ASAPA) as a Professional Archaeologist, membership number - 526. She holds a master's degree (MA) in Archaeology from the University of Pretoria

Nicholas Fletcher is a field archaeologist. He holds a master's degree (MA) in Archaeology from the University of Pretoria.

Xander Fourie is an archaeological field assistant, who is currently busy with his undergraduate studies in archaeology.

1.3 Assumptions and Limitations

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 Project Site. Various factors account for this, including the subterranean nature of some archaeological sites and existing vegetation cover. It should be noted most of the Project Site[1] was accessible for the fieldwork survey.

Furthermore, a small section of the OHL Grid Corridor was located within the off-taker's boundary. This area was not surveyed as access was not granted as the area had already been disturbed, by the construction of a sub-station. Some areas, especially in the northern part of the proposed Development Area, were covered in very dense vegetation and the team was unable to survey through the bush. It was also difficult to see if potential material was on the ground as the grass was very thick and long.

Therefore, should any heritage features and/or objects be located or observed outside the identified heritage-sensitive areas during the construction activities, a heritage specialist must be contacted immediately. 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 the significance of the site (or material) in question. This applies to graves and cemeteries as well. If any graves or burial places are located during the development, the procedures and requirements about graves and burials will apply as set out in section 1.4.

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:

- Notice 648 of the Government Gazette 45421- general requirements for undertaking an initial site sensitivity verification where no specific assessment protocol has been identified
- National Environmental Management Act (NEMA), Act 107 of 1998 – Appendix 6
- National Heritage Resources Act (NHRA), Act 25 of 1999

1.4.1 Notice 648 of the Government Gazette 45421

Although minimum standards for archaeological (2007) and palaeontological (2012) assessments were published by SAHRA, 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 Government Notice (GN) are listed in **Table 1** and the applicable section in this report is noted.

[1] Donates the PV array and infrastructure as well as the grid corridor if not otherwise stated.

Table 1: Reporting requirements for GN648

GN 648	Relevant section in the report	Where not applicable in this report
2.2 (a) a desktop analysis, using satellite imagery;	section 4.3	-
2.2 (b) a preliminary on-site inspection to identify if there are any discrepancies with the current use of land and environmental status quo versus the environmental sensitivity as identified on the national web-based environmental screening tool, such as new developments, infrastructure, indigenous/pristine vegetation, etc.	section 4.1	-
2.3(a) confirms or disputes the current use of the land and environmental sensitivity as identified by the national web-based environmental screening tool;	section 4.1	-
2.3(b) contains motivation and evidence (e.g., photographs) of either the verified or different use of the land and environmental sensitivity;	section 4.1	-

1.4.2 NEMA – Appendix 6 requirements

The HS report has been compiled considering the NEMA Appendix 6 requirements for specialist reports as indicated in the table below. For ease of reference, the table below provides cross-references to the report sections where these requirements have been addressed.

1.4.3 The National Heritage Resources Act

- National Heritage Resources Act (NHRA) Act 25 of 1999
    - Protection of Heritage Resources – Sections 34 to 36; and
    - Heritage Resources Management – Section 38

The NHRA is utilized as the basis for the identification, evaluation, and management of heritage resources and in the case of Cultural Resource Management (CRM) those resources are specifically impacted by development as stipulated in Section 38 of NHRA. This study falls under s38(8) and requires comment from the relevant heritage resources authority.

2 TECHNICAL DETAILS OF THE PROJECT

2.1 Locality

The proposed 40 MWp Buffelspoort Solar PV Energy Facility is located on several privately-owned properties with the overhead powerline corridor (OHL Grid Corridor) for the Project starting north of the N4 Bakwena National highway, running across the highway and up to the R104 Old Rustenburg Road. The solar field and primary generation infrastructure will be in the open area adjacent to where the quarantine facility is currently located (Development Area). The site is located 4.5 km from Buffelspoort and 5.5 km from Mooinooi, in the North West Province (**Figure 2**).

2.1.1 Site Description

The proposed Development Footprint is situated on Portions 75 and 134 of the farm Buffelspoort 343 JQ, between Buffelspoort and Mooinooi and is approximately 56.6 ha in size with an overhead power line (OHL) grid corridor of approximately 2.5 km in length (**Figure 2**).

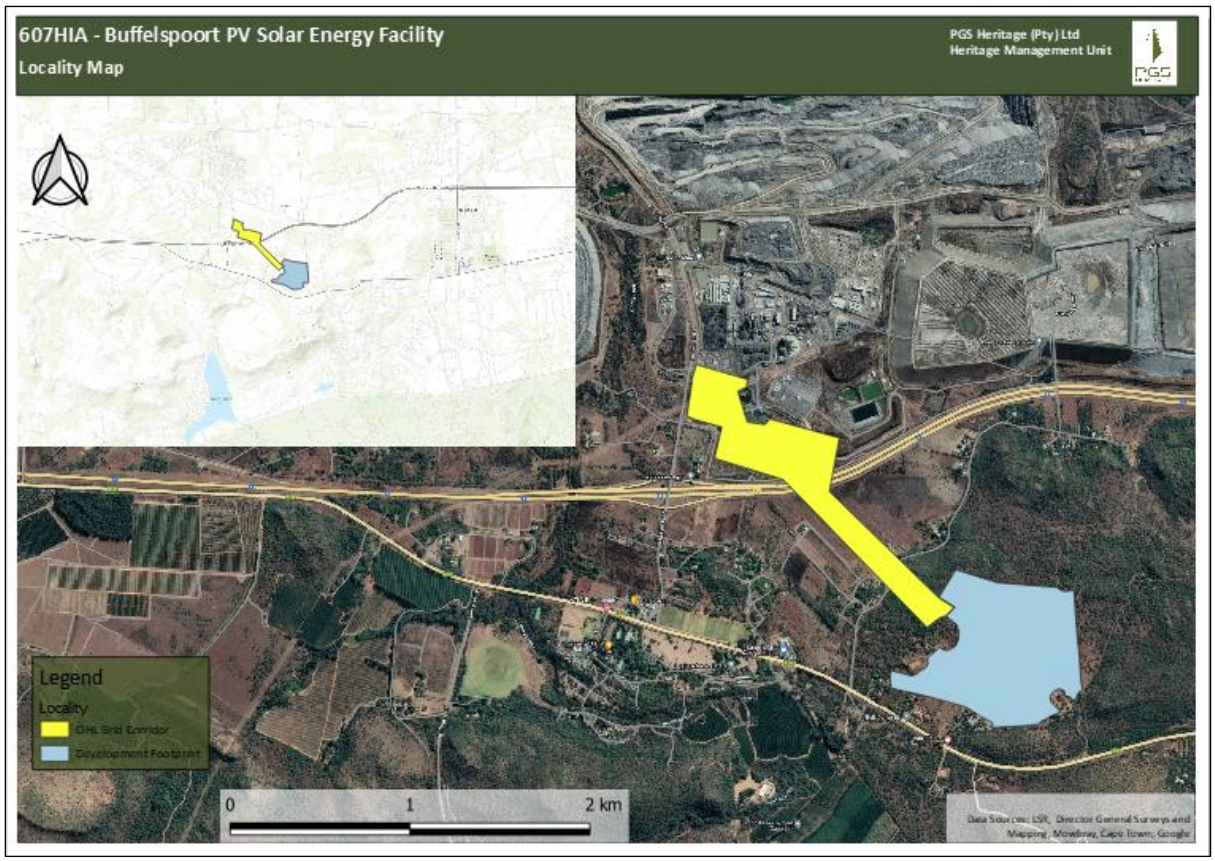


Figure 2 - Regional locality of Project Site.

2.2 Technical Project Description

2.2.1 Project description

Buffelspoort Solar Project (Pty) Ltd is proposing the development, construction and operations of a Solar PV Energy Facility and associated infrastructure on Portions 75 and 134 of the Farm Buffelspoort 343JQ, near Mooinooi in the North-West Province. The Project will have a contracted capacity of up to 40 MWp and will be known as the Buffelspoort Solar PV Energy Facility. The purpose of the Project will be to supply power to a private off-taker via a newly proposed ~2.5 km 88 kV overhead power line that will be routed across privately-owned properties from the onsite Project substation to the point of interconnection, north of the N4.

The construction of the Project is aimed at diversifying the energy mix for the private off-taker and reducing the off-taker's dependency on direct supply from Eskom's national grid for the operation of its

activities. It is also a conscious effort for the off-taker to contribute to their sustainability targets and reduce their carbon footprint.

A grid connection corridor, which varies in width between 200 m to 300 m and is up to 2.5 km in length, has been identified for the assessment and suitable placement of the grid connection infrastructure. This corridor will provide for the avoidance of sensitive environment areas and features and technical constraints.

A Development Footprint of up to ~56.6 ha has been identified within the Project Site (~223 ha) by the developer for the development of the Buffelspoort Solar PV Energy Facility and OHL Grid Corridor. The infrastructure associated with the Project will include the following:

- Solar PV arrays comprising PV modules and mounting structures.
- Inverters and transformers.
- Cabling between the arrays.
- Onsite facility substation.
- 88kV single circuit overhead power line for the distribution of the generated power, which will be connected to an existing 88kV Substation.
- Batter Energy Storage System (BESS)[2] – to be phased in at a later stage than the Solar PV Energy Facility.
- Temporary laydown area.
- Operations and Maintenance (O&M) building which will include a site security office, warehouse, storage area and workshop.
- Main access road (existing – to be upgraded with a hard surface) and internal (new) gravel roads.
- Fencing around the site, including an access gate.

[2] The BESS is included as part of the ESIA process albeit that the facility will only be installed after the Solar PV Energy Facility has come into operation. The total electricity requirements for the offtaker are currently under review and an energy master plan is being developed, which will only be finalised post implementation of the Solar PV Energy Facility to address all the electricity needs of the offtaker. The BESS has been included in this ESIA to ensure that should the energy master plan require this component to be included sooner than expected that it has already been authorised.

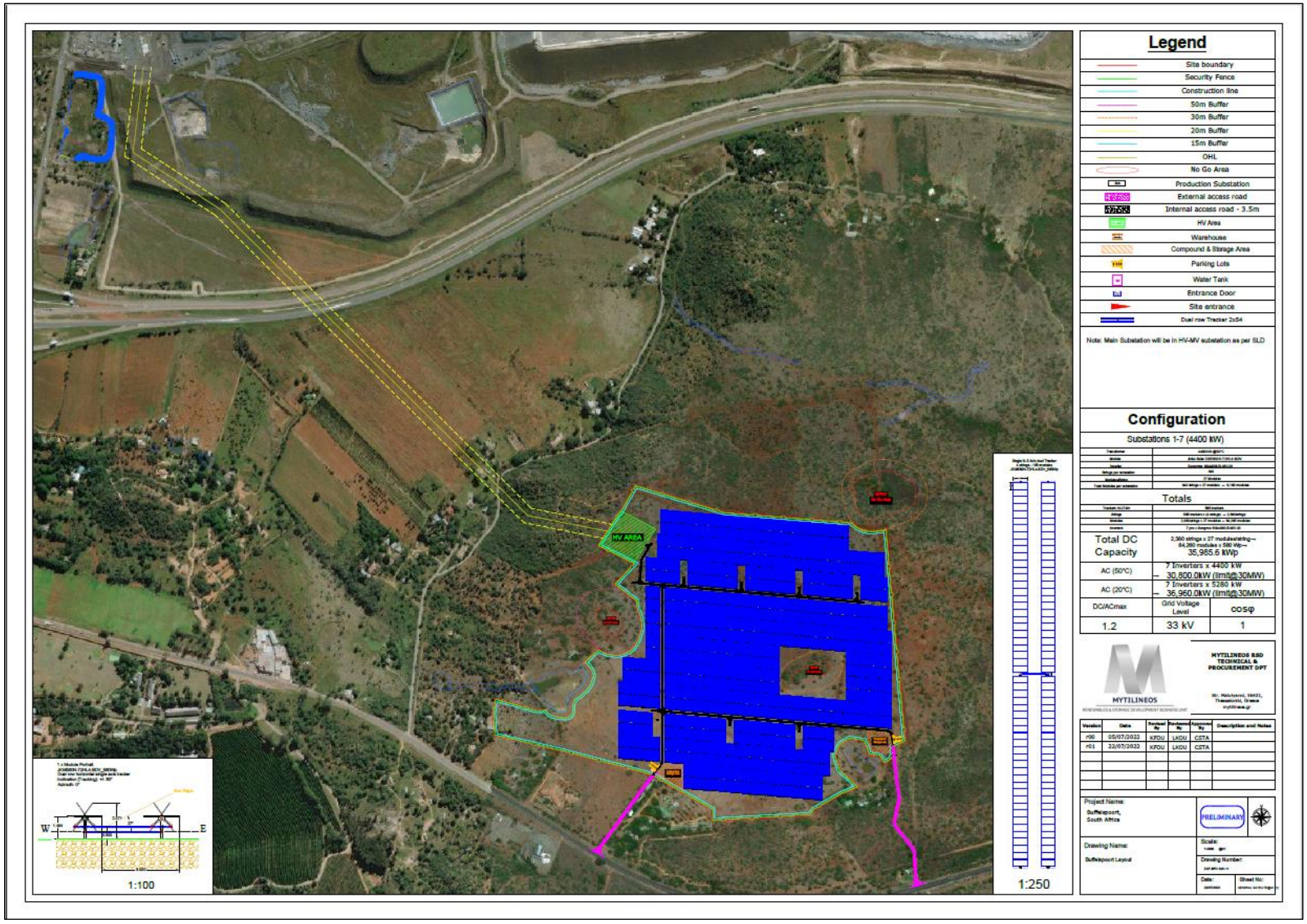


Figure 3 - Proposed layout plan of Buffelspoort Solar Energy Facility and OHL Grid Corridor, accommodating the identified heritage resources (Provided by Savannah).

3 ASSESSMENT METHODOLOGY

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

3.1 Methodology for Assessing Heritage Site significance

This HIA report was compiled by PGS Heritage for the 40 MWp Buffelspoort Solar PV Energy Facility and the OHL Grid Corridor. The applicable maps, tables and figures are included, as stipulated in the NHRA (no 25 of 1999) and the National Environmental Management Act (NEMA) (No. 107 of 1998). The HIA process consists of three steps:

Step I – Literature Review and initial site analysis: The background information to the field survey relies greatly on the Heritage Background Research which was undertaken through archival research and evaluation of satellite imagery and topographical maps of the Project Site.

Step II – Physical Survey: A physical survey was conducted by a combination of vehicle and pedestrian access through the proposed Project Site by two qualified heritage specialists and one field assistant (between 28 April and 26 May 2022), aimed at locating and documenting sites falling within and adjacent to the proposed Project Site.

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

The significance of heritage sites is 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 - <10/50 m^2
    - Medium - 10-50/50 m^2
    - High - >50/50 m^2
- Uniqueness; and
- Potential to answer present research questions.

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

3.1.1 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 updated classification and rating system as developed by Heritage Western Cape (2021) is implemented in this report.

Site significance classification standards prescribed by the Heritage Western Cape Guideline (2016), were used for this report (**Table 2** and

Table 3).

Table 2: A 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 Provincial Heritage Authority. 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 fulfil one of the criteria set out in section 3(3) of the Act but that do 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	The 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 Grade III A resources, but to a lesser degree.	The resource must be retained where possible, and where not possible it must be fully investigated and/or mitigated.	Medium Significance
IIIC	Such a resource is of contributing significance.	The resource must be satisfactorily studied before impact. If the recording was 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

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance

Table 3: A 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 Provincial Heritage Authority.	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 a local level.	High Significance
IIIB	Such a resource might have similar significances to those of Grade III A resources, 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 a 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.	Low Significance

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
		These buildings and sites should, consequently, 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.	
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 HWC for structures in this category if they are older than 60 years.	No research potential or other cultural significance

3.2 The methodology used in determining the significance of environmental impacts

The methodology used to determine the environmental impact significance used was provided by Savannah Environmental and is explained in **Appendix B**.

