



**PGS**  
**HERITAGE**

## **The proposed Dominion 1 Solar Park**

**On the remaining extent of Portion 18 of the farm Wolwerand 425 IR, City of Matlosana, North West Province**

Heritage Impact Assessment

**Issue Date:** 26 October 2022  
**Revision No.:** 2.0  
**Project No.:** 609HIA



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### **Declaration of Independence**

- I, Wouter Fourie, declare that –
- General declaration:
- I act as the independent heritage practitioner in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting heritage impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in section 38 of the NHRA when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- All the particulars furnished by me in this form are true and correct;
- I will perform all other obligations as expected from a heritage practitioner in terms of the Act and the constitutions of my affiliated professional bodies; and
- I realise that a false declaration is an offence in terms of regulation 71 of the Regulations and is punishable in terms of section 24F of the NEMA.

### **Disclosure of Vested Interest**

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

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A handwritten signature in black ink, appearing to be 'Wouter Fourie', is written over a horizontal line.

### ACKNOWLEDGEMENT OF RECEIPT

<b>Report Title</b>	HIA for the Dominion 1 Solar Park on the remaining Extent of Portion 18 of the farm Wolwerand 425 IR, City of Matlosana, North West Province		
<b>Control</b>	<b>Name</b>	<b>Signature</b>	<b>Designation</b>
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Tel: 021 701 5228

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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 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	Section 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 the course of 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 Terramanzi Group (Pty) Ltd to undertake a Heritage Impact Assessment (HIA) that forms part of the Basic Environmental Assessment (BA) for the proposed Dominion 1 Solar Park on the remaining Extent of Portion 18 of the farm Wolwerand 425 IR, City of Matlosana, North West Province.

A further standalone Palaeontological Desktop Assessment (PDA) was completed for PGS by Dr Elize Butler of Banzai Environmental.

During the fieldwork a total of eight heritage features and resources were identified (**Figure 20**). These consist of one burial ground with approximately 10 graves (**D1-007**) three localities with recent historic structures (**D1-003-006** and **D1-008**) and two low significance archaeological sites (**D1-002** and **D1-005**). See **Figure 19** and the individual site descriptions as contained in **Appendix C**. The field description forms were collected with ArcGIS Survey123 in field software.

### **Historical Structures**

The recent historic structures are all younger than 60 years and varies in preservation from the farmhouse and sheds as utilised by the current owner Mr van Vuuren (**D1-003**) (**Figure 24**), the older warm worker dwelling and large brick and corrugated iron-built barn (**D1-001**) (**Figure 21**) and the remains of a worker dwelling indicated on the 1968 as well as 1982 maps (**D1-008**). The structure and remains of structures are not conservation worthy and contain no cultural or scientific value and is consequently graded as not conservation worthy. ). Of interest is the trigonometric beacon number 197 on the high point of the property (**D1-006**) (**Figure 25**) that is shown on the 1953 map and older than 60 years any alterations or removal of the beacon will require a S34 permit under the NHRA.

The impact on the recent historic structures identified during the fieldwork is calculated as having a LOW significance before and after the implementation of the proposed mitigation measures.

### **Archaeological Site**

Both archaeological sites are characterised by low density scatters of MSA flakes and prepared cores found in areas of rocky outcrops of ferricrete (**D1-002**) and quartzite (**D1-005**) (**Figure 22**). Of interest is the locality of the scatter at **D1-002** that occur on the side of a deflated area that resulted in a pan forming that created the ideal locality for a basecamp for the early inhabitants of the grasslands around the study area some 300 000 years ago (**Figure 23**). Due to the low-density scatter and lack of any other deposits for these two sites they are graded as not conservation worthy.

The possibility of the archaeological resources impacted by the proposed SF cannot be excluded and the project can potentially have a LOW impact without and with mitigation.

### **Burial grounds and graves**

A single burial ground consisting of approximately 10 graves were identified at site **D1-007**. The site was indicated by one of the field rangers on the property. He told the survey team that the burial ground was damaged during the construction of a farm road a while back (**Figure 27**). Some of the graves are still identifiable and consist mainly of stone packed or stone lined grave dressings. A single inscribed concrete headstone was also found with an inscription date of 1944 (**Figure 26**). Due to the cultural and religious significance of burial grounds the site is graded as Grade 3A.

The possibility of the burial ground impacted by the proposed SF cannot be excluded and the project can potentially have a MODERATE impact without mitigation. Implementation of the recommended management and mitigation measures can reduce the impact rating to LOW.

### **Palaeontology**

The proposed Dominion 1 SF is underlain by the Allanridge Formation and the Rietgat Formation (Platberg Group, Ventersdorp Supergroup). According to the PalaeoMap on the South African Heritage Resources Information System (SAHRIS) database, the Palaeontological Sensitivity of the Allanridge Formation is Zero while that of the Rietgat Formation is Moderate (Almond and Pether 2008, SAHRIS website).

The PDA notes that the paleontological significance and potential of the geology of the area is rated as low to zero. The impact significance is rated as LOW before and after mitigation.

### **Mitigation measures**

Mitigation measures are described in **Table 13** of this report.