4 CURRENT STATUS QUO

4.1 Site Description

The proposed Buffelspoort Solar PV Energy Facility Development Footprint is characterised by flat grass land with a few small rocky outcrops. Most of the Development Footprint is currently being used as grazing land for game (**Figure 6**) as well as a small section which is used as a bee-keeping area (**Figure 7)**. There are also small, dedicated feeding areas (**Figure 8)** which include a small structure that is used as a feeding trough (**Figure 9)**. There is a small dam (**Figure 10)** and two (2) structures that were once a lodge (**Figure 11)**, these two (2) features are located just outside the proposed Development Footprint to the west. A large modern structure (**Figure 12)**, which is currently being used as office space is located just outside the proposed Development Footprint to the east. There is also a helicopter pad (**Figure 13)** close to the entrance of the property, which is adjacent to a quarantine facility, access was also gained to the proposed Development Footprint through this facility (**Figure 19)**. This helipad, which is not registered by the CAA, is a temporary feature and was only used during COVID by the quarantine centre, it will be removed for the project. Other features in the Development Footprint include an old broken windmill and 11 kV powerlines (**Figure 14** and **Figure 15)**.

The proposed grid corridor extends from the north-western corner of the Development Footprint, across the N4 national highway onto the area that is currently being utilised by the private off-taker.

Access was gained via the N4 national highway (**Figure 20**). Both the northern and southern sides of the N4 Bakwena National highway were surveyed. The area south of the N4 highway consists of an open flat field and a few residential structures (some abandoned, and some still inhabited by people). The northern part of the proposed OHL Grid Corridor surveyed is located between an existing mine waste rock dump (**Figure 17**) and the N4 Bakwena National highway (**Figure 16**) and consists of an open flat field and a dirt road. Approximately 50% of the proposed grid corridor extends into an area where mining operations are currently being conducted, as such this area could not be accessed (**Figure 21**).

Figure 4 - General view of the flat open field in the southern section of the proposed Development Footprint.

Figure 5 - General view of the denser area in the northern section of the proposed Development Footprint.

Figure 6 - Image depicting some of the game (Rooihartbees) in the Development Footprint area.

Figure 7 - Bee-keeping area located in the southeast of the proposed Development Footprint.

Figure 8 - Small dedicated feeding area for the game located in the Development Footprint.

Figure 9 - Small structure that serves as a feeding trough located in the Development Footprint.

Figure 10 - The small dam located just outside of the proposed Development Footprint.

Figure 11 - The two abandoned lodges are located just outside the proposed Development Footprint, and adjacent to the small dam.

Figure 12 - The large structure used as an office space, located just outside the proposed Development Footprint.

Figure 13 - Image of the temporary helicopter pad located in the Development Footprint.

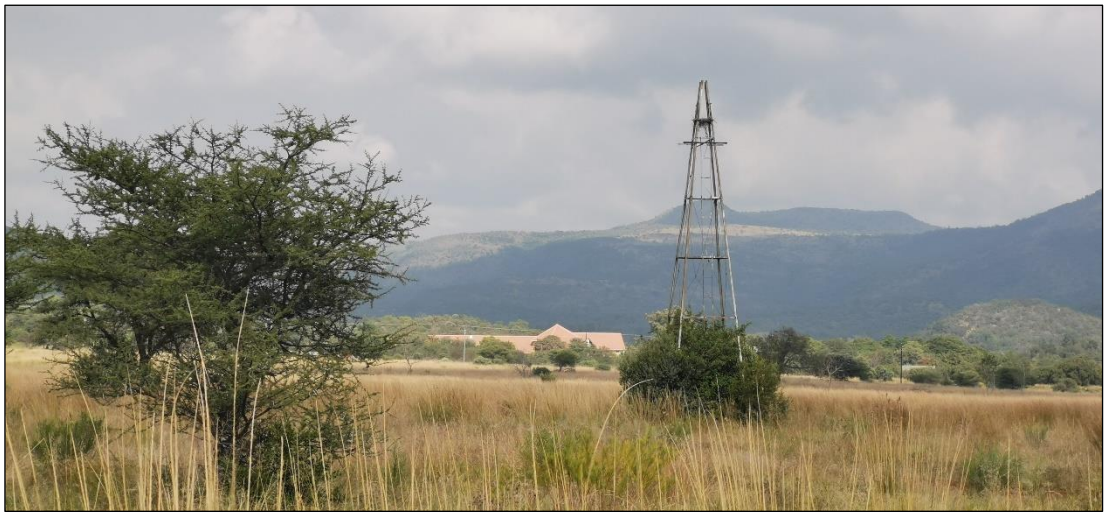


Figure 14 - An old windmill located in the centre of the proposed Development Footprint.

Figure 15 - Powerlines located in the proposed Development Footprint.

Figure 16 - View of the N4 highway in the background from the proposed OHL Grid Corridor.

Figure 17 – View of a dirt road located at the mining operations in the northern section of the proposed OHL Grid Corridor, with the mining operations to the left and the small open grass section surveyed to the right.

Figure 18 – View of a mine waste rock dump in the background.

Figure 19 – Access to the southern section of the proposed Development Footprint was gained through this gate.

Figure 20 – Access to the northern section (OHL Grid Corridor) was gained using this road (N4 Bakwena national highway).

Figure 21 – Access could not be gained to survey a section of the proposed OHL Grid Corridor, which is currently located in mining operations.

4.2 Area and surrounding landscape

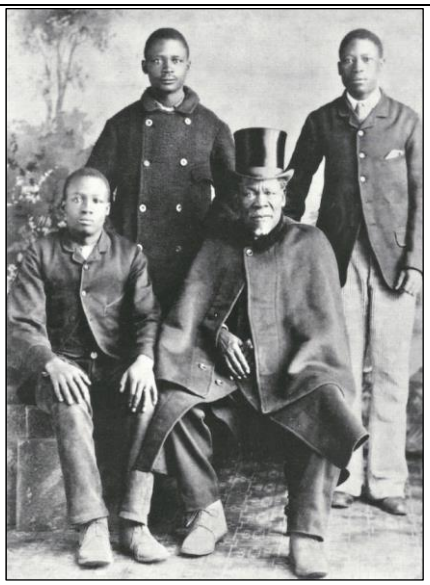
DATE	DESCRIPTION
2.5 million to 250 000 years ago	The Earlier Stone Age is the first and oldest phase identified in South Africa's archaeological history and comprises two technological phases. The earliest of these is known as Oldowan and is associated with crude flakes and hammer stones. It dates to approximately 2 million years ago. The second technological phase is the Acheulian which comprises more refined and better-made stone artefacts such as the cleaver and bifacial hand axe. The Acheulian dates to approximately 1.5 million years ago. Several Early Stone Age sites are known from the general vicinity. One of these is situated close to the study area (Huffman, 2005).
250 000 to 40 000 years ago	The Middle Stone Age (MSA) is the second oldest phase identified in South Africa's archaeological history. This phase is associated with flakes, points and blades manufactured using the so-called 'prepared core' technique. An MSA site is located approx. 27 km north-west of the study area, and three sites comprising Iron Age pottery as well as Middle Stone Age lithics were identified roughly 23 km to the north as well as 25.1 km and 25.2 km to the north-west of the study area (Huffman, 2005). A Middle Stone Age find spot was also identified approximately 18 km northwest of the study area during the survey of the Turffontein No. 2 area (Huffman, 2005). Lastly, a site comprising Middle Stone Age material as well as Iron Age pottery has been identified in proximity to the study area (Huffman, 2005).
40 000 years ago, to the historic past	The Later Stone Age is the third archaeological phase identified and is associated with an abundance of very small artefacts known as microliths.
AD 1450 – AD 1650	The Ntsuanatsatsi facies of the Blackburn Branch of the Urewe Ceramic Tradition represents the earliest known Iron Age period within the surroundings of the study area. The decoration on the ceramics from this facies is characterised by a broad band of stamping in the neck, stamped arcades on the shoulder and appliqué (Huffman, 2007). Huffman (2007) suggests that the Ntsuanatsatsi facies can be directly linked to the early Bafokeng who regarding this theory were the first Mbo Nguni people to leave present-day KwaZulu-Natal.

DATE	DESCRIPTION
AD 1500 – AD 1700	The Olifantspoort facies of the Moloko Branch of the Urewe Ceramic Tradition is the second Iron Age facies to be identified within the surroundings of the study area. The Olifantspoort facies can likely be dated to between AD 1500 and AD 1700. The key features of the decoration used on the ceramics from this facies include multiple bands of fine stamping or narrow incisions separated by colour (Huffman, 2007). The type of site for this facies is located on the farm Olfantspoort 328 JQ, which is situated approx. 25 km southwest of the present study area. An Olifantspoort site was also identified roughly 20 km northwest of the study area during the survey for the UG2 expansion area (Huffman, 2005). After an archaeological team under Professor R.J. Mason of the University of the Witwatersrand identified several stonewalled settlements on the farm Olifantspoort by using aerial photographs, archaeological field research and excavations were undertaken during 1971 at eight of these sites located on the farm Olifantspoort as well as another site located on an adjacent farm. These sites numbered 20/71, 21/71, 26/71, 27/71, 28/71, 60/71, 61/71, 62/71, 64/71 and 65/71. The focus of the research turned to Site 20/71 which proved to be a very large, stonewalled site. A total of 85 huts, as well as several middens, were excavated here during the 1971 season alone. As many as 80 individual rock engraving panels were identified in the vicinity of the site. These engravings all depict settlement plans (Mason, 1973). A copper mine was also identified on the farm (Steel, 1987). In the following year sites, 2/72 and 29/72 were added and researched, with sites 38/73 and 47/73 added the year after. A few years later in 1984, an Olifantspoort site was identified at Broederstroom and in 1985 another Olifantspoort site was identified at Ifafi (Huffman, 2007). The Olifantspoort facies holds an important position in the sequence of the Moloko or Sotho-Tswana group. The earliest facies to be associated with the Moloko are the Icon facies (AD 1300 – 1500), with sites found across large sections of what is today the Limpopo Province. The Icon facies resulted in three different and parallel Iron Age facies, namely the Madikwe facies (AD 1500 – 1700) (which in turn led to the Buispoort facies between AD 1700 and 1850), the Letsibogo facies (AD 1500 – 1700) and thirdly the Olifantspoort facies. The Olfantspoort facies developed into the Thabeng facies (AD 1700 – 1850) (Huffman, 2007). It is therefore evident that the Olifantspoort facies represents a key pillar in our understanding of the origins and sequence of the Sotho-Tswana people of today (Huffman, 2007). Sites associated with the Olifantspoort facies are known from the direct vicinity of the study area. One such example is Site 6 identified by Professor Tom Huffman within the UG2 Expansion Project Area (Huffman, 2005). This site is located close to the present study area.
AD 1650 – AD 1850	The Uitkomst facies of the Blackburn Branch of the Urewe Ceramic Tradition represents the third Iron Age period to be identified for the surroundings of the study area. These facies can likely be dated between AD 1650 and AD 1820. The decoration on the ceramics associated with these facies is characterised by stamped arcades, appliqué of parallel incisions, stamping and cord impressions and is described as a mixture of the characteristics of both Ntsuanatsatsi (Nguni) and Olifantspoort (Sotho) (Huffman, 2007). The type-site is Uitkomst Cave, which is situated approximately 26km southeast of the study area. The site was excavated by Professor R.J. Mason of the University of the Witwatersrand as part of a project to excavate five cave sites in the Witwatersrand-Magaliesberg area. These

DATE	DESCRIPTION
	five sites are Glenferness, Hennops River, Pietkloof, Zwartkops and Uitkomst. Uitkomst was chosen as the type of site for the Iron Age material excavated at these sites as the Uitkomst deposit was found to be well stratified and the site "...*illustrates the combination of a certain kind of pottery with evidence for metal and food production and stone wall building found at the open sites*..." (Mason, 1962:385). The Uitkomst pottery is viewed as a combination of Ntsuanatsatsi and Olifantspoort, and the Makgwareng facies is seen as the successors to the Ntsuanatsatsi facies. The Ntsuanatsatsi facies is closely related to the oral histories of the Early Fokeng people and represents the earliest known movement of Nguni people out of Kwazulu-Natal into the inland areas of South Africa. Regarding this theory, the Bafokeng settled at Ntsuanatsatsi Hill in the present-day Free State Province. Subsequently, the BaKwena lineage had broken away from the Bahurutshe cluster and crossed southward over the Vaal River to encounter the Bafokeng. As a result of this contact, a Bafokeng-Bakwena cluster was formed, which moved northward and became further 'Sotho-ised' by coming into increasing contact with other Sotho-Tswana groups. According to this theory, this eventually resulted in the appearance of Uitkomst facies type pottery which contained elements of both Nguni and Sotho-Tswana speakers (Huffman, 2007). Huffman states that the Uitkomst facies is directly associated with the Bafokeng (Huffman, 2007). However, it is worth noting that not all researchers agree with this proposition of the Bafokeng origins. In their book on the history of the Bafokeng, Bernard Mbenga and Andrew Mason indicate that the research of Prof. R.J. Mason and Dr J.C.C. Pistorius "...*would indicate that the Bafokeng originated from the Bahurutshe-Bakwena-Bakgatla lineage cluster. Tom Huffman holds a different view..."* (Mbenga & Mason, 2010). Uitkomst sites are well known from the surroundings of the study area. Two examples of Uitkomst sites from the vicinity of the study area are two stone-walled sites located roughly 23km to the north and 20 km to the northwest of the present study area. These sites were identified during the survey of the Turffontein No. 2 and Turffontein West areas (Huffman, 2005).
AD 1700 – AD 1840	The Buispoort facies of the Moloko branch of the Urewe Ceramic Tradition is the next phase to be identified within the study area's surroundings. It is most likely dated between AD 1700 and AD 1840. The key features of decorated ceramics include rim notching, broadly incised chevrons, and white bands, all with red ochre (Huffman, 2007). It is believed that the Madikwe facies developed into the Buispoort facies. The Buispoort facies is associated with sites such as Boschhoek, Buffelshoek, Kaditshwene, Molokwane and Olifantspoort (Huffman, 2007).
The early 1700s	At the time, and possibly for some time before this date, the area surrounding present-day Rustenburg would have been occupied by the Bafokeng and the Tlokwa people (Hall et al., 2008). Mbenga and Mason (2010) indicate that Prof. R.D. Coertze estimated that the Bafokeng had settled in the vicinity of Rustenburg at the end of the 17th century. Their land at the time stretched from the "...*Ngwaritsi (Selons) River to the west, the Bakwena-ba-Mogopa to the east, the Magaliesberg to the south and the Kgetleng (Elands) River to the north* (Mbenga & Mason, 2010: 7). At roughly this time the capital of the Bafokeng was moved to the Boschpoort area (Mbenga & Mason, 2010). The farm Boschpoort 284JQ is situated roughly 9km north of the present study area. According to Pistorius (2001), the mountain range traditionally known as the Maralla-a-Nape stretches from the vicinity of the Pilanesberg south-eastward ending up roughly between present-day Rustenburg and

DATE	DESCRIPTION
	Marikana. This mountain range*: "...is one of the early beacons where the Bafokeng settled when they arrived from the north in the Rustenburg district*..." (Pistorius, 2001:47). He also quotes the Bafokeng author and oral historian Naboth Mokgatle in saying that various clans settled along the Maralla-a-Nape Mountain range at settlements (from north to south) such as Serutube, Marakana, Tsitsing (Kanana), Thekwane and Photsaneng (Bleskop) (Pistorius, 2001). These settlements are still located along the Maralle-a-Nape Mountain range and are still known by their original names, although in some cases (such as Photsaneng and Bleskop) attempts may have been made with the arrival and settlement of white people to rename some of these settlements, albeit not always successfully. Evidence for the settlement of the Maralla-a-Nape range hundreds of years ago was found by Pistorius (2001) in the form of several Late Iron Age stonewalled settlements located along this mountain range. Similarly, Professor Tom Huffman has also identified many Late Iron Age sites associated with areas such as Photsaneng and Thekwane (Huffman, 2005). Incidentally, Photsaneng is located approximately 20 km northwest of the present study area whereas Thekwane is located roughly another 3 km further to the north. It is also worth noting that the Maralla-a-Nape range crosses over the present study area as well.
The late 1700s	During the reign of kgosi Sekete IV, the Bafokeng had "*...relations of conflict*..." with their Batswana neighbours. Of interest for the present study area, is that during this time of unrest the Bafokeng established themselves at the confluence of the Matsokubyane (Hex) and Tlhabane Rivers, in the vicinity of where present-day Rustenburg today stands. They called this settlement Tlhabane (Mbenga & Mason, 2010).
1800	The Bafokeng moved from Thlabane in a north-western direction and settled at Phokeng (Mokgatle, 1971; Mbenga & Mason, 2010).
1827 - 1832	During this time the Khumalo Ndebele of Mzilikazi established themselves along the Magaliesberg Mountains. They had moved here from the central Vaal River. In c. 1832 the Khumalo Ndebele moved to the Marico River to the northwest (Bergh, 1999).
1836	The first Voortrekker parties started crossing the Vaal River (Bergh, 1999).
The late 1830s – Early 1840s	These years saw the early establishment of farms by the Voortrekkers in the general vicinity of the study area (Bergh, 1999). One of these Voortrekkers was Stephanus Johannes Paulus Kruger, who was President of the Zuid-Afrikaansche Republiek between 1883 and the end of the South African War in 1902. His family formed part of the Voortrekkers who settled in these parts during this time and, in 1841 at the age of 16 Kruger himself became an owner of a farm near Rustenburg (likely Waterkloof). During this period, the first contact between the black people residing in the Rustenburg area at the time (including the Bafokeng) and white people took place. According to Bergh (2005), these early contacts resulted in the setting aside of land by the Voortrekker leadership for the Bafokeng people. This land appears to have included the farms Boekenhoutfontein 260 IQ (22.6 km north-west of the study area), Turffontein 262 IQ (21.6 km north-west of the study area) and possibly Kookfontein 265 IQ (16 km north-west of the study area) as well. However, within a short period, the Bafokeng people were dispossessed of these properties (Bergh, 2005).

DATE	DESCRIPTION
1851	Both the district and town of Rustenburg were established this year (Bergh, 1999). The study area fell within the Rustenburg district at the time.
1858	A Lutheran Mission Station was established in what is today known as the town of Kroondal. The mission station was established on the farm Kronendal which was owned by Jan Michiel van Helsdingen (Erasmus, 2004). The Kroondal Mission Station eventually became one of 22 Lutheran mission stations in South Africa where both the missionaries and farmers living on the property of the mission station were initially supported by the missionary society (Erasmus, 2004). The town of Kroondal is 23 km southwest of the present study area.
10 February 1859	The very first Reformed Church (Gereformeerde Kerk) was established in South Africa on this day. The church was established under a Syringa tree on Church Street, Rustenburg. The stump of this tree was proclaimed a National Monument in 1951 (Bergh, 1999). This tree is located approx. 30 km west of the present study area. Incidentally, the Anglican Church of Rustenburg was proclaimed a National Monument in 1972 and the Dutch Reformed Church of Rustenburg was proclaimed a National Monument in 1979.
1867	Hermannsburg missionary Hermann Wenhold established the Kana mission station amongst the Bafokeng. At the time the mission station was established on the farm Tweedepoort 283 JQ (Bergh, 2005). This farm is situated roughly 32 km northwest of the study area.
December 1869	The Kana mission station was moved from the farm Tweedepoort 283 JQ to the farm Reinkoyalskraal 278 JQ (Bergh, 2005). This new location for the Kana Mission Station is located roughly 31 km northwest of the study area.
The 1860s – 1870s	With the assistance provided by German missionary Christoph Penzhorn of the Hermannsburg Missionary Society, Kgosi Mokgatle and the Bafokeng bought several farms (Bergh, 2005). These acquisitions were an attempt by the Kgosi and the Bafokeng to procure land which had been theirs before the arrival of the first white people. According to Mbenga & Manson (2010), a total of 24 farms were acquired by the Bafokeng during the second half of the 19th century. Of these, the closest two farms to the present study area are Turffontein (located directly north-west of the present study area) and a portion of the farm Klipfontein (the present-day farm of Waterval 303 IQ comprises a section of the farm Klipfontein).
1880-1881	The First Boer War (First War of Independence) took place during this time. The most significant aspect of the war for the town of Rustenburg would have been the besiegement of a company of 2nd Batallion Royal Scots Fusiliers by Boer forces. The siege lasted for 93 days. While the earthwork fort in which the British forces were besieged does not exist anymore, its present location would have been the corner of Kerk and Von Wielligh Streets. This position is approx. 30 km west of the present study area (Wulfsohn, 1992).

DATE	DESCRIPTION
	 *Figure 22 - Photograph taken in 1887 of Kgosi Mokgatle and his sons (Mbenga & Manson, 2010).*
1899 - 1902	During the Anglo-Boer War (1899-1902) the town of Rustenburg had some role to play. This was largely due to its strategic position halfway between Zeerust and Pretoria as well as its location near two important passes over the Magaliesberg range, namely Olifants Nek and Magato's Nek. During the initial phase of the war, very few military activities took place in this area. After the British advance into the republics and the occupation of Pretoria (5 June 1900), the Rustenburg area became significant. On 15 June 1900, the town was occupied by a British force under Major-General Robert Stephenson Baden-Powell. On 4 July 1900, it was evacuated by the British and occupied once again the following day on 5 July 1900 by a small British force of 50 men, supported during the afternoon by another 140 men. Soon thereafter, the Rustenburg Commando under General Lemmer attacked the town. They were repulsed when two squadrons of Australians arrived. On 7 August 1900, it was evacuated by the British considering Lord Roberts' decision to evacuate all the smaller British positions in the then Western Transvaal, which included the town of Rustenburg. The Boer forces occupied the town on the same day and remained in possession of Rustenburg until 16 August 1900 when a force under Lord Methuen pushed over Magatos Nek and reoccupied Rustenburg. However, this occupation was short-lived in that the British evacuated the town at the end of August 1900 leaving it in Boer's hands once more. On 26 September 1900, General Cunningham's column occupied it again. For the remainder of the war until the cessation of hostilities in 1902 Rustenburg remained in British hands (Wulfsohn, 1992). While no skirmishes or battles are known from within the study area, one of the more significant of these from the direct surroundings was certainly the Battle of Buffelspoort of 3 December 1900. The battle entailed the attack of the commandos of Generals De La Rey and Smuts and Commandant K. Boshoff on the British Convoy under the overall command of Major J.S. Wolrige-Gordon en route from the Rietfontein military camp to Rustenburg (Wulfsohn, 1992) The battlefield is located roughly 15 km west of the present study area. The Magaliesberg Mountain Range played a pivotal part in the South African War (Boer War) with numerous battles and skirmishes taking place

DATE	DESCRIPTION
	between the British and Boer forces. One such encounter took place some 3 kilometres to the east of the study area and is known as the Battle of Buffelspoort. By the end of 1900, the Magaliesberg was dominated by the British forces with all the major passes and farms occupied. On 2 December 1900, a large wagon train embarked for Rustenburg from the current Hartbeespoort Dam area. On the 3rd of December, the group reached the area just west of Moonooi where the road winds through the Buffelspoort foothills. General De la Rey and General Smuts ambushed the British group with a Boer force of 600-strong. The British forces took position on the two hills overlooking the R104 road, after the first assault on the convoy. However, by dusk, the attack was called off and most of the wagons were taken by De la Rey and Smuts and the provisions not removed were set a light. In addition to the wagons, a total of 70 men and 1800 oxen were captured (Carruthers, 1990).
1924	This year, the famous geologist Hans Merensky was shown a sample of platinum ore that Mr Andries Lombard had found near Lydenburg. Merensky managed to trace a platinum reef all along the outer edge of the Bushveld Complex from Lydenburg to Rustenburg. This reef was to be known as Merensky Reef (Carruthers, 2007).
 *Figure 23 - Dr Hans Merensky, the geologist who discovered the platinum reef at Rustenburg (Machens, 2009).*	
1925	Several companies were floated to mine the Merensky Reef in the vicinity of Rustenburg at the time (Carruthers, 2007).
27 August 1925	Potgietersrust Platinums was registered (SA Mining Yearbook, 1941/2).
29 September 1926	The Waterval (Rustenburg) Platinum Mining Company Limited was registered on this day (South African Mining Yearbook, 1941/2).
1927	The re-proclamation of the farm Rustenburg Townlands was applied for by Potgietersrust Platinum Mines Limited (MNW, 876, MM804/27).
11 September 1931	Rustenburg Platinum Mines Ltd was registered on this day. It was formed by the amalgamation of Potgietersrust Platinums and the Waterval (Rustenburg) Platinum Mining Company (SA Mining Yearbook, 1941/2).

4.2.1 Early History of Platinum Mining within the Study Area

After the discovery of platinum in the vicinity of Rustenburg by Dr Hans Merensky in 1924, a period like one of the gold rushes followed during which gambles were won and lost. Those who managed to get options on platinum-bearing farms were the obvious winners. This period became known as the Platinum Boom and during this time the quest for options on profitable farms became a mad race as more and more people became interested in the promise of profits to be gained from the newly discovered mineral reefs. Merensky himself commissioned two men by the names of Hans von Gernet and Schreiner Cooper to obtain as many options as possible from farm owners along areas Merensky believed to contain platinum. Due to the obvious advantage Merensky had as the discoverer of the platinum reefs, his rivals constantly spied on Merensky and his two associates, Von Gernet and Cooper. As a result, a cloak and dagger game developed whereby misinformation was spread daily to put any rivals off their tracks (Machens, 2009).

Eventually, as the dust started settling, as many as fifty individual mining companies had been established along the platinum fields of Lydenburg and Rustenburg by 1925. However, sanity soon prevailed as the realities and logistical challenges of mining became apparent. As a result, many of the smaller companies were bought by the larger ones or disappeared altogether. In some cases, mining companies that were established to mine the Lydenburg fields relocated their entire operations to the Rustenburg area, albeit keeping their original names (Wagner, 1973). An example of this is the company known as Potgietersrust Platinums Limited which will be discussed in more detail below.

By 1929, the most prominent mining companies within the study area and surroundings were Potgietersrust Platinums Limited, Transvaal Consolidated Land and Exploration Company Limited and the Colonial Mining Development Company Limited (Wagner, 1973).

4.2.2 Potgietersrust Platinums Limited and Rustenburg Platinum Mines Limited

Potgietersrust Platinums Limited was established on 7 August 1925 and according to Machens (2009) had as founding partners Gustav Adolf Eugene Becker, Hermann Ohlthaver, South African Townships as well as Anglo American with a start-up capital of £ 500,000. A few months later the Barnato group became another partner and brought capital to the value of £ 500,000 to the table. This said the published history of the Johannesburg Consolidated Investment Company Limited (1965) indicates that the Johannesburg Consolidated Investment company had acquired a controlling interest in the Potgietersrust Platinums Limited company as early as 1926.

As its name suggests, the company was established to mine the platinum deposits in the vicinity of Potgietersrust (present-day Mokopane). However, after acquiring the Rustenburg properties of companies such as Premier Rustenburg Platinum Limited, the Steelpoort Platinum Syndicate Limited and the Eerstegeluk Platinum Mines Limited, the company started intensive mining

operations on the Rustenburg fields as well. By 1929 Potgietersrust Platinums Limited boasted the most extensive holdings of any South African platinum mining company.

By the late 1920s, the company owned mineral rights over more than 842 morgen, 159 square roods on the farm Kroondal 304 JQ as well as mineral rights over 62 morgen, 105 square roods on the farm Klipfontein 300 JQ (Wagner, 1973).

Within the study area, the mining company was actively developing the Klipfontein-Kroondal Mine during the late 1920s (Wagner, 1973). By 1929 the Merensky Reef on this property had been opened over 18,000 feet (5,486.4 meters) along the outcrop and to a depth of 300 feet (91.4 meters) (Excursion Guide, 1929). At the same time, a treatment plant with a capacity of 6,000 tons a month was in the process of being constructed here (Wagner, 1973). A mill was also erected during this time. According to a published history of the Johannesburg Consolidated Investment company, the mine appears to have come into production in 1930 (Johannesburg Consolidated Investment, 1965).

On 11 September 1931, a new company by the name of Rustenburg Platinum Mines Limited was registered. It was formed by the amalgamation of Potgietersrust Platinums and the Waterval (Rustenburg) Platinum Mining Company (SA Mining Yearbook, 1941/2). This amalgamated company came about because of decreasing worldwide demand for platinum and the resulting shutting down of the Waterval mine. Due to the continuing slump in the platinum market, all mining operations were halted in April 1932. When the demand for platinum increased again during the early 1950s, the mine opened once more on 1 August 1933 (Johannesburg Consolidated Investment, 1965).

In August 1950, the Rustenburg Platinum Mine took over the Union Platinum Company (Johannesburg Consolidated Investment, 1965). By the 1970s, the Rustenburg Platinum mine was seen as the biggest platinum producer in the world.

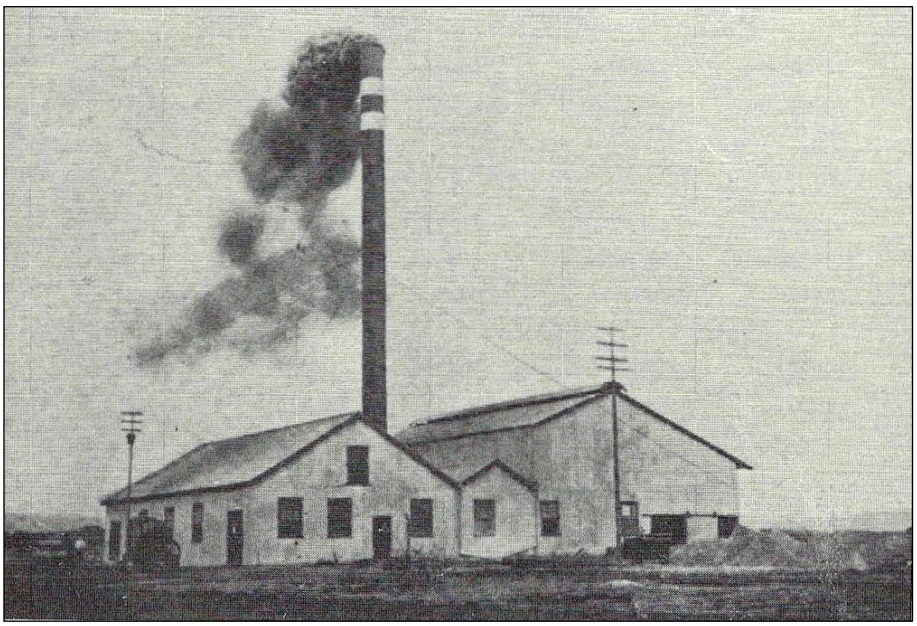


Figure 24 – The power plant at the Kroondal-Klipfontein Mine during the late 1920s (Wagner, 1973:96).

Figure 25 – Early prospecting activities on the farm Swartklip, Rustenburg District. Although this farm is located near present-day Northam, this image provides the viewer with an idea as to what the early history of platinum mining within the study area was like (Wagner, 1973:96).

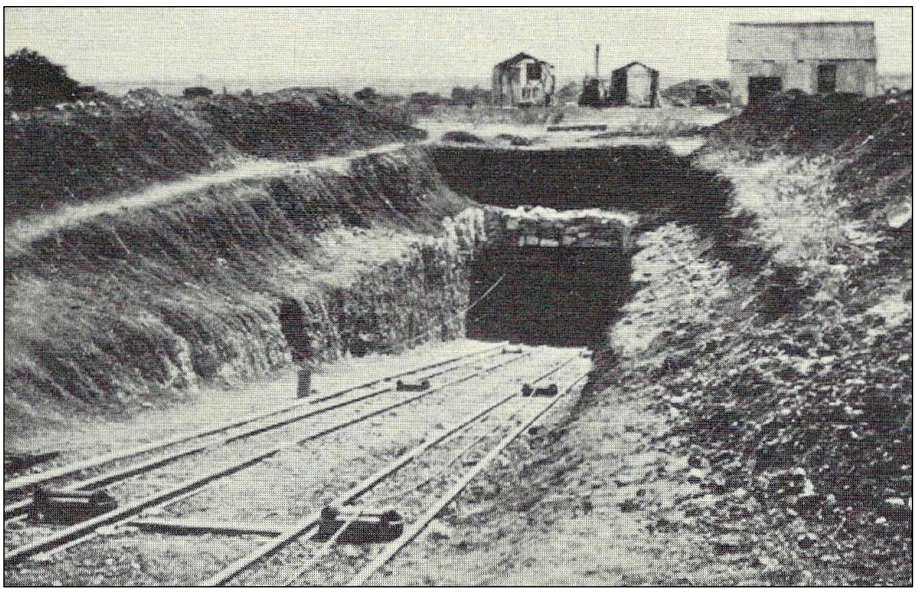


Figure 26 – The Main Western Incline Shaft at the Kroondal-Klipfontein Mine. The photograph was taken during the late 1920s (Wagner, 1973:96).