### **Final project layout Impact Statement**

The final proposed project layout for the Dominion 1 project took the specialist recommendations identified during the various field assessments done during the EIA process into consideration.

From an archaeological and historical structure perspective, the proposed footprint areas have changed the pre- and post-mitigation impact to LOW for the heritage resources identified during the fieldwork.

As such, the recommended mitigation measures as described in the HIA report remain.

We have no objection to the proposed layout.

### **Conclusion**

It is the combined considered opinion of the heritage specialists that the proposed project will have a direct impact on several identified heritage resources rated being of low to high heritage significance.

With the implementation of recommended mitigation measures the overall impact on heritage resources will be reduced to acceptable levels during the activities of the project.

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## TERMINOLOGY AND ABBREVIATIONS

### Archaeological resources

This includes:

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

### Cultural significance

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

### Development

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

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

### Early Stone Age

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

## **Fossil**

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

## **Heritage**

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

## **Heritage resources**

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

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

## **Holocene**

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

## **Late Stone Age**

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

## **Late Iron Age (Early Farming Communities)**

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

## **Middle Stone Age**

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

## **Palaeontology**

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

<b>Abbreviations</b>	<b>Description</b>
AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
CRM	Cultural Resource Management
ECO	Environmental Control Officer
EIA practitioner	Environmental Impact Assessment Practitioner
EIA	Environmental Impact Assessment
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
I&AP	Interested & Affected Party
LSA	Late Stone Age
LIA	Late Iron Age
MSA	Middle Stone Age
MIA	Middle Iron Age
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
PHRA-G	Gauteng Provincial Heritage Resources Authority
PHS	Provincial Heritage Site
PSSA	Palaeontological Society of South Africa
SADC	Southern African Development Community
SAHRA	South African Heritage Resources Agency