4.2.3 Archival and historical maps

The examination of historical data and cartographic resources represents a critical tool for locating and identifying heritage resources and determining the historical and cultural context of the study area. Relevant topographic maps and satellite imagery were studied to identify structures, possible burial grounds or archaeological sites present in the footprint area.

Historical topographic maps (1:50 000) for various years (1943 and 1968) were available for utilisation in the background study. These maps were assessed to observe the development of the area, as well as the location of possible historical structures and burial grounds. The Project Site was overlain on the map sheets to identify structures or graves situated within or immediately adjacent to the study area that could be older than 60 years and thus protected under Sections 34 and 36 of the NHRA.

4.2.4 Krugersdorp, 1900

(University of Cape Town Libraries, South Africa)

The map depicted in **Figure 27** below is titled “Krugersdorp”. It was compiled by John Wood for the Field Intelligence Department. The map dates from 1900. On it is indicated the farm Buffelspoort.

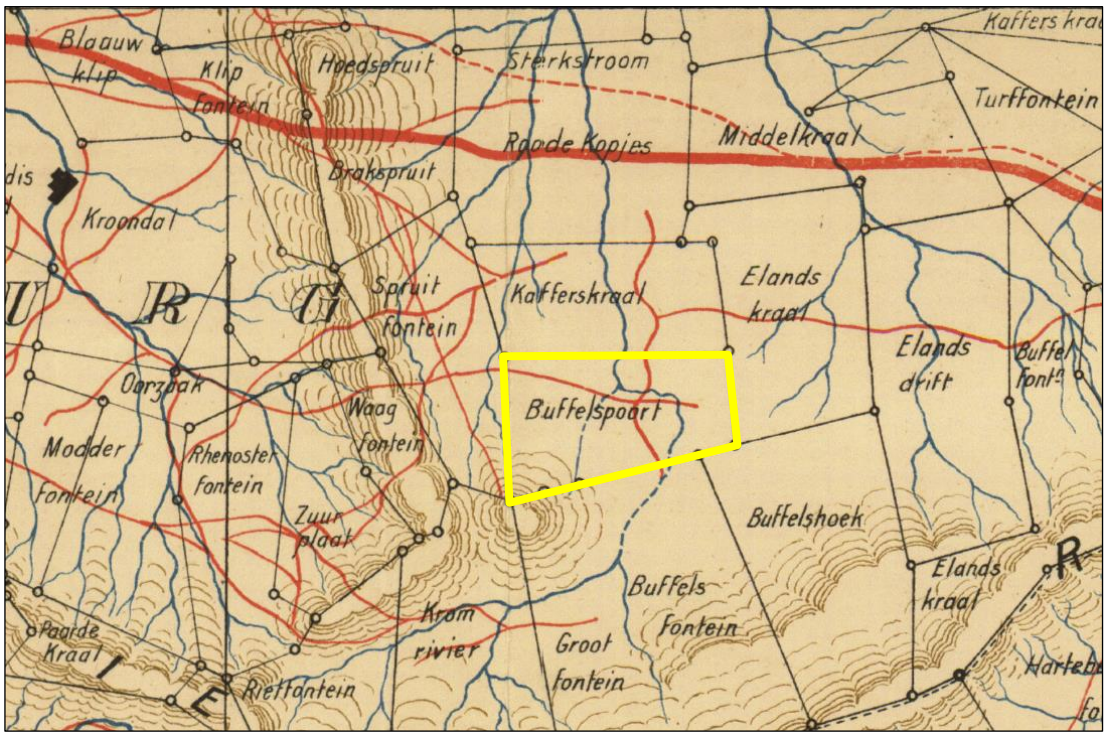


Figure 27 - Section of the 1900 Krugersdorp map highlighting the names of the Buffelspoort farm (yellow polygon) (University of Cape Town Libraries, South Africa).

4.2.5 First edition of the 2527CB Rustenburg (Oos) topographical map dated 1968, the First Edition of the 2527CD Rex topographical map dated 1968 and the First Edition of the 2527DC Magaliesberg topographical map dated 1943.

The 2527CB Rustenburg (Oos) map sheet was based on the 1963 aerial photography, surveyed in 1968 and drawn in 1969 and printed by the Government Printer in Pretoria in 1976. The 2527CD Rex map sheet was printed by the government printer in Pretoria. The 2527DC map sheet was surveyed and drawn in 1943 by 45 Survey Coy., S. A. E. C. and printed by the Government Printer in Pretoria in 1957.

The three (3) different topographical maps were combined to create an image overlay of the proposed Project Site (**Figure 28**). This map sheet shows no heritage features within the proposed Project Site. However, the Kerkhof Cemetery is located just outside the area, toward to southeast.

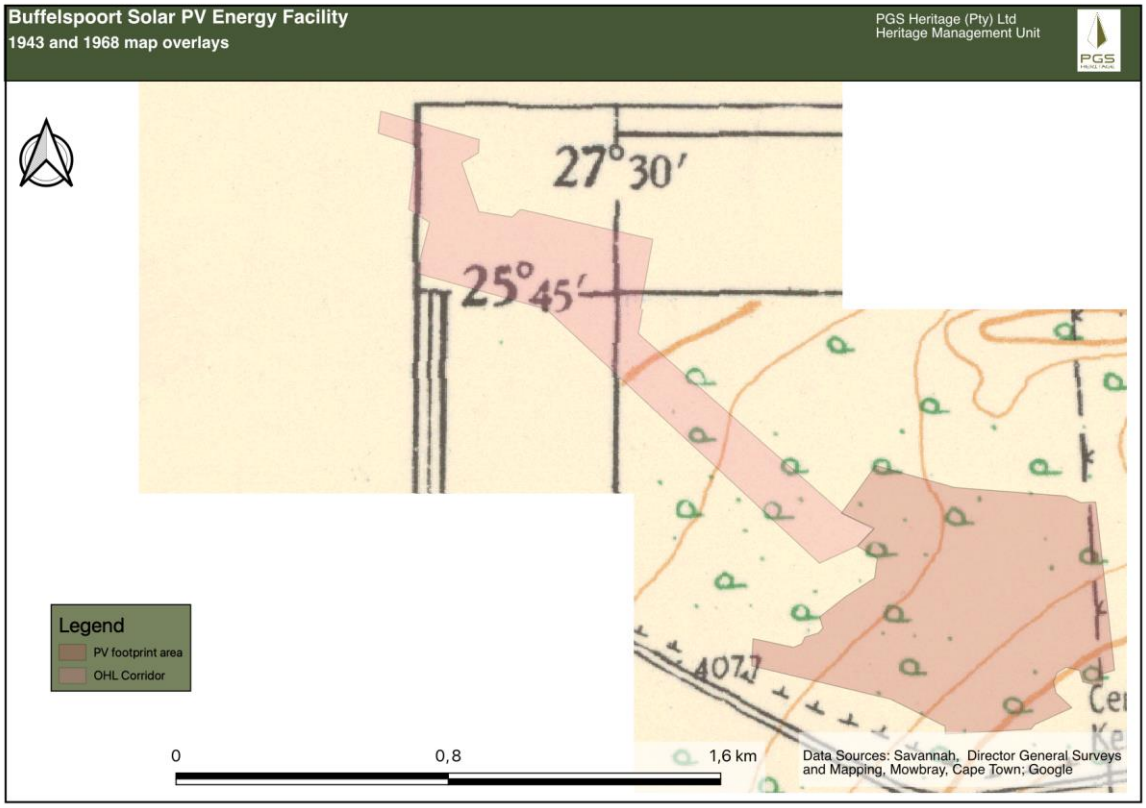


Figure 28 – Three different sections of the First Editions of the 2527CB, CD and DC Topographical Map Sheets.

4.2.6 Previous heritage impact assessment reports from the study area and surroundings

A search of the South African Heritage Resources Information System (SAHRIS) database revealed that several previous archaeological and heritage impact assessments had been undertaken within the surroundings of the Project Site (**Figure 29**). In each case, the results of each study are shown in bold. These previous studies are listed below in ascending chronological order:

- The archaeological survey was undertaken by Dr Johnny van Schalkwyk of the National Cultural History Museum in 1997 on the farm Kroondal 304 JQ. A total of four (4) sites were identified in the report, all of which are located close to the present study area. These four (4) sites comprise three (3) LIA stonewalled sites and one (1) MSA site (NCHM, 1997).

- In 1999 an article was published by Dr Julius Pistorius of the University of Pretoria regarding his archaeological excavations and research on a Late Iron Age stonewalled complex comprising three distinct clusters, numbered in his article as KRO001, KRO002 and KRO003. Dr Pistorius indicated that these "...settlement clusters reflect the same tripartite division as has been recognised at Molokwane." Dr Pistorius identified the overall stonewalled complex comprising the three clusters as a typical Batswana settlement, and

while no direct association with a specific cultural group was found, he suggested that the site was located within the historical sphere of influence of the Bafokeng (Pistorius, 1999).

- The cultural resources survey was undertaken by the National Cultural History Museum in 1999 on the farms Spruitfontein 341 JQ and Kafferskraal 342 JQ. Eight (8) sites were identified and include two (2) unmarked graves (2527CB10 & 2527CB13), three (3) cemeteries (2527CB15, 2527CB16 & 2527CB17), a historic structure (2527CB11), an Iron Age site comprising pottery (2527CB12) and an Iron Age stonewalled site (2527CB14) (NCHM, 1999).

- The cultural resources survey was undertaken by the National Cultural History Museum in 2001 on a section of the farm Kroondal 304 JQ. This study was undertaken to identify cultural resources from within the proposed footprint area of a new tailings facility at Kroondal Platinum Mine. **No sites were identified** (NCHM, 2001).

- In 2002 the National Cultural History Museum was commissioned by Aquarius Platinum to exhume and relocate 23 graves located on the farm Kafferskraal 342 JQ that were affected by the proposed development at the Marikana Platinum Mine. The exhumations took place on 31 October 2002 (NCHM, 2002). The graves were reburied on Portion 345 of the farm Kafferskraal 342 JQ at the following coordinates: S 25° 44' 19.0" E 27° 27' 59.1". **This place of reburial is located close to the present study area.**

- Fourie, W. 2009. Isotium (Pty) Ltd (Isotium) – Royalty Fair Resort on Portion 35 of the farm Buffelspoort 343 JQ, District Rustenburg, North West Province. **During the survey, fifteen (15) heritage sites were identified.**

- Pelser, A. J. 2012. A Report on An Archaeological Impact Assessment for the Proposed Moonooi Township Development on Portion 34 and the Remaining Extent of Portion 1 of the Farm Elandsdrift 467 JQ, Near Mooinooi, Northwest. **During the survey, one heritage site was identified.**

- Van der Walt, J. 2012. For the Proposed RustMo4 PV Facility on Portion 69 of the farm Spruitfontein 341 JQ, near Buffelspoort, North West Province. **During the survey, no significant heritage sites were found within the proposed development area.**

- An HIA study undertaken by PGS Heritage (Pty) Ltd for a Consolidated EIA and EMP for Kroondal and Marikana in 2014 (Birkholtz) identified the three existing buildings at the Central Shaft site (Additional Site 1). This study noted that the Rustenburg Platinum Mines commissioned and completed the Central Deep shaft and associated treatment plant in 1954. The study also noted that “such older mine buildings and structures from this area

are not at all common" and gave the site a Generally Protected B (GP.A) or High / Medium Significance, which indicated that the site may not be impacted upon without prior mitigation. It was recommended that the best option for the site was to preserve it in situ.

- Van der Walt, J. 2017. For the Proposed Overvaal Trust PV Facility, Buffelspoort, North West Province. **During the survey, no significant heritage sites were found within the proposed development area.**

- Fourie, W. 2021. The Proposed Samancor Chrome Ltd (Western Chrome Mines) Waterkloof Section Opencast Project. Samancor Wcm –Waterkloof Section Falls Under the Jurisdiction of the Bojanala Platinum District Council and the Rustenburg Local Municipality, in the Northwest Province. The Mine is Located on Portions of Waterkloof 305 JQ, Northwest. **During the survey, two (2) areas with multiple foundations and broken-down buildings were identified.**

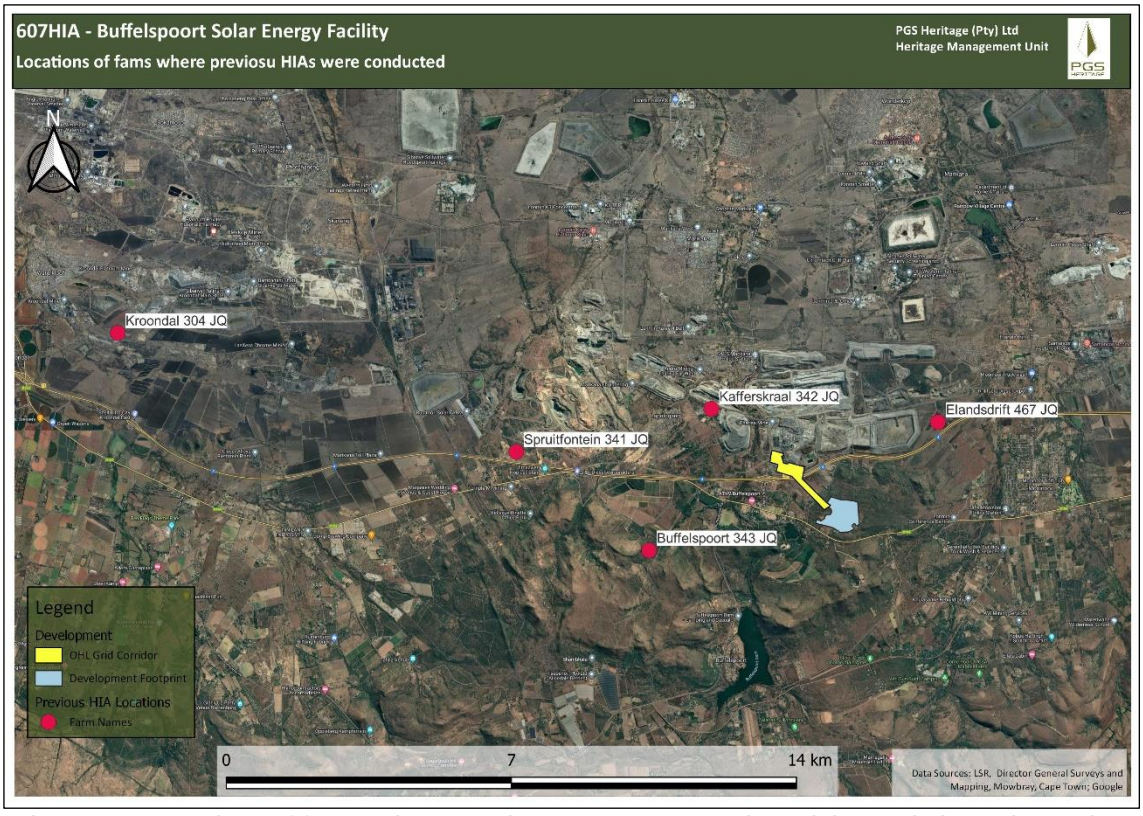


Figure 29 - Locations of farms where previous HIAs were conducted, in proximity to the Project Site.

4.2.7 Heritage screening

A heritage screening report was compiled using the Department of Forestry, Fisheries and Environment (DFFE) National Web-based Environmental Screening Tool as required by Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended. According to the heritage screening report, the study area has a Low Heritage Sensitivity (**Figure 30**) and a

Medium Palaeontological Sensitivity (**Figure 31**). The fieldwork has shown that some archaeological and heritage resources were present in the area and thus have a higher rating than the original screening rating. This is in part due to the low resolution of the available data that the screening data is based on.

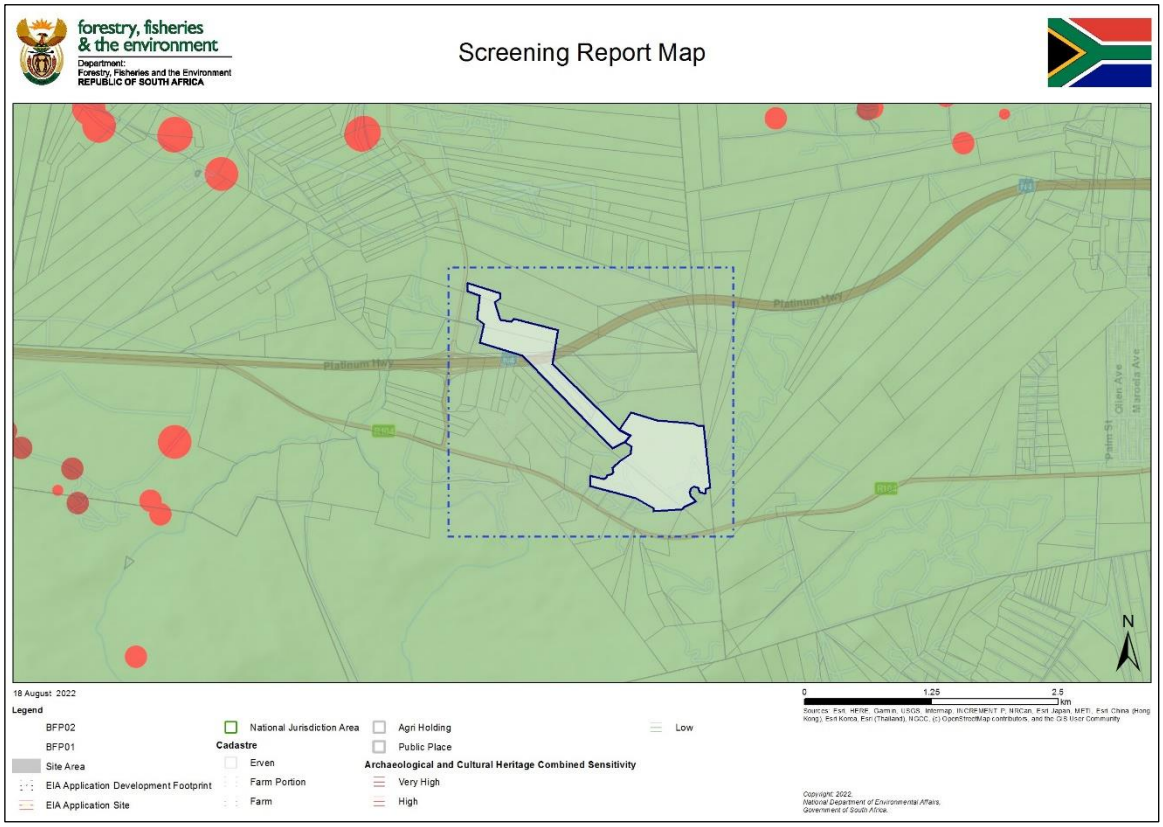


Figure 30 - Screening tool map indicating a low sensitivity rating for archaeology and heritage Source: DFFE).

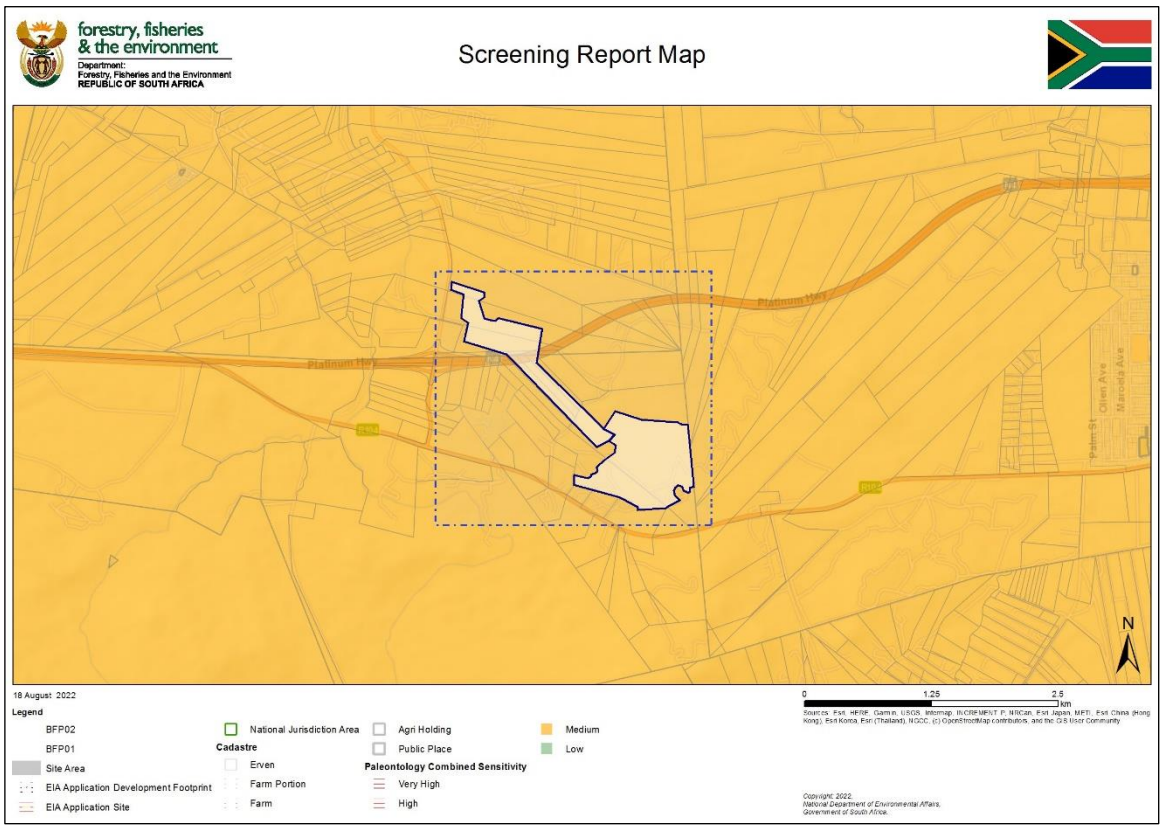


Figure 31 - Screening tool map indicating a medium sensitivity rating for paleontological heritage (Source: DFFE).

4.2.8 Heritage sensitivity

Analysis of maps and satellite imagery enabled the identification of possible heritage-sensitive areas. By superimposition and analysis, it was possible to rate these structures according to age and thus their level of protection under NHRA. **Table 4** lists the possible tangible heritage sites identified in the vicinity of the study area and the relevant legislative protection.

Table 4: Tangible heritage site in the study area.

Name	Description	Legislative protection
Archaeology	Older than 100 years	NHRA Sections 3 and 35
Structures	Possibly older than 60 years	NHRA Sections 3 and 34
Burial grounds	Graves	NHRA Sections 3 and 36 and MP Graves Act

Additionally, evaluation of satellite imagery has indicated the following areas that may be sensitive from a heritage perspective. The analysis of the studies conducted in the area assisted in the development of the following landform type to heritage find matrix (**Table 5**).

Table 5: Landform type to heritage find matrix

LANDFORM TYPE	HERITAGE TYPE
Crest and foothill	LSA and MSA scatters, LIA settlements

Crest of small hills	Small LSA sites – scatters of stone artefacts, ostrich eggshell, pottery and beads
Water holes/pans/rivers	MSA and LSA sites, LIA settlements
Farmsteads	Historical archaeological material
Ridges and drainage lines	LSA sites, LIA settlements

4.3 Fieldwork findings[3]

The fieldwork was conducted on 28 April, 6 May, and 26 May 2022 by a field team from PGS Heritage. Their movement on site was tracked by GPS and a tracklog map can be seen in **Figure 32**.

Fieldwork

The fieldwork component of the study was aimed at identifying tangible remains of archaeological, historical and heritage significance. The fieldwork was undertaken by way of intensive walkthroughs of the proposed Project Site.

During the fieldwork, a total of seven (7) heritage features and resources were identified (**Figure 33**). These consist of one (1) burial ground with approximately 100 graves (**BFP-02**), three (3) localities with recent historic structures (**BFP-04, BFP-06 and BFP-07),** and one (1) kraal (**BFP-05**), two (2) archaeological sites (**BFP-01 and BFP-03**) were identified.

Archaeological Resources

The two archaeological sites identified, are characterised by large areas of stonewalling **(BFP-01 and BFP-03)**. Site **BFP-01** consists of a long continuous stone wall running along a raised outcrop, although no other cultural material was identified within the proposed Development Footprint. The developer has excluded this site employing buffers put in place for the layout of the solar energy facility. Site **BFP-03** is a large stone wall site with numerous stone-walled enclosures. It appears the area was already disturbed as it now functions as a feeding ground for the game in the area. There is evidence of some of the stonewalling being destroyed whereas others still appear to be in their original state, no other cultural material was identified in the area. It is located just outside (at the northeastern corner) of the proposed Development Footprint.

The possibility of the archaeological resources impacted by the proposed Buffelspoort Solar PV Energy Facility cannot be excluded, and the project can potentially have a **MODERATE** impact without and **LOW** with mitigation.

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

Burial Grounds and Graves

A single burial ground consisting of approximately 100 graves was identified at site **BFP-02**. The site was indicated to the fieldwork team by the owner of the property. The informal graveyard lies just outside (west) the proposed Development Footprint. Although the area is overgrown by vegetation, some of the graves are still identifiable and consist mainly of stone-packed or stone-lined grave dressings, except for a few concrete or marble grave dressing features. Due to the cultural and religious significance of burial grounds, the site is graded as Grade IIIA.

The possibility of the burial ground being impacted by the proposed Buffelspoort Solar PV Energy Facility cannot be excluded, and the Project can potentially have a **HIGH** impact without mitigation. Implementation of the recommended management and mitigation measures can reduce the impact rating to **LOW**.

Historical Structures

The recent historic structures (**BFP-04, BFP-06 and BFP-07**) and the kraal (**BFP-05**) are all younger than 60 years and vary in preservation. They are all currently abandoned. The structures and remains of structures are not conservation worthy and contain no cultural or scientific value and are consequently graded as **not conservation worthy (NCW)**.

The impact on the recent historic structures identified during the fieldwork can potentially have a **LOW** significance before and after the implementation of the proposed mitigation measures.

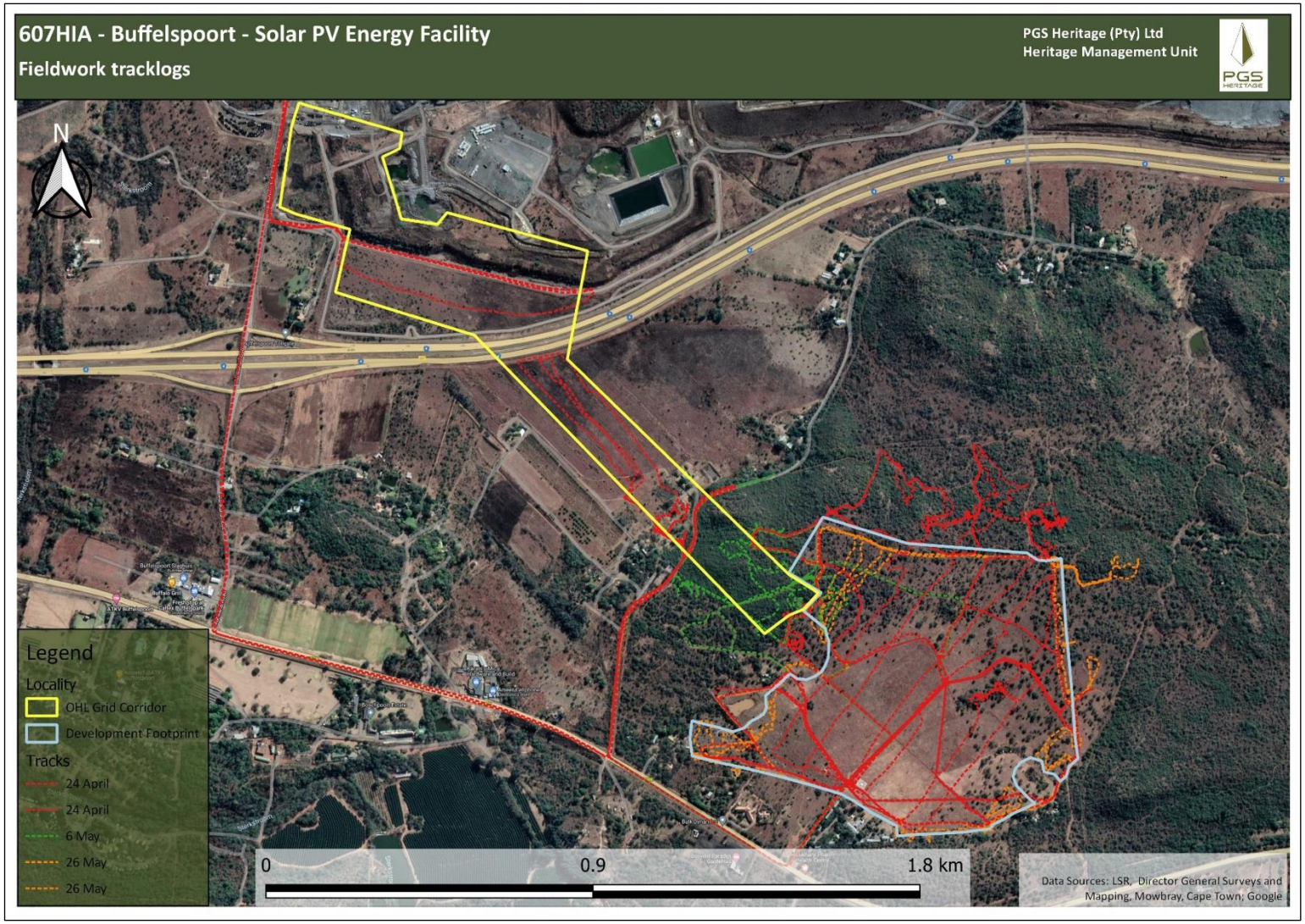


Figure 32 - Fieldwork tracklogs (tracks in red, orange, and green) within the proposed Development Footprint (marked in blue) and the OHL Grid Corridor (marked in yellow).

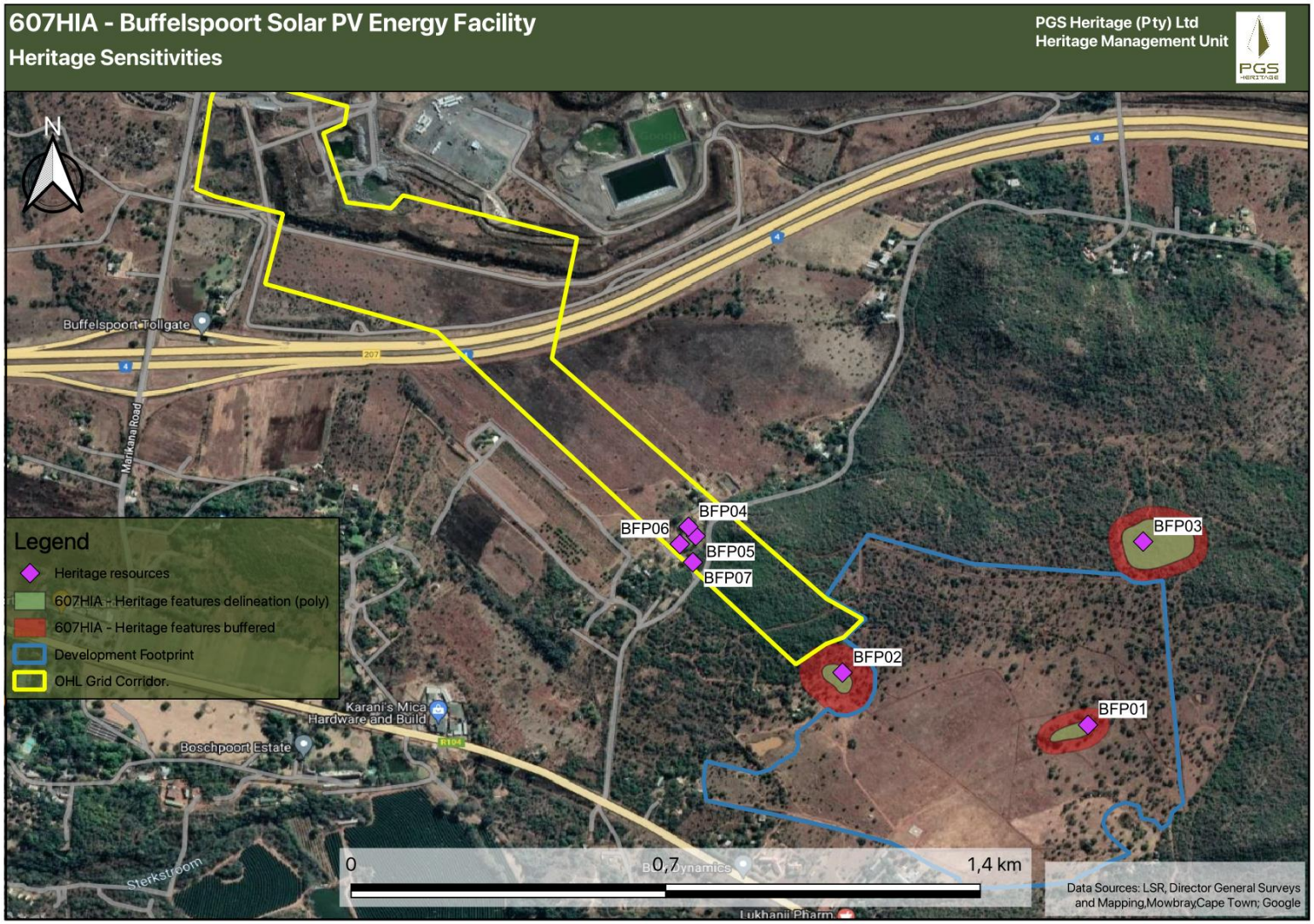


Figure 33 - Identified heritage resources (marked in purple) within the proposed Development Footprint (marked in blue) and the OHL Grid Corridor (marked in yellow).