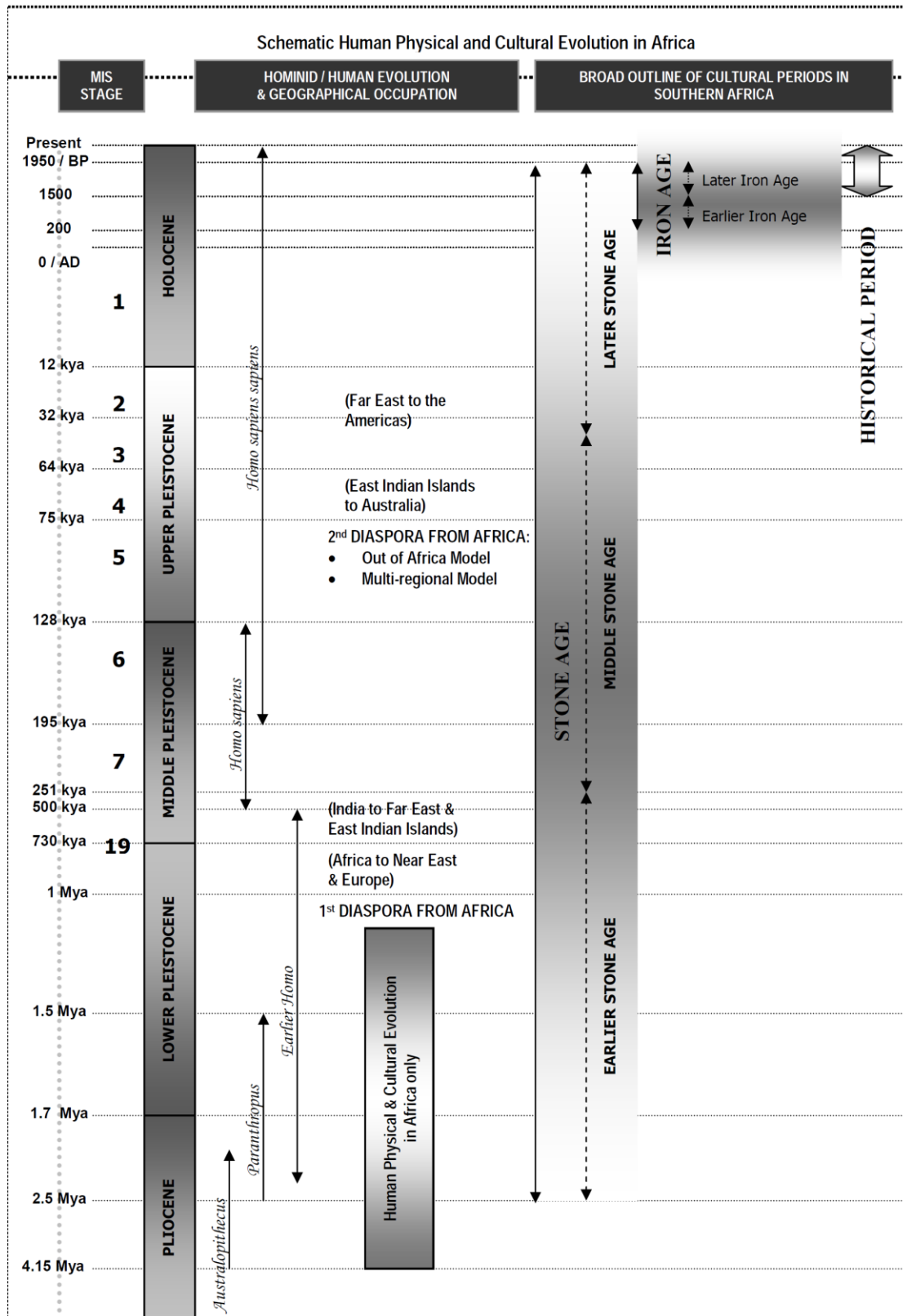


Figure 1 – Human and Cultural Timeline in Africa

# **1 INTRODUCTION**

PGS Heritage (Pty) Ltd was appointed by Terramanzi Group (Pty) Ltd to undertake a Heritage Impact Assessment (HIA) that forms part of the Basic Environmental Assessment (BA) for the proposed Dominion 1 Solar facility (SF) on the remaining Extent of Portion 18 of the farm Wolwerand 425 IR, City of Matlosana, North West Province.

A further standalone Palaeontological Desktop Assessment (PDA) was completed for PGS by Dr Elize Butler of Banzai Environmental.

## **1.1 Scope of the Study**

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

## **1.2 Specialist Qualifications**

This HIA Report was compiled by PGS Heritage (PGS).

The staff at PGS has a combined experience of nearly 70 years in the heritage consulting industry. PGS and its staff have extensive experience in managing HIA processes. 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).

## **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 area. Various factors account for this, including the subterranean nature of some archaeological sites and existing vegetation cover. It should be noted most of the study area was accessible for the fieldwork survey.



Fieldwork was also focussed on area that was not previously ploughed or disturbed by farming activity, thus focussing on areas with the highest potential to yield heritage resources.

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 make an assessment as to the significance of the site (or material) in question. This applies to graves and cemeteries as well. If any graves or burial places are located during the development, the procedures and requirements pertaining to graves and burials will apply as set out below.

#### 1.4 Legislative Context

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

- 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 noted.

*Table 1: Reporting requirements for GN648*

GN 648	Relevant section in report	Where applicable in this report	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,	4.1	-	

GN 648	Relevant section in report	Where not applicable in this report
such as new developments, infrastructure, indigenous/pristine vegetation, etc.		
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 HIA 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 specifically impacted on 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 Dominion 1 SF is located 4 km to the west of the town of Klerksdorp on the N12 national highway in the City of Matlosana, North West Province (**Figure 2**).

#### 2.1.1 Site Description

The application area is situated on the remainder or portion 18 of the farm Wolwerand 425 IR with a footprint area of approximately 250ha (**Figure 2**).

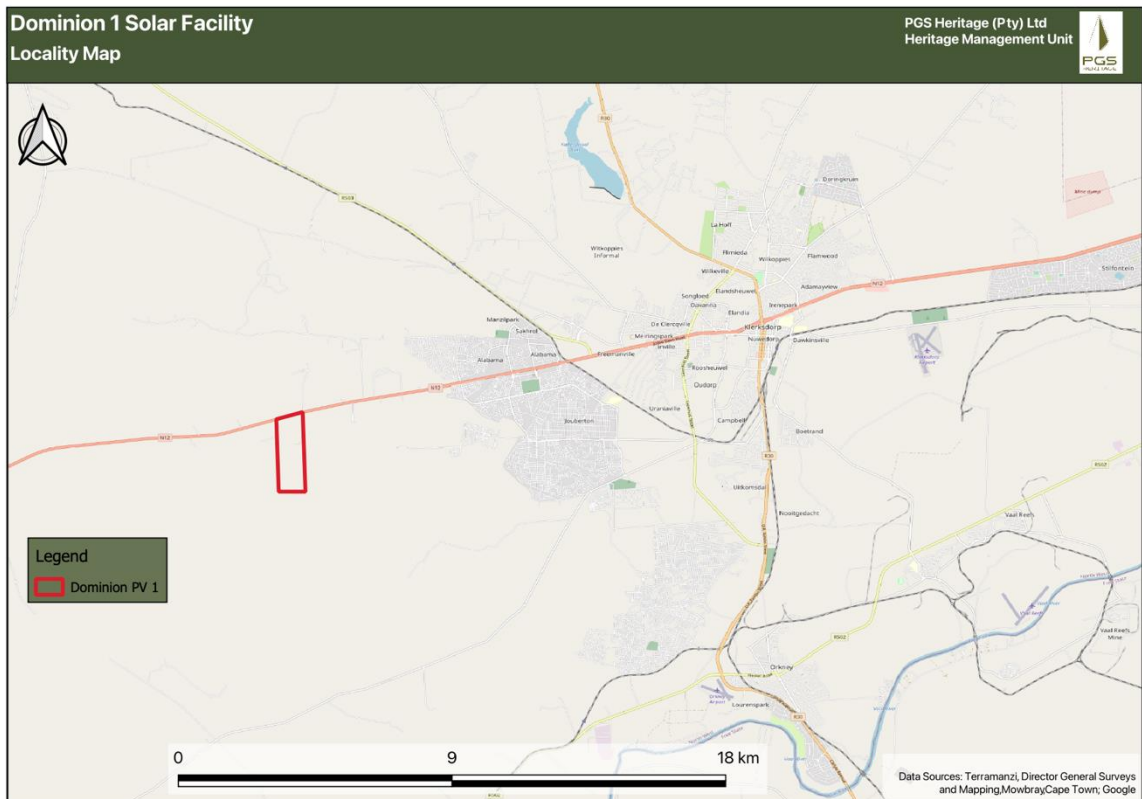


Figure 2 - Regional Locality of study area (red polygon)

## 2.2 Technical Project Description

### 2.2.1 Project description

The Applicant (Dominion Solar PV Cluster 1-3) intends to establish 3 x 240MW Photovoltaic Solar Energy Facility (PVSEF) Projects. Three (3) separate NEMA Permitting Processes are required to align with their commercial and lender requirements. The project is in a Renewable Energy Development Zone (REDz).