Table 6: Sites identified during the heritage survey.

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
BFP-01	S -25.759900°	E 27.512075°	A continuous stone wall (drywalling) is located on a small outcrop within the proposed Development Footprint. It runs across the centre of the small, raised outcrop. No other material of cultural significance was identified within the site area. *The new planned layout has excluded this site from the proposed Development Footprint.* **Site extent:** Approximately 60m x 30m. It is recommended that: • A 30-meter buffer should be implemented from the outer edge of the archaeological site. • If the preservation of the site is not possible mitigation before destruction will be required. ▪ Phase 2 archaeological mitigation process must be implemented. This will include, surface collections, test excavations and analysis of recovered material. A permit issued under S35 of the NHRA will be required to conduct such work. ▪ On completion of the mitigation work, the developer can apply for a destruction permit with the backing of the mitigation report. ▪ This work will need to be done as part of the EMPr implementation before construction.	LOW	IIIC

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 34 – Aerial view of the outcrop where site BFP-01 was identified.

Figure 35 – General view of the outcrop where site BFP-01 is located.

Figure 36 – General view of the stonewalling located at site BFP-01. The scale is in 10cm increments.

Figure 37 – Close-up of the stonewalling located at site BFP-01. The scale is in 10cm increments.

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
BFP-02	S -25.758738°	E 27.506627°	An informal burial ground with approximately 100 graves is located just outside the Development Footprint. The graves are in a very overgrown field and as such, some of the graves can easily be missed. Most of the graves have a stone-packed and/or stone-lined dressing, whereas others have concrete or granite dressing. **Site extent:** Approximately 50m x 50m. Burial grounds and graves are protected under Section 36 of the NHRA 25 of 1999. Thus, the site is provisionally rated as having a HIGH heritage significance with a heritage rating of IIIA. All graves have high levels of emotional, religious and in some cases historical significance. It is also important to understand that the identified graves could have significant heritage value to the relevant families. It is recommended that: • The Development footprint incorporated the recommended 50-meter no-go-buffer zone The graves will be avoided and left in situ. • A Grave Management Plan should be developed for the graves, to be implemented during the construction and operation phases (which needs approval by SAHRA BGG). • If the site is going to be impacted directly and the graves need to be removed, a grave relocation process for these sites is recommended as a mitigation and management measure. This will involve the necessary social consultation and public participation process before grave relocation permits can be applied for with the SAHRA BGG under the NHRA and National Health Act regulations.	HIGH	IIIA

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 38 – General view of the grave site at BFP-02. The scale is in 10cm increments.

Figure 39 – General view of the grave site at BFP-02. The scale is in 10cm increments.

Figure 40 - General view of the grave site at BFP-02. The scale is in 10cm increments.

Figure 41 - General view of the grave site at BFP-02. The scale is in 10cm increments.

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
BFP-03	S -25.755832°	E 27.513298°	A large stone-walled site is located here but it appears that it has already been disturbed by activities. The area is currently being used as a feeding ground for the game located on the property. *The new planned layout has excluded this site from the proposed Development Footprint.* Some of the stonewalling appear to be in its original state, whereas others have been pushed over and heaps created to clear a space for the game. At the centre of one stone enclosure, a modern braai area has been built with bricks. No other cultural material was identified at the site. **Site extent:** Approximately 30m x 30m. It is recommended that: • If the preservation of the site is not possible mitigation before destruction will be required. ▪ Phase 2 archaeological mitigation process must be implemented. This will include, surface collections, test excavations and analysis of recovered material. A permit issued under s35 of the NHRA will be required to conduct such work. ▪ On completion of the mitigation work, the developer can apply for a destruction permit with the backing of the mitigation report. ▪ This work will need to be done as part of the EMP implementation before construction.	MODERATE	IIIB

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 42 – One stone walling enclosure located at site BFP-03 with a modern braai located in the centre. The scale is in 10cm increments.

Figure 43 – One stone walling enclosure located at site BFP-03 The scale is in 10cm increments.

Figure 44 - General view of the collapsed stone walling at BFP-03. The scale is in 10cm increments.

Figure 45 - General view of site BFP-03 with a portion of the cleared area visible.

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
BFP-04	S -25.755504°	E 27.503211°	Large abandoned and broken-down structure located in an open field, within the OHL Grid Corridor area. Along with the large structure, there is a small broken-down red-brick building located to the left of the structure and a small square concrete and a possible reservoir located to the right of the structure. The large structure consists of bricks and concrete and had wooden window frames along with a corrugated iron roof. The structure has multiple rooms and probably served the purpose of residential space. The structure appears to be relatively modern as it does not yet appear on the first edition topographical maps that date to 1968. **Site extent:** Approximately 25m x 25m. It is recommended that: • No mitigation is required.	NCW	No research potential or other cultural significance

Figure 46 – General view of the small brick structure located at site BFP-04. The scale is in 10cm increments.

Figure 47 – General view of the small square structure and the possible reservoir located at site BFP-04. The scale is in 10cm increments.

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 48 - General view of the large residential structure located at site BFP-04.

Figure 49 - General view of the large residential structure located at site BFP-04. The scale is in 10cm increments.

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
BFP-05	S -25.755708°	E 27.503372°	A kraal that possibly once served the purpose to keep animals, like domestic stock. The kraal could also be associated with the large residential structure at the site at BFP-04. This kraal is located within the OHL Grid Corridor area. **Site extent:** Approximately 10m x 10m. It is recommended that: • No mitigation is required.	NCW	No research potential or other cultural significance

Figure 50 – General view of the kraal located at site BFP-05. The scale is in 10cm increments.

Figure 51 – General view of the kraal located at site BFP-05.

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
BFP-06	S -25.755888°	E 27.503019°	Large abandoned and broken-down structure located in an open field, within the OHL Grid Corridor area. The structure consists of brick and concrete. There is no evidence left of a roof. At the corner of the building, there is a space that resembles an entryway and the remains of a few stairs. This building could probably have been a storage unit of some sort. The structure appears to be relatively modern as it does not yet appear on the first edition topographical maps that date to 1968. **Site extent:** Approximately 10m x 10m. It is recommended that: • No mitigation is required.	NCW	No research potential or other cultural significance

Figure 52 – General view of the structure located at site BFP-06. The scale is in 10cm increments.

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
BFP-07	S -25.756290°	E 27.503308°	An abandoned and broken-down structure is located behind site BFP-06, which is located within the OHL Grid Corridor area. It appears to be the same building materials, bricks, and concrete. The structure has no remains of a roof, or doors and windows. The structure appears to be relatively modern as it does not yet appear on the first edition topographical maps that date to 1968. **Site extent:** Approximately 5m x 5m. It is recommended that: • No mitigation is required.	NCW	No research potential or other cultural significance

Figure 53 – General view of the broken-down structure located at site BFP-07. The scale is in 10cm increments.

Figure 54 – General view of the rubble and broken-down structure located at site BFP-07.

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 55 - General view of the structure located at site BFP-07. The area is very overgrown.

4.1 Palaeontology

According to the PalaeoMap of SAHRIS, the Palaeontological Sensitivity of the proposed Development Footprint is zero or insignificant. No paleontological studies are required (**Figure 56**).

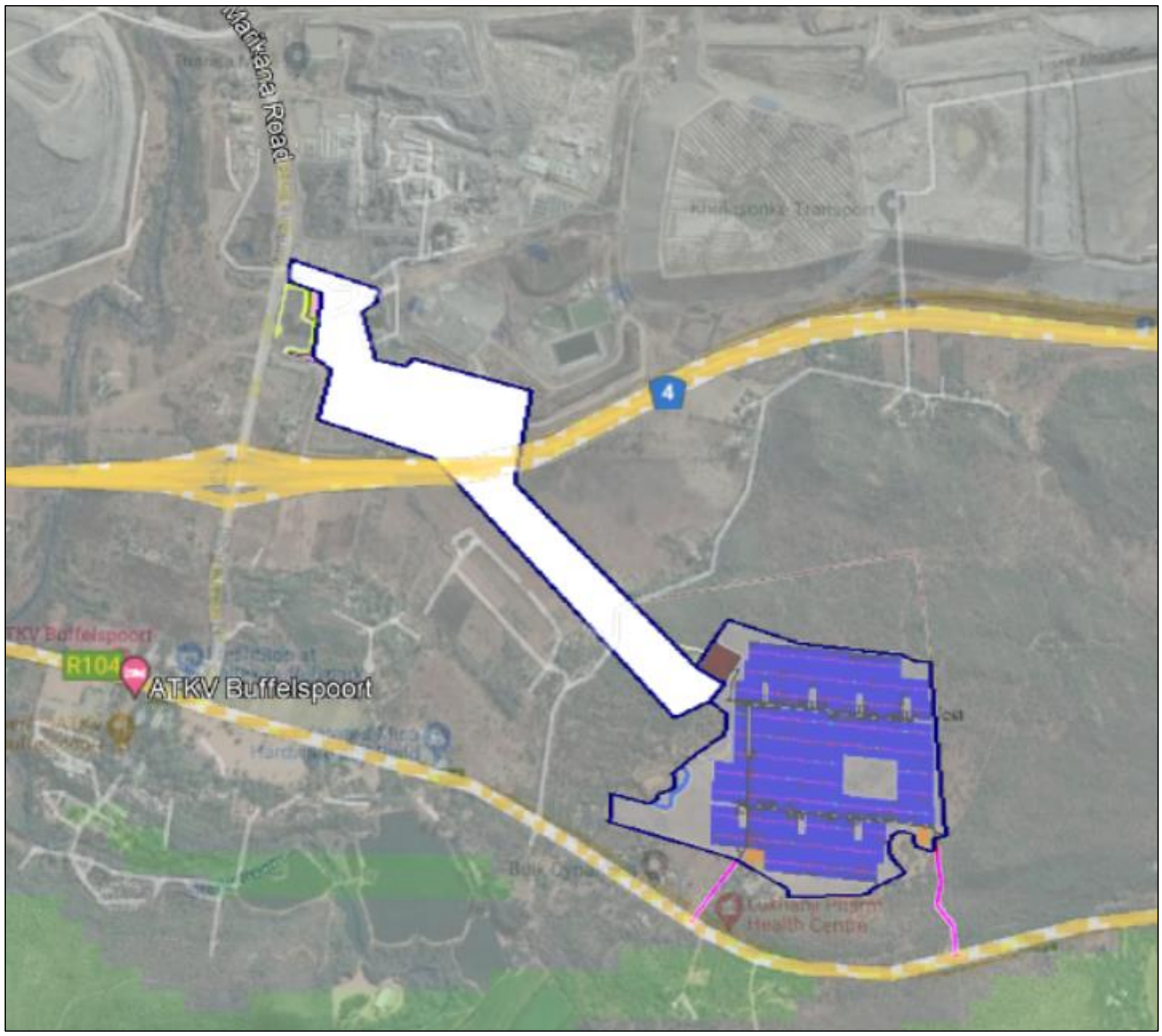


Figure 56 - Palaeontological Heritage Sensitivity Map. As can be viewed, most of the Development Footprint has no sensitivity indicated by the white/clear background (Retrieved from SAHRIS).

Table 7: SAHRIS palaeosensitivity rating table.

Colour	Sensitivity	Required Action
Red	Very High	Field assessment and protocol for finds are 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	A desktop study is required

Colour	Sensitivity	Required Action
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.

5 IMPACT ASSESSMENT

The impact assessment rating is based on the rating scale contained in **Appendix B**.

The following section provides an analysis of the impact of the proposed Project Site on heritage resources identified within the proposed Buffelspoort Solar PV Energy Facility and the OHL Grid Corridor.

5.1 Details of all alternatives considered

This section describes alternative means of carrying out the operation and the consequences of not proceeding with the proposed Project.

The “no-go” alternative refers to the option of not going ahead with the proposed Project. This will entail maintaining the current status quo with no impact on the Project.

5.1.1 Archaeological Resources

The two (2) archaeological features (**BFP-01 and BFP-03)** have a respective **LOW** and **MODERATE** heritage significance with a heritage grading of IIIC and IIIB respectively. The possibility of the archaeological resources impacted by the proposed Buffelspoort Solar PV Energy Facility cannot be excluded. However due to the implementation of the recommendation made during the Scoping phase the sites was excluded from the Development Footprint and this resulted in a final **LOW** impact rating.

5.1.2 Burial Grounds and Graves

The burial ground at site **BFP-02** has a **HIGH** heritage significance a heritage grading of IIIA. The possibility of the burial ground being impacted by the proposed Buffelspoort Solar PV Energy Facility cannot be excluded, and the Project can potentially have a **MODERATE** impact without mitigation.

However due to the implementation of the recommendation made during the Scoping phase the sites was excluded from the Development Footprint and this resulted in a final **LOW** impact rating.

5.1.3 Historical Structures

The impact on the recent historic structures **(BFP-04, BFP-06 and BFP-07)** and the kraal (**BFP-05)** identified during the fieldwork is calculated as having a **LOW** heritage significance, and a heritage grading of **not conservation worthy (NCW)** before and after the implementation of the proposed mitigation measures.

5.1.4 Palaeontology

The PDA notes that the paleontological significance and potential of the geology of the Project Site are rated as **LOW** to **ZERO** The impact significance is rated as **LOW** before and after mitigation.

5.2 Heritage Impacts and Impact Assessment Table

During the fieldwork, a total of seven (7) heritage features and resources were identified (**Figure 33**). These consist of one (1) burial ground with approximately 100 graves (**BFP-02**), three (3) localities with recent historic structures (**BFP-04, BFP-06 and BFP-07),** and one (1) kraal (**BFP-05**), two (2) archaeological sites (**BFP-01 and BFP-03**) were identified.

5.2.1 Archaeological Resources

The sites **BFP01** and **BFP03** have a low and moderate heritage significance respectively and a heritage rating of IIIC and IIIB.

The impact significance before mitigation on the structures will be **HIGH** negative. *The impact of the proposed development will be local in extent*. **The possibility of the impact occurring is probable**. The expected duration of the impact is assessed as potentially permanent. Implementation of the recommended mitigation measures will reduce this impact rating to an acceptable **LOW** negative impact.

Table 8: Impact Assessment Table for Archaeological Resources of moderate significance

Archaeological resources have been identified during the survey. These sites are of moderate significance and rated as IIIB.		
	Without mitigation	**With mitigation**
Extent	Moderate/High (4)	Low (1)
Duration	Permanent (5)	Long-term (4)
Magnitude	High (8)	Low (2)
Probability	Highly Probable (4)	Unlikely (2)
Significance	**High (68)**	**Low (14)**
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low

The irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	
Mitigation: • A 30-meter buffer should be implemented from the outer edge of the archaeological site. • If the preservation of the site is not possible mitigation before destruction will be required. • Phase 2 archaeological mitigation process must be implemented. This will include, surface collections, test excavations and analysis of recovered material. A permit issued under s35 of the NHRA will be required to conduct such work. • On completion of the mitigation work, the developer can apply for a destruction permit with the backing of the mitigation report. • This work will need to be done as part of the EMP implementation before construction.		
Cumulative impacts: Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is possible that the impact could lead to the irreplaceable loss of archaeological resources.		
Residual Impacts: Considering the nature of the sites identified in the present study, the residual risk will be moderate.		

5.2.2 Burial Grounds and Graves

The site **BFP-02** has a high heritage significance and heritage rating of IIIA. This site has high heritage sensitivity.