The project proposes solar arrays of up to 12.5 Ha (subject to change during detailed design) consisting of multiple inverters and solar PV modules mounted on single axis trackers which are at a height of up to 6m. Tier 1 Bifacial modules with a linear power warranty will be utilised. The project further proposed the establishment of an operations and maintenance (O&M) building and workshop, IPP Substation, Eskom distribution/collector station and BESS per project. A 300MWh BESS per project is proposed. The final interconnection/ grid connection solution will be dependent on the requirements of Eskom which is still to be defined.

### 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 for the proposed Dominion 1 SF. 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 (between 19 and 21 April 2022), 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 - <10/50m<sup>2</sup>
  - Medium - 10-50/50m<sup>2</sup>
  - High - >50/50m<sup>2</sup>
- Uniqueness; and
- Potential to answer present research questions.

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

A - No further action necessary;

B - Mapping of the site and controlled sampling required;

C - No-go or relocate development activity position;

D - Preserve site, or extensive data collection and mapping of the site; and

E - Preserve site.

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

### 3.1.1 Site Significance

Site significance classification standards use is based on the heritage classification of s3 in the NHRA and developed for implementation keeping in mind the grading system approved by SAHRA for archaeological impact assessments. The update classification and rating system as developed by Heritage Western Cape (2021) is implemented in this report

Site significance classification standards prescribed by the Heritage Western Cape Guideline (2016), were used for the purpose of this report (**Table 2** and **Table 3**).

Table 2: 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 fulfils one of the criteria set out in section 3(3) of the Act but that does not fulfil the criteria for Grade II status. Grade III sites may be formally protected by placement on the Heritage Register.		
IIIA	Such a resource must be an excellent example of its kind or must be sufficiently rare. Current examples: Varschedrift; Peers Cave; Brobartia Road Midden at Bettys Bay	Resource must be retained. Specific mitigation and scientific investigation can be permitted in certain circumstances with sufficient motivation.	High Significance
IIIB	Such a resource might have similar significances to those of a Grade III A resource, but to a lesser degree.	Resource must be retained where possible where not possible it must be fully investigated and/or mitigated.	Medium Significance
IIIC	Such a resource is of contributing significance.	Resource must be satisfactorily studied before impact. If the recording already done (such as in an HIA or permit application) is not sufficient, further recording or even mitigation may be required.	Low Significance

<b>Grading</b>	<b>Description of Resource</b>	<b>Examples of Possible Management Strategies</b>	<b>Heritage Significance</b>
NCW	A resource that, after appropriate investigation, has been determined to not have enough heritage significance to be retained as part of the National Estate.	No further actions under the NHRA are required. This must be motivated by the applicant or the consultant and approved by the authority.	No research potential or other cultural significance

Table 3: Rating system for built environment resources

<b>Grading</b>	<b>Description of Resource</b>	<b>Examples of Possible Management Strategies</b>	<b>Heritage Significance</b>
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 local level.	High Significance
IIIB	Such a resource might have similar significances to those of a Grade III A resource, but to a lesser degree. These are heritage resources which are significant in the context of a townscape, neighbourhood, settlement or community.	Like Grade IIIA buildings and sites, such buildings and sites may be representative, being excellent examples of their kind, or may be rare, but less so than Grade IIIA examples. They would receive less stringent protection than Grade IIIA buildings and sites at local level.	Medium Significance

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage 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

### 3.2 Methodology used in determining the significance of environmental impacts

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

## 4 CURRENT STATUS QUO

### 4.1 Site Description

The proposed Dominion 1 SF footprint area is characterised by flat grass land divided into various grazing camps by various barbed wire fences (**Figure 3 to Figure 6**). Large tracks of the property were previously ploughed for crop cultivation since the early 1940s and 1960s as is evident from historic aerial photographs (**Figure 8 and Figure 9**).

The central eastern and central western part of the property is characterised by two natural pans or topographical deflations resulting in saturated soils.



*Figure 3 – View from the centre of the property towards the northeast*



*Figure 4 – View from the centre of the property towards the east*



*Figure 5 – Tall grass pastures in the central western section of the property*

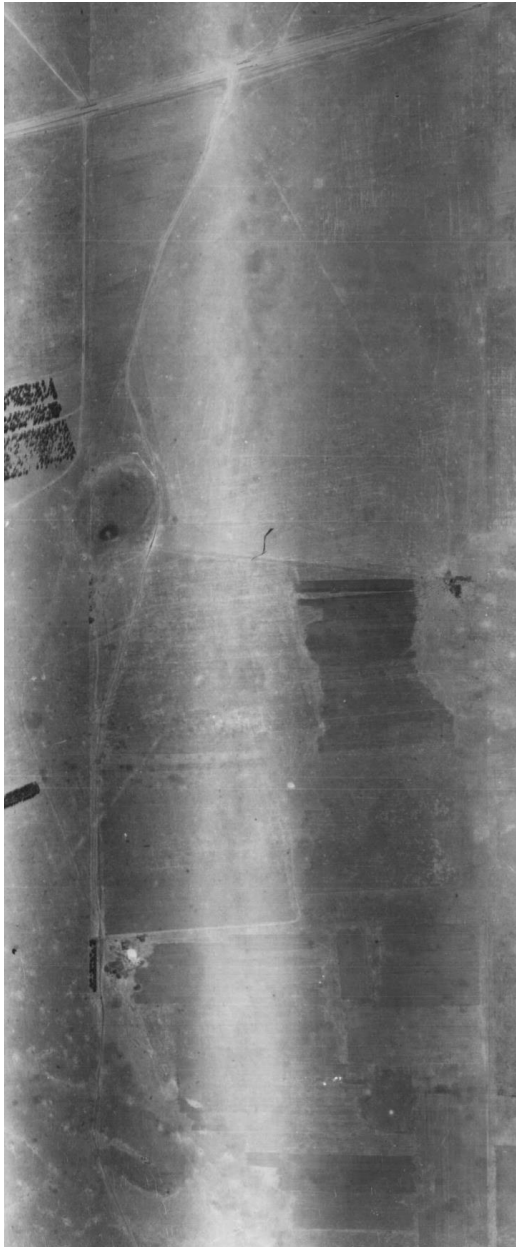


*Figure 6 – View of north-eastern section of the property towards the N12*



*Figure 7 – View of watering hole in southern section of the proposed area*





*Figure 8 – Aerial photograph dated 1944, ploughed fields are visible in the southern section of the property*






*Figure 9 – Aerial photograph 1963 indicating most of the property cultivated or disturbed*

#### **4.2 Overview of the study area and surrounding landscape**

<b>DATE</b>	<b>DESCRIPTION</b>
2.5 million – 250 000 years ago	<p>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 and 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.</p> <p><i>No ESA sites are known from the vicinity of the study area</i></p>

DATE	DESCRIPTION
250 000 to 40 000 years ago	<p>The Middle Stone Age is the second oldest phase identified in South Africa's archaeological history. This phase is associated with flakes, points and blades manufactured by means of the so-called 'prepared core' technique.</p> <p><i>No MSA sites are known from the vicinity of the study area</i></p>
40 000 years ago to the historic past	<p>The Later Stone Age is the third archaeological phase identified and is associated with an abundance of very small artefacts known as microliths. A well-known feature of the Later Stone Age is rock art in the form of rock paintings and engravings.</p> <p><i>No LSA sites are known from the vicinity of the study area</i></p>
AD 1500 – AD 1700	<p>The Olifantspoort facies of the Moloko Branch of the Urewe Ceramic Tradition is the first Iron Age facies to be identified within the surroundings of the study area. The key features of the decoration used on the ceramics from this facies include multiple bands of fine stamping or narrow incision separated by colour (Huffman, 2007).</p>
AD 1700 – AD 1840	<p>The Thabeng facies of the Moloko Branch of the Urewe Tradition is the next Iron Age period to be identified within the surroundings of the study area. The decoration on the ceramics associated with this facies is characterised by incised triangles, coloured chevrons and arcades (Huffman, 2007).</p>
AD 1700 – AD 1840	<p>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. The key features on the decorated ceramics include rim notching, broadly incised chevrons and white bands, all with red ochre (Huffman, 2007).</p>
1823 – 1827	<p>During the Difaqane the Khumalo Ndebele (or Matabele) of Mzilikazi established themselves along the banks of the Vaal River (Bergh, 1999). In c. 1827 the Matabele moved further north and settled along the Magaliesberg Mountain and five years later in 1832 settled along the Marico River.</p>
1836 – 1840	<p>The first Voortrekkers started crossing over the Vaal River (Bergh, 1999) and in terms of the direct surroundings of the study area established themselves along the banks of the Schoonspruit during this time. One of the first Voortrekkers to arrive in the area was C.M. du Plooy. Shortly thereafter a group consisting of twelve families under the leadership of H.J. van der Merwe also established themselves in the general vicinity (Du Plessis, 1952). The land next to Schoonspruit was later to become the farm Elandsheuvel (today known as Oudorp). They established a town which they called "Clercqsdorp" after the first magistrate north of the Vaal River, Jacob De Clercq.</p>
1839	<p>The district of Potchefstroom was established in this year (Bergh, 1999). The study area fell within this district at the time.</p>
16 December 1841	<p>The farm Hartebeestfontein (known at the time as Stinkhoutboom) was inspected by G.J. Kruger on this day (RAK, 2875). Kruger was to become the Commandant-General of the Zuid-Afrikaansche Republiek during the 1850s and must have held an official position during this time. The farm was inspected for Christiaan Theunissen but this was opposed by Marthinus Wessel Koekemoer.</p> <p>On the same day the farm Buffelsfontein was also inspected by G.J. Kruger (RAK, 2876).</p>
1850	<p>Although the exact date for the establishment of the town of Klerksdorp is not known, the first depiction of a town on the banks of the Schoonspruit was on an archival map dated to 1850.</p>