The impact significance before mitigation on the graves will be **HIGH** negative. *The impact of the proposed development will be local in extent.* **The possibility of the impact occurring is probable**. The expected duration of the impact is assessed as potentially permanent. Implementation of the recommended mitigation measures will reduce this impact rating to an acceptable **LOW** negative impact.

Table 9: Impact Assessment Table for Burial Grounds and Graves

Graves and Burial Grounds have been identified during the survey. This site is of high significance and rated as IIIA.		
	Without mitigation	**With mitigation**
Extent	Moderate/High (4)	Low (1)
Duration	Permanent (5)	Long-term (4)
Magnitude	High (8)	Low (2)

Probability	Highly Probable (4)	Unlikely (2)
Significance	**High (68)**	**Low (14)**
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
The irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	
Mitigation: • The sites should be demarcated, and a 50-meter no-go-buffer zone must be enforced. The graves should be avoided and left in situ. • A Grave Management Plan should be developed for the graves, to be implemented during the construction and operation phases (which needs approval by SAHRA BGG). • If the site is going to be impacted directly and the graves need to be removed, a grave relocation process for these sites is recommended as a mitigation and management measure. This will involve the necessary social consultation and public participation process before grave relocation permits can be applied for with the SAHRA BGG under the NHRA and National Health Act regulations.		
Cumulative impacts: Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is possible that the impact could lead to the irreplaceable loss of burial grounds and graves.		
Residual Impacts: Considering the nature of the sites identified in the present study, the residual risk will be moderate.		

5.2.3 Historical Structures

BFP-04, BFP-05, BFP-06 and BFP-07 were rated as not conservation worthy and of no heritage significance.

The impact significance before mitigation on the structures will be **LOW** negative. *The impact of the proposed development will be local in extent*. **The possibility of the impact occurring is probable**. The expected duration of the impact is assessed as potentially permanent. Implementation of the recommended mitigation measures will reduce this impact rating to an acceptable **LOW** negative impact.

Table 10: Impact Assessment Table for Historical Structures of no heritage significance.

Historical Structures have been identified during the survey. These sites were rated as not conservation worthy and of no heritage significance.

	Without mitigation	With mitigation
Extent	Low (1)	Low (1)
Duration	Long-term (4)	Long-Term (4)
Magnitude	Minor (2)	Minor (1)
Probability	Probable (3)	Unlikely (2)
Significance	**Low (21)**	**Low (12)**
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
The irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	
Mitigation: No mitigation is required		
Cumulative impacts: Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely that the impact will result in spatial and temporal cumulative change. Therefore, no cumulative impact is expected to occur.		
Residual Impacts: Considering the nature of the sites identified in the present study, the residual risk will be minimal.		

5.3 Cumulative Impacts

This section evaluates the possible cumulative impacts on heritage resources with the addition of the Buffelspoort PV Solar Energy Facility and the OHL corridor. The cumulative impacts considered below assume that mitigation measures have been applied.

Table 11: Cumulative Impact Assessment Table for Historical Structures of no heritage significance.

Historical Structures have been identified during the survey. These sites were rated as **not conservation worthy (NCW)** and of no heritage significance. Cumulative impacts on historical resources would occur during the construction and operation phase.		
	Overall impact of the proposed project considered in isolation	**Cumulative impact of the project and other projects in the area**
Extent	Low (1)	Low (1)
Duration	Long-term (4)	Long-Term (4)
Magnitude	Minor (2)	Minor (1)
Probability	Probable (3)	Unlikely (2)
Significance	**Low (21)**	**Low (12)**

Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
The irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	
Mitigation: "Mitigation", means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible. Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely that the impact will result in spatial and temporal cumulative change. Therefore, no cumulative impact is expected to occur.		
Residual Impacts: "Residual Risk", means the risk that will remain after all the recommended measures have been undertaken to mitigate the impact associated with the activity (Green Leaves III, 2014). Considering the nature of the sites identified in the present study, the residual risk will be minimal.		

Table 12: Cumulative Impact Assessment Table for Archaeological Resources of moderate significance

Archaeological resources have been identified during the survey. These sites are of **MODERATE** significance and rated as IIIB. Cumulative impacts on historical resources would occur during the construction and operation phase.		
	Without mitigation	**With mitigation**
Extent	Low (1)	Low (1)
Duration	Long-term (4)	Long-Term (4)
Magnitude	Minor (2)	Minor (1)
Probability	Probable (3)	Unlikely (2)
Significance	**Low (21)**	**Low (12)**
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
The irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	
Mitigation: "Mitigation", means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.		

Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is possible that the impact could lead to the irreplaceable loss of archaeological resources.
Residual Impacts: "Residual Risk", means the risk that will remain after all the recommended measures have been undertaken to mitigate the impact associated with the activity (Green Leaves III, 2014). Considering the nature of the sites identified in the present study, the residual risk will be moderate.

Table 13: Cumulative Impact Assessment Table for Burial Grounds and Graves

Graves and Burial Grounds have been identified during the survey. These sites are of **HIGH** significance and rated as IIIA. Cumulative impacts on Burial Grounds and graves resources would occur during the construction and operation phase when.		
	Overall impact of the proposed project considered in isolation	***Cumulative impact of the project and other projects in the area***
Extent	Low (1)	Low (1)
Duration	Long-term (4)	Long-term (4)
Magnitude	Low (2)	Low (3)
Probability	Unlikely (2)	Unlikely (2)
Significance	**Low (14)**	**Low (16)**
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
The irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	
Mitigation: "Mitigation", means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible. Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is possible that the impact could lead to the irreplaceable loss of burial grounds and graves.		
Residual Impacts: "Residual Risk", means the risk that will remain after all the recommended measures have been undertaken to mitigate the impact associated with the activity (Green Leaves III, 2014). Considering the nature of the sites identified in the present study, the residual risk will be moderate.		

5.4 Management recommendations and guidelines

5.4.1 Construction phase

The Project will encompass a range of activities during the construction phase, including ground clearance, the establishment of construction camp areas and small-scale infrastructure development associated with the Project.

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. 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 they still, need to be catered for.

During the construction phase, it is important to recognise any significant material being unearthed, making the correct judgment on which actions should be taken. It is recommended that the following chance find procedure principles should be implemented as defined in section 5.4.2.

5.4.2 Chance finds procedure

- A heritage practitioner/archaeologist should be appointed to develop a heritage induction program and conduct training for the Environmental Control Officer (ECO) as well as team leaders in the identification of heritage resources and artefacts.
- An appropriately qualified heritage practitioner/archaeologist must be identified to be called upon if 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.

5.4.3 Possible finds during construction and operation

The study area occurs within a greater historical and archaeological site as identified during the desktop and fieldwork phase. Soil clearance for infrastructure as well as the proposed reclamation activities could uncover the following:

- stone foundations;

- ash middens associated with the historical structures or archaeological sites that can contain bone, glass and clay ceramics, ash, metal objects such as spoons, forks, and knives, and
- Unmarked graves.

5.5 Grave Management Plan Guidelines

The HIA identified a burial ground at **BFP02**. This site (**BFP02**) will require management and mitigation if any of the resource will be affected by any construction-related activities. The following should be included as a minimum in the Grave Management Plan to be drafted for the BGG to be retained in situ in the Project Site:

- The plan must define how the site will be protected, i.e. fencing, gates, buffer distances from development activities;
- How access will be controlled for visitors and arrangements about visitation for the next of kin
- How general up-keep of the burial ground will be done and must include such as aspects as vegetation control, and timing of activities.

5.6 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 14** gives guidelines for lead times on permitting.

Table 14: 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

5.7 Heritage Management Plan for EMPr implementation

Table 15: Heritage Management Plan for EMPr implementation

SITE TYPE	MITIGATION MEASURES	PHASE	TIMEFRAME	RESPONSIBLE PARTY FOR IMPLEMENTATION	MONITORING PARTY (FREQUENCY)	TARGET	PERFORMANCE INDICATORS (MONITORING TOOL)
General Project Area	• Implement a chance to find procedures in case possible heritage finds are uncovered. • Any heritage features of significance identified during this walk down will require formal mitigation (i.e., permitting where required) or where possible a slight change in design could accommodate such resources.	Construction	During construction	Applicant ECO Heritage Specialist	ECO (monthly / as or when required)	Ensure compliance with relevant legislation and recommendations from SAHRA under Sections 36 and 38 of NHRA	ECO Monthly Checklist/Report
Historical Structures that were rated as NCW (BFP-04, BFP-05, BFP-06 and BFP-07)	• No mitigation is required	Construction	Before and during construction	Applicant ECO	Applicant ECO	Ensure compliance with relevant legislation and recommendations from SAHRA under Sections 36 and 38 of NHRA	ECO Monthly Checklist/Report
Archaeological Resources rated as MODERATE (BFP-01 and BFP-03)	• A 30-meter buffer should be implemented from the outer edge of the archaeological site. • If the preservation of the site is not possible mitigation before	Construction	Before and during construction	Applicant ECO	Applicant ECO	Ensure compliance with relevant legislation and recommendations from SAHRA under Sections 36 and 38 of NHRA	ECO Monthly Checklist/Report

SITE TYPE	MITIGATION MEASURES	PHASE	TIMEFRAME	RESPONSIBLE PARTY FOR IMPLEMENTATION	MONITORING PARTY (FREQUENCY)	TARGET	PERFORMANCE INDICATORS (MONITORING TOOL)
	destruction will be required. ▪ Phase 2 archaeological mitigation process must be implemented. This will include, surface collections, test excavations and analysis of recovered material. A permit issued under s35 of the NHRA will be required to conduct such work. ▪ On completion of the mitigation work, the developer can apply for a destruction permit with the backing of the mitigation report. ▪ This work will need to be done as part of the EMP implementation before construction.						
Burial Grounds and Graves (BFP-02)	• Demarcate sites with a 50-meter buffer as per SAHRA guidelines and avoid them. • A Grave Management Plan should be developed for the graves, to be implemented during the construction and operation phases (which	Construction & Operation	Before and during construction & operation	Applicant ECO	Applicant ECO	Ensure compliance with relevant legislation and recommendations from SAHRA under Sections 36 and 38 of NHRA	ECO Monthly Checklist/Report

SITE TYPE	MITIGATION MEASURES	PHASE	TIMEFRAME	RESPONSIBLE PARTY FOR IMPLEMENTATION	MONITORING PARTY (FREQUENCY)	TARGET	PERFORMANCE INDICATORS (MONITORING TOOL)
	needs approval by SAHRA BGG). • Stakeholder engagement will need to be implemented in the case where the graves are to be relocated. • If this is not possible a detailed grave relocation process must be implemented as required under the NHRA and National Health Act regulations.						

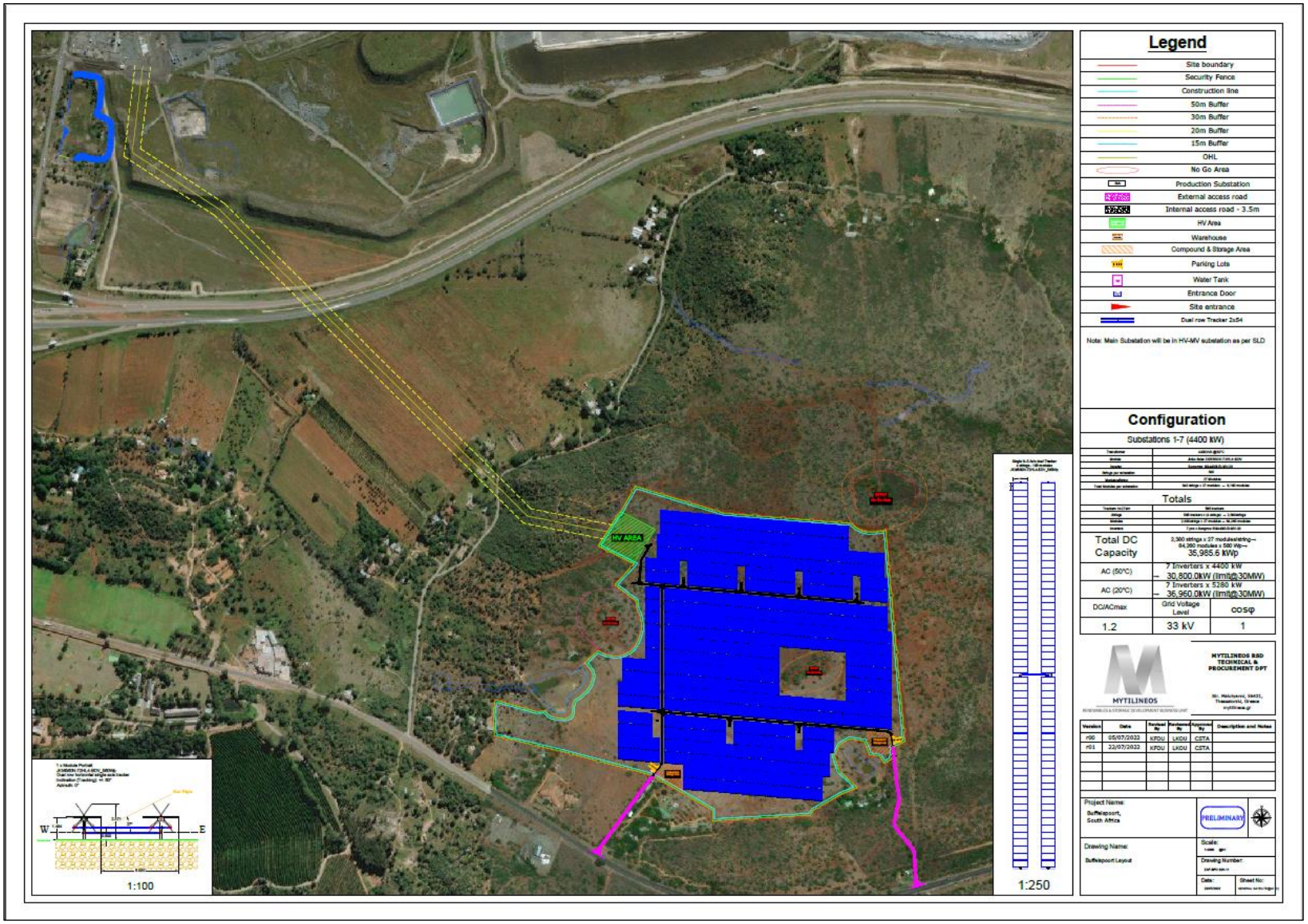


Figure 57 - Proposed layout plan of Buffelspoort Solar Project accommodating the identified heritage resources (Provided by Savannah Environmental).

6 CONCLUSIONS AND RECOMMENDATIONS

The HIA identified various heritage resources within the Project Site including archaeological resources and burial grounds and graves which are rated as having a high heritage significance and will require further mitigation work before the Project can continue.

During the fieldwork, a total of seven (7) heritage features and resources were identified (**Figure 33**). These consist of one (1) burial ground with approximately 100 graves (**BFP-02**), three (3) localities with recent historic structures (**BFP-04, BFP-06 and BFP-07),** and one (1) kraal (**BFP-05**), two (2) archaeological sites (**BFP-01 and BFP-03**) were identified.

6.1 Archaeological Resources

The two archaeological sites identified are characterised by large areas of stonewalling **(BFP-01 and BFP-03)**. Site **BFP-01** consists of a long continuous stone wall running along a raised outcrop, although no other cultural material was identified within the proposed Development Footprint. The developer has excluded this site employing buffers put in place for the layout of the solar energy facility. Site **BFP-03** is a large stone wall site with numerous stone-walled enclosures. It appears the area was already disturbed as it now functions as a feeding ground for the game in the area. There is evidence of some of the stonewalling being destroyed whereas others still appear to be in their original state, no other cultural material was identified in the area. It is located just outside (at the northeastern corner) of the proposed Development Footprint.

The possibility of the archaeological resources impacted by the proposed Buffelspoort Solar PV Energy Facility and OHL Grid Corridor cannot be excluded, and the Project can potentially have a **HIGH** impact without and **LOW** with mitigation.

6.2 Burial Grounds and Graves

A single burial ground consisting of approximately 100 graves was identified at site **BFP-02**. The site was indicated to the fieldwork team by the owner of the property. The informal graveyard lies just outside (west) the proposed Development Area. Although the area is overgrown by vegetation, some of the graves are still identifiable and consist mainly of stone-packed or stone-lined grave dressings, except for a few concrete or marble grave dressing features. Due to the cultural and religious significance of burial grounds, the site is graded as **Grade IIIA**.