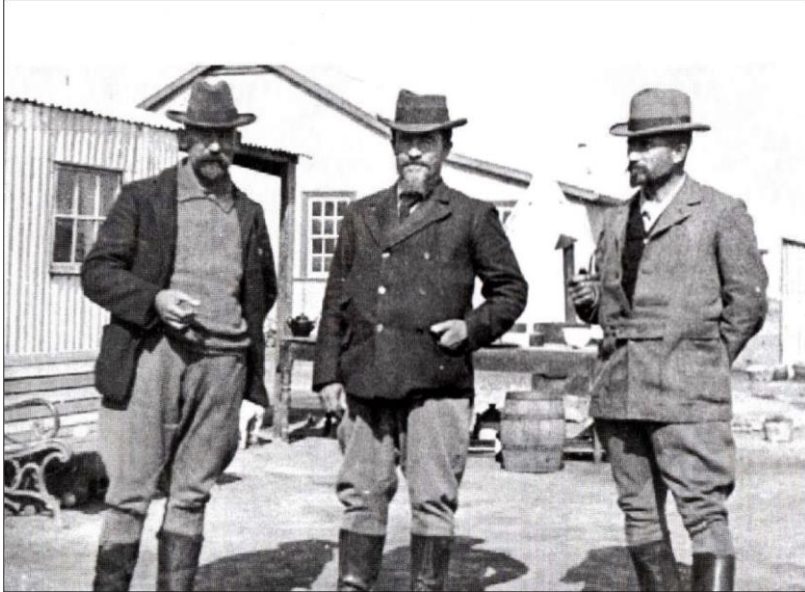
DATE	DESCRIPTION
	 <p data-bbox="635 748 1342 808"><i>Figure 10 - Early photograph depicting Klerksdorp's Oudorp (National Archives, Photographs, 163420).</i></p>
14 December 1853	<p data-bbox="563 813 1414 931">The farm Hartebeestfontein was officially transferred to Marthinus Wessel Koekemoer (RAK, 2875). Koekemoer owned the farm for nearly 20 years until 21 July 1871. Local place names such as Koekemoer Station and the Koekemoer Spruit were named after him.</p>
12 May 1859	<p data-bbox="563 936 1414 1267">The farm Buffelsfontein was transferred to Johannes Petrus Pretorius (RAK, 2876). Pretorius was a Voortrekker who was born on 25 December 1782 on his farm in Tulbagh in what is today known as the Western Cape. He died on 8 June 1861 at his farm Buffelsfontein (Visagie, 2000). A portion of the farm was transferred from Pretorius to Petrus Johannes Vermaas and William John Dunn with the remaining portion transferred to Gerhardus Dirk Pretorius after the death of Johannes Petrus Pretorius. Vermaas owned his portion of the farm until 1875 (RAK, 2876). It is evident that the Vermaas Drift over the Vaal River situated adjacent to the farm Buffelsfontein was named after Petrus Johannes Vermaas.</p>
1865	<p data-bbox="563 1272 1414 1373">Messrs. James Taylor and Thomas Leask established the first business in Klerksdorp in this year. Tomas Leask became an important businessman in Klerksdorp.</p>  <p data-bbox="571 1868 1406 1928"><i>Figure 11 - The shop that Taylor and Leask established in Klerksdorp's Oudorp (Marx, 1987:15).</i></p>
November 1885	<p data-bbox="563 1933 1414 2020">During this time Martinus Gerhardus Jansen van Vuuren of the farm Ysterspruit wrote a letter to President S.J.P. Kruger indicating that he had discovered gold on his farm. He also submitted samples of what he</p>

DATE	DESCRIPTION
	<p>had discovered with the letter for analysis. The government of the Zuid-Afrikaansche Republiek wrote back to state that the samples that he submitted were rich in gold and silver (Marx, 1987). This discovery at Ysterspruit can therefore be seen as the first discovery of gold in the neighbourhood of Klerksdorp. The farm Ysterspruit is located approximately 10km south of the study area.</p>  <p><i>Figure 12 - Marthinus Gerhardus Jansen van Rensburg (Marx, 1987:17).</i></p>
1887	The second important discovery of gold in the Klerksdorp area, and the discovery that is more commonly known, is the gold discovered by A.P. Roos on a low hill known as Town or Railway Hill (Guest, 1938).
1887 – 1888	During this time Thomas Leask was prospecting for gold on the farms Roodepoort (also known as Strathmore) and Nooitgedacht. He found the results so promising that he ordered a five stamp mill from England and erected it on the banks of the Schoonspruit, not far from the homestead on Strathmore. During these early years this mill was used by various mining companies from the surrounding area, with the ore transported by ox wagon to the mill site (Guest, 1938).
1889	<p>This year saw a flurry of gold mining companies being established. These include a number of mines on the farm Nooitgedacht such as the Ariston, Nooitgedacht and Wilkinson Mines (Guest, 1938).</p> <p>The Buffelsdoorn Estate and Gold Mining Company was also established in 1889. At the time the mining company controlled portions of the farms Buffelsdoorn, Rietfontein, Request, Eleazar, Rietkuil East, Palmietfontein and also a portion of the farm Stilfontein. Furthermore, the company also owned coal rights on the farm Hartebeestfontein which it had acquired from the Klerksdorp Coal Syndicate. This latter coal mine was located near the Koekemoer Station and was known as the Buffelsdoorn Collieries (Guest, 1938).</p>

DATE	DESCRIPTION
1895	Jack Scott, who with his father Charles, had undertaken prospecting and mining operations on their farm Strathmore (Roodepoort), obtained an option on the farm Stilfontein in 1895 (Erasmus, 2004).
1896	From the information provided above it is evident that the present study area did not focus strongly in the early development of mining in the vicinity of Klerksdorp. A map that was published in Charles Sydney Goldmann's South African Mines: Their Position, Results and Developments (1895/1896) supports this and indicates that none of the farms forming part of the present study area were part of the Klerksdorp (Schoonspruit) Goldfields.
1897	The Nederlandsche Zuid-Afrikaansche Spoorweg Maatschappij (NZASM) completed the so-called South-Western Line in 1897 thereby linking the Witwatersrand with Klerksdorp. The line was opened to traffic in August 1897 and comprised the following stations: Randfontein, Bank, Welverdiend, Frederikstad, Potchefstroom, Machavie, Koekemoer and Klerksdorp (De Jong et.al., 1988). The railway line is still located a short distance north of the study area with Koekemoer Station the closest of the stations along this line to the present study area. Koekemoer Station is located 5.2km north-west of the study area (Erasmus, 2004).
1899 – 1902	<p>During the South African War (1899-1902) a number of battles and skirmishes were fought in the wider area, though none inside the present development area. Examples of battles from the surrounding landscape include a Boer attack on Klerksdorp on 29 January 1901 that was repulsed by the Northamptonshire regiment (Gurney and Jervois, 1935). Klerksdorp is located roughly 9km west of the study area. However, a number of events associated with the Boer War took place in closer proximity to the study area.</p> <p>At the onset of hostilities town of Klerksdorp was naturally in Boer hands. On 8 June 1900 it was occupied by Captain Lambart and a small British force. Less than two months later, on 25 July 1900, the town was retaken by a Boer Commando under General Liebenberg. On 16 November 1900 Klerksdorp was occupied again by the British, and in this instance by a force under the command of General Douglas. For the remainder of the war the town would remain in British hands (Marx, 1987).</p> <p>It is known that on 2 August 1900 Colonel Younghusband with the 3rd Battalion Imperial Yeomanry and a section of the Northamptonshire were ordered to Vermaas Drift. This force stayed at the drift until 6 August 1900 when they were ordered to join the main body further to the east (Amery, 1909). Other references to these drifts during the war years include a report in the Sydney Morning Herald of 15 December 1900 that Privates F.W. Mohr and A. Moran of the New South Wales Regiment of the Imperial Bushmen went missing after a skirmish at Wolmaran's Drift on (or before) 14 December 1900. Both individuals later returned to their unit (The Advertiser, 19 December 1900).</p> <p>Between December 1900 and March 1901, the 58th Northamptonshire Regiment was placed in defensive positions around Klerksdorp. While its headquarters comprising A and G Companies under the command of Colonel H.C. Denny were at Klerksdorp, D and E Companies under the command of Captains Skinner and Ripley were placed at Coal Mine Bridge (at present-day Orkney) with F and H Companies under the command of Major Fawcett positioned at Koekemoer Station, B Company commanded by Captain A.A. Lloyd at Wolmaran's Drift and C Company under the command of Captain C.S. Pritchard at Vermaas Drift (Gurney and Jervois, 1935).</p>

DATE	DESCRIPTION
	<div data-bbox="560 271 1382 860" data-label="Image"> </div> <p data-bbox="579 875 1401 999"><i>Figure 13 - Captain Arthur Athelwold Lloyd (left) and Major Charles Steward Pritchard (right) were the respective commanding officers at Wolmaran's Drift and Vermaas Drift between December 1900 and March 1901 (Northampton Museum Service).</i></p> <p data-bbox="560 1028 1414 1547">Further evidence for the presence of British forces within the surroundings of the study area during the war was found in archival documents relating to compensation claims submitted after the war. In a claim submitted by the New Ariston Gold Mines (National Archives, CJC, 35, 656) it is indicated that a column under General Elliot and Colonel Byng had been encamped on the farm Nooitgedacht in the vicinity of the New Ariston Gold Mine for some time during the war. According to another document there also were a number of blockhouses manned by British troops in the area during the war (CJC, 128, 2493). Furthermore, according to the compensation claim submitted by Izak Johannes Koekemoer (National Archives, CJC, 994, 925), the Koekemoer farmstead on the farm Hartebeestfontein was destroyed by members of C Squadron Imperial Light Horse under the command of Captain Nommand on or about 30 November 1900. Apart from the farmhouse that was destroyed, a number of livestock and other farm animals were also taken away or destroyed. At the time this unit under Captain Nommand was holding Koekemoer Station.</p> <p data-bbox="560 1581 1414 1854">From a collection of photographs that was put up for sale on the internet (<a href="http://www.antiquarianauctions.com">www.antiquarianauctions.com</a>), it is evident that a blockhouse was located at Koekemoer Station during the war. A black concentration camp was also located near Koekemoer Station (see for example Warwick, 1983). It is not presently known exactly where this camp was located, but in all likelihood, it would have been situated in close proximity to the station itself. It is possible that the intensive mining and related development which have taken place in the vicinity of Koekemoer Station would have destroyed the camp.</p> <p data-bbox="560 1888 1414 2033">Closer to the study area the some 7km to the south of the study area a British convoy came under attack from a Boer force of approximately 900 men on the 25<sup>th</sup> of February 1902. The British convoy consisted of approximately 490 men under the command of Lt-Col William Anderson. The main Boer force commanded by Genl. Koos de la Rey was joined</p>