The possibility of the burial ground being impacted by the proposed Buffelspoort Solar PV Energy Facility and OHL Grid Corridor cannot be excluded, and the Project can potentially have a **HIGH** impact without mitigation. Implementation of the recommended management and mitigation measures can reduce the impact rating to **LOW**.

6.3 Historical Structures

The recent historic structures (**BFP-04, BFP-06, and BFP-07**) and the kraal (**BFP-05**) are all younger than 60 years and vary in preservation. They are all currently abandoned. The structures and remains of structures are not conservation worthy and contain no cultural or scientific value and are consequently graded as **not conservation worthy (NCW)**.

The impact on the recent historic structures identified during the fieldwork can potentially have a **LOW** significance before and after the implementation of the proposed mitigation measures.

6.4 Palaeontology

According to the PalaeoMap of the South African Heritage Resources Information System (SAHRIS), the Palaeontological Sensitivity of the area is **zero/Insignificant**. As such, no paleontological studies are required.

6.5 General

The HIA concludes that the heritage resources are present within the Development Footprint of the Buffelspoort Solar PV Energy Facility and OHL Grid Corridor. The initial projected impact is rated as **LOW** to **HIGH** on these heritage resources before mitigation measures.

Through the combination of the various environmental, cultural, and socio-economic sensitivities, the client can develop a layout option that will reduce the impact on the heritage resources.
The developer shared a new proposed layout within the Development Area, which has a reduced impact on the heritage resource identified to **LOW**.

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7.4 Google Earth

All the aerial depictions and overlays used in this report are from Google Earth.

APPENDIX A

HERITAGE ASSESSMENT METHODOLOGY

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

This HIA report was compiled by PGS Heritage (PGS) for the proposed Buffelspoort Solar Photovoltaic (PV) Energy Facility. The applicable maps, tables and figures are included, as stipulated in the NHRA (no 25 of 1999) and the National Environmental Management Act (NEMA) (No. 107 of 1998). The HIA process consists of three steps:

Step I – Literature Review and initial site analysis: The background information to the field survey relies greatly on the Heritage Background Research which was undertaken through archival research and evaluation of satellite imagery and topographical maps of the study area.

Step II – Physical Survey: A physical survey was conducted by a combination of vehicle and pedestrian access through the proposed project area by one qualified heritage specialist and one field assistant (19-21 April), aimed at locating and documenting sites falling within and adjacent to the proposed development footprint.

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

The significance of heritage sites is 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 is 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 updated 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 (2021), were used for this report (**Table 16** and **Table 17**).

Table 16: A 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 HWC. 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 fulfil one of the criteria set out in section 3(3) of the Act but that do 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	The 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 Grade III A resource, but to a lesser degree.	The resource must be retained where possible and where not possible it must be fully investigated and/or mitigated.	Medium Significance
IIIC	Such a resource is of contributing significance.	The resource must be satisfactorily studied before impact. If the recording was 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	No further actions under the NHRA are required. This must be	No research potential or

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
	been determined to not have enough heritage significance to be retained as part of the National Estate.	motivated by the applicant or the consultant and approved by the authority.	other cultural significance

Table 17: A 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 HWC.	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 a local level.	High Significance

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
IIIB	Such a resource might have similar significances to those of 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 a 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 HWC for structures in this category if they are older than 60 years.	No research potential or other cultural significance

APPENDIX B

ENVIRONMENTAL IMPACT METHODOLOGY

SAVANNAH ENVIRONMENTAL: IMPACT ASSESSMENT METHODOLOGY

Scoping Report Requirements

The Scoping Report should be in line with the EIA Regulations of 2014, as amended on 07 April 2017 and Savannah Environmental's requirements. Where relevant, the report must be in line with the gazetted protocols.

Example of Scoping evaluation table summarising the impacts identified

Impact [description of the impact]			
Issue	**Nature of Impact**	**Extent of Impact**	**No-Go Areas**
Potential loss of faunal species	Direct impacts: » Loss of habitat will potentially lead to a loss faunal species Indirect impacts: » Minimal edge effects leading to loss of habitat outside development site, thus loss of faunal species	Regional	None identified at this stage
Potential loss of Species of Special Concern	Direct impacts: » None Indirect impacts: » Loss of protected species in terrestrial habitat	National	None identified at this stage
Description of expected significance of impact The proposed development site has a long history of transformation and therefore the impacts on the terrestrial environment are likely to be limited as the species typically resident in and around urban and industrial areas are commonly generalists with a wide range of habitat types. Protected species such as *Crinum stuhlmannii* and *Zoothera guttata* have potential to occur on the proposed development site. However, no protected species were observed within the development areas during the previously conducted site visits. Impacts can be minimised through the implementation of appropriate mitigation measures.			
Gaps in knowledge & recommendations for further study » Mapping of all protected species and species of special concern within the development footprint. » Mapping of known and potential habitats used in breeding, foraging, roosting, aestivation and hibernation. » Describing the condition of all habitats and clearly indicating these on an Ecological sensitivity map. » Indication of the potential of protected species to occur on the proposed development site. **Recommendations with regards to general field surveys**			

- Field surveys must include the proposed development site and adjacent surrounding areas with indigenous vegetation and habitats within a 500 m radius of the project footprint.
- In season (November to April) follow-up terrestrial site visits to determine the diversity of resident fauna species
- In season follow-up terrestrial site visits to determine the diversity of vegetation species.
- A follow up site visit is to be undertaken for small mammal trapping.
- Active search will be required for the protected species and species of concern that have a high probability of occurrence which will be impacted by the proposed facility.

EIA Report Requirements

The EIA Report should be in line with the EIA Regulations of 2014, as amended on 07 April 2017 and Savannah Environmental's requirements. Where relevant, the report must be in line with the gazetted protocols.

The EIA Report must consider the latest layout provided and should include:

- a description of the environment that may be affected by the activity and the manner in which the environment may be affected by the proposed project
- a description and evaluation of environmental issues and potential impacts (including direct, indirect, cumulative impacts and residual risks) that have been identified
- Direct, indirect, cumulative impacts and residual risks of the identified issues must be evaluated within the EIA Report in terms of the following criteria:
  - the nature, which shall include a description of what causes the effect, what will be affected and how it will be affected;
- a statement regarding the potential significance of the identified issues based on the evaluation of the issues/impacts
- a comparative evaluation of the identified feasible alternatives, and **nomination of a preferred alternative**
- Any aspects which are conditional to the findings of the assessment which are to be included as conditions of the Environmental Authorisation
- This must also include any gaps in knowledge at this point of the study. Consideration of areas that would constitute "acceptable and defendable loss" should be included in this discussion.
- A reasoned opinion as to whether the proposed project should be authorised.
- Summary of the positive and negative impacts and risks of the proposed project and identified alternatives.
- Mitigation measures and management recommendations to be included in the Environmental Management Programme to be submitted with the FEIR

Assessment of Impacts

Direct, indirect and cumulative impacts of the issues identified through the scoping study, as well as all other issues identified in the EIA phase must be assessed in terms of the following criteria:

- The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.

- The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high):
- The **duration**, wherein it will be indicated whether:
  - the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
  - the lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
  - medium-term (5–15 years) – assigned a score of 3;
  - long term (> 15 years) - assigned a score of 4; or
  - permanent - assigned a score of 5;
- The **magnitude**, quantified on a scale from 0-10, where a score is assigned:
  - 0 is small and will have no effect on the environment
  - 2 is minor and will not result in an impact on processes
  - 4 is low and will cause a slight impact on processes
  - 6 is moderate and will result in processes continuing but in a modified way
  - 8 is high (processes are altered to the extent that they temporarily cease)
  - 10 is very high and results in complete destruction of patterns and permanent cessation of processes
- The **probability** *of occurrence*, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1–5, where 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).
- the **significance**, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
- the **status**, which will be described as either positive, negative or neutral.
- the degree to which the impact can be reversed.
- the degree to which the impact may cause irreplaceable loss of resources.
- the *degree* to which the impact can be *mitigated*.

The **significance** is calculated by combining the criteria in the following formula:
S=(E+D+M)P
S = Significance weighting
E = Extent
D = Duration
M = Magnitude
P = Probability

The **significance weightings** for each potential impact are as follows:

- < 30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- 30-60 points: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- > 60 points: High (i.e. where the impact must have an influence on the decision process to develop in the area).

Assessment of impacts must be summarised in the following table format. The rating values as per the above criteria must also be included. Complete a table and associated ratings for **each** impact identified during the assessment.

***Example* of Impact table summarising the significance of impacts (with and without mitigation)**

Nature: **[Outline and describe fully the impact anticipated as per the assessment undertaken]**			
Impact description: The impact will occur due to added pressure on the availability of housing located in the local community. This may contribute to increased levels of competition in the temporary housing market.			
	Rating	**Motivation**	**Significance**
Prior to Mitigation			
Duration	Short-term (1)	The construction period will last for less than one year	**Low Negative (18)**
Extent	Local (1)	Pressure will only be added on the local municipality to provide housing for outsourced construction workers	
Magnitude	Low (4)	The increase in demand for affordable accommodation should not be extensive as workers will primarily be sourced from the local communities.	
Probability	Probable (3)	The possibility of the impact on the provision of affordable accommodation is very low	
Mitigation/Enhancement Measures			
Mitigation: "Mitigation", means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible. • Provide a description of how these mitigation measures will be undertaken keeping the above definition in mind.			
Post Mitigation/Enhancement Measures			
Duration	Short-term (1)	Pressure will only be added on the local municipality to provide housing for outsourced construction workers.	**Low Positive (8)**
Extent	Local (1)	The increase in demand for affordable accommodation should be mitigated if external construction crews are provided with onsite accommodation.	
Magnitude	Minor (2)	The possibility of the impact on the provision of affordable accommodation is very low.	
Probability	Improbable (2)	A reduced amount of pressure will be added on the local municipality to provide housing for outsourced construction workers.	
Cumulative impacts:			

"Cumulative Impact", in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to existing and reasonably foreseeable impacts eventuating from similar or diverse activities.
Residual Risks: "Residual Risk", means the risk that will remain after all the recommended measures have been undertaken to mitigate the impact associated with the activity (Green Leaves III, 2014).

Assessment of Cumulative Impacts

As per requirements of the EIA Regulations, specialists are required to assess the cumulative impacts. In this regard, please refer to the methodology below that will need to be used for the assessment of Cumulative Impacts.

"Cumulative Impact", in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to existing and reasonably foreseeable impacts eventuating from similar or diverse activities[4].

The role of the cumulative assessment is to test if such impacts are relevant to the proposed project in the proposed location (i.e. whether the addition of the proposed project in the area will increase the impact). This section should address whether the construction of the proposed development will result in:

- Unacceptable risk
- Unacceptable loss
- Complete or whole-scale changes to the environment or sense of place
- Unacceptable increase in impact

The specialist is required to conclude if the proposed development will result in any unacceptable loss or impact considering all the projects proposed in the area.

Example of a cumulative impact table:

Nature: Complete or whole-scale changes to the environment or sense of place (example)

Nature: **[Outline and describe fully the impact anticipated as per the assessment undertaken]**		
	Overall impact of the proposed project considered in isolation	**Cumulative impact of the project and other projects in the area**
Extent	Low (1)	Low (1)
Duration	Medium-term (3)	Long-term (4)
Magnitude	Minor (2)	Low (4)
Probability	Improbable (2)	Probable (3)
Significance	**Low (12)**	**Low (27)**
Status (positive or negative)	Negative	Negative

[4] Unless otherwise stated, all definitions are from the 2014 EIA Regulations, as amended, GNR 326

Reversibility	High	Low
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	Yes
Confidence in findings: High.		
Mitigation: "Mitigation", means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible. Provide a description of how these mitigation measures will be undertaken keeping the above definition in mind.		

Environmental Management Plan Table format

Measures for inclusion in the draft Environmental Management Programme must be laid out as detailed below:

OBJECTIVE: Description of the objective, which is necessary in order to meet the overall goals; these take into account the findings of the environmental impact assessment specialist studies

Project component/s	List of project components affecting the objective
Potential Impact	Brief description of potential environmental impact if objective is not met
Activity/risk source	Description of activities which could impact on achieving objective
Mitigation: Target/Objective	Description of the target; include quantitative measures and/or dates of completion

Mitigation: Action/control	Responsibility	Timeframe
List specific action(s) required to meet the mitigation target/objective described above	Who is responsible for the measures	Time periods for implementation of measures

Performance Indicator	Description of key indicator(s) that track progress/indicate the effectiveness of the management plan.
Monitoring	Mechanisms for monitoring compliance; the key monitoring actions required to check whether the objectives are being achieved, taking into consideration responsibility, frequency, methods and reporting

APPENDIX C

PGS HERITAGE TEAM CVs

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, and 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 the 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, Mauritius, Malawi, Zambia, Mozambique, and the Democratic Republic of the Congo

PROFESSIONAL CURRICULUM FOR MICHELLE SACHSE

Archaeologist for PGS Heritage

Summary of Experience

Involvement in various grave relocation projects in the various provinces of South Africa. Expertise in Heritage Impact Assessment Surveys, Historical and Archival Research, Archaeology, and Fieldwork including *inter alia* -

Involvement with various Heritage Impact Assessments,

- Heritage Impact Assessments within Gauteng, Limpopo, Mpumalanga, Free State, North West and the Northern Cape and Western Cape Province.
- Archaeological Walkdowns for various projects.
- Desktop, archival and heritage screening for projects.
- Instrument Survey and recording for various projects.

Heritage Impact Assessments:

- Proposed New Pit for Msobo Coal (Spitzkop Colliery), in Ermelo, within the Mpumalanga Province. **Position:** Heritage Specialist.
- The Proposed Harmony FSS6 Reclamation Pipeline, Welkom, Free State Province. **Position:** Heritage Specialist.
- Heritage Impact Assessment Report, for the Proposed Kalgold Expansion Project between Mafikeng and Vryburg, the North West Province. **Position:** Heritage Specialist.
- Heritage Impact Assessment Report, for the Proposed Chartwell Data Centre Project in Chartwell, Johannesburg, Gauteng Province. **Position:** Heritage Specialist.
- Proposed Development on Portions of the Farm Rondebult 303 JS, Near Kwa-Guqa, Emalahleni Local Municipality, Nkangala District Municipality, Mpumalanga Province. **Position:** Heritage Specialist.

Grave Relocation Projects:

- Report on the Relocation of Graves: Relocation of 22 Graves at Nkomati Anthracite Mine on the Farm Fig Tree 503 JU, near Madadeni Mpumalanga Province.
- Report on the Relocation of Graves: Relocation of 27 Graves Located on the Farm Welstand 55 IS, near Kriel, Mpumalanga Province.
- Report on the Relocation of Graves: Relocation of 6 Graves Located on the Farm Klipfontein 241 IS, near Breyten, Mpumalanga province.
- Report on the Relocation of Graves. Relocation of 68 Graves Located at Erf 4460, 4461 and 4463, Kudube Unit 4, in Hammanskraal, Gauteng Province.

Key Qualifications

2016 - 2019	MA in Archaeology University of Pretoria, Pretoria
2015	BA Honours in Archaeology University of Pretoria, South Africa
2012 - 2014	BA (General) University of Pretoria, South Africa Major subjects: Archaeology and History

Professional Qualifications

Professional Archaeologist - Association of Southern African Professional Archaeologists - Professional Member – No 526

Key Work Experience

- 2020 – to date: Archaeologist - PGS Heritage
- 2018 – 2019: Assistant Manager at the Archaeology Laboratory on South Campus at the University of Pretoria

PROFESSIONAL CURRICULUM FOR NICHOLAS FLETCHER

Archaeologist for PGS Heritage

Summary of Experience

Expertise in Heritage Impact Assessment Surveys, Historical and Archival Research, Archaeology, and Fieldwork including *inter alia* -

Involvement with various Heritage Impact Assessments,

- Heritage Impact Assessments within Gauteng, Limpopo, Mpumalanga, Free State, North-West and the Northern Cape Province.
- Archaeological Walkdowns for various projects.
- Desktop, archival and heritage screening for projects.

Key Qualifications

2022	MA in Archaeology University of Pretoria, Pretoria
2015	BA Honours in Archaeology University of Pretoria, South Africa
2014	BA (General) University of Pretoria, South Africa Major subjects: Archaeology and History

Key Work Experience

- 2021: Archaeologist - PGS Heritage
- 2018 – 2019: Lab Technician for the Archaeology Laboratory at the University of Pretoria