DATE	DESCRIPTION
	<p>by an additional 500 men under the command of Genl. Cilliers. The combined Boer force, forced the surrender of the British convoy with the loss of 187 British and 51 Boer soldiers.</p> <p>On 9 and 10 April 1902 representatives of the Transvaal Republic (Z.A.R.) and the Republic of the Orange Free State met on the banks of the Schoonspruit at Klerksdorp. The Transvaal delegation comprising Vice-President Schalk Burger, State Secretary F.W. Reitz, Commandant-General Louis Botha, General Koos de la Rey, General L.J. Meyer and General J.C. Krogh were accommodated in the Nieuwe Dorp. The Free State delegation comprising President Steyn, Commandant-General Christiaan de Wet, State Secretary J.W.C. Brebner, General J.B.M. Hertzog and General C.H. Olivier was accommodated in the Oude Dorp. The meeting was conducted with the knowledge of the British High Command. The aim of the meeting was for the representatives of the two Boer Republics to discuss the status of the war and to establish whether peace should be negotiated with the British (Raath, 2007). The meeting was the first step toward the final peace settlement on 31 May 1902 at Vereeniging.</p>  <p><i>Figure 14 - This photograph was taken during the peace negotiations at Vereeniging and show three members of the Free State delegation at the Klerksdorp meeting of April 1902 namely (from left to right) State Secretary J.W.C. Brebner, Commandant-General C.R. de Wet and General J.B.M. Hertzog (Van Schoor, 2007).</i></p>
1930s	<p>During the 1930s a person by the name of Alexander Bisset Lucas put together a parcel of mineral right options known as Lucas Block. This parcel of mineral right options would become very significant in the later mining history of the landscape within which the study area is located (Antrobus, 1986), with mines such as Stilfontein, Buffelsfontein and Hartebeestfontein established on this block. Interestingly, Lucas had acquired a portion of the farm Buffelsfontein in 1917 from one Mark Donaldson (RAK, 2876) and named it Shenfield after the farm near Grahamstown where he grew up. The portion of the farm Buffelsfontein which Lucas had obtained was located directly north of the Vaal River on the section of the farm situated to the west of Vermaas Drift and outside of the present study area.</p>

DATE	DESCRIPTION
1935	The Klerksdorp District was established, and the study area now fell within this district (Bergh, 1999). At the time the eastern section of the present study area still fell within the Potchefstroom District.
c. 1945	<p data-bbox="560 331 1409 824">During the latter stages of the Second World War (1939 – 1945) the American and British scientists working on the production of nuclear weapons as part of the Manhattan Project realised that although they were able to obtain enough uranium for their immediate uses from places such as the Belgian Congo and Canada, more uranium would be required from other places as well (Groves, 1962). One of the scientists on the Manhattan Project was Professor G.W. Bain of the Amherst College, Massachusetts (Jones, 1995). During this time Professor Bain remembered that he had ore samples from the Witwatersrand in his private collection which he had collected during a visit to South Africa in 1941. He conducted tests on these samples and to his excitement realised that they emitted beta rays which in turn meant that the Witwatersrand gold mines could become another source for uranium (Jones, 1995) (Groves, 1962). This was the start of the uranium industry of South Africa and by 1959 the country had become a major world producer in uranium (Bhushan &amp; Katyal, 2002).</p> <p data-bbox="560 860 1409 940">A number of gold mines in the Klerksdorp that were established during the 1950s such as Buffelsfontein and Hartebeestfontein were significantly associated with the production and export of uranium.</p>

#### 4.2.1 Archival and historical maps

The examination of historical data and cartographic resources represents a critical tool for locating and identifying heritage resources and in 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 (1953 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 study area was overlain on the map sheets to identify structures or graves situated within or immediately adjacent to the study area that could possibly be older than 60 years and thus protected under Section 34 and 36 of the NHRA.

#### 4.2.2 Bloemhof, 1900

(University of Cape Town Libraries, South Africa)

The map depicted in **Figure 15** below is titled “Bloemhof”. It was compiled by John Wood for the Field Intelligence Department. The map dates from 1900. On it is indicated the Klerksdorp Goldfields as well as the farms “Wolverand” and Rietkuil.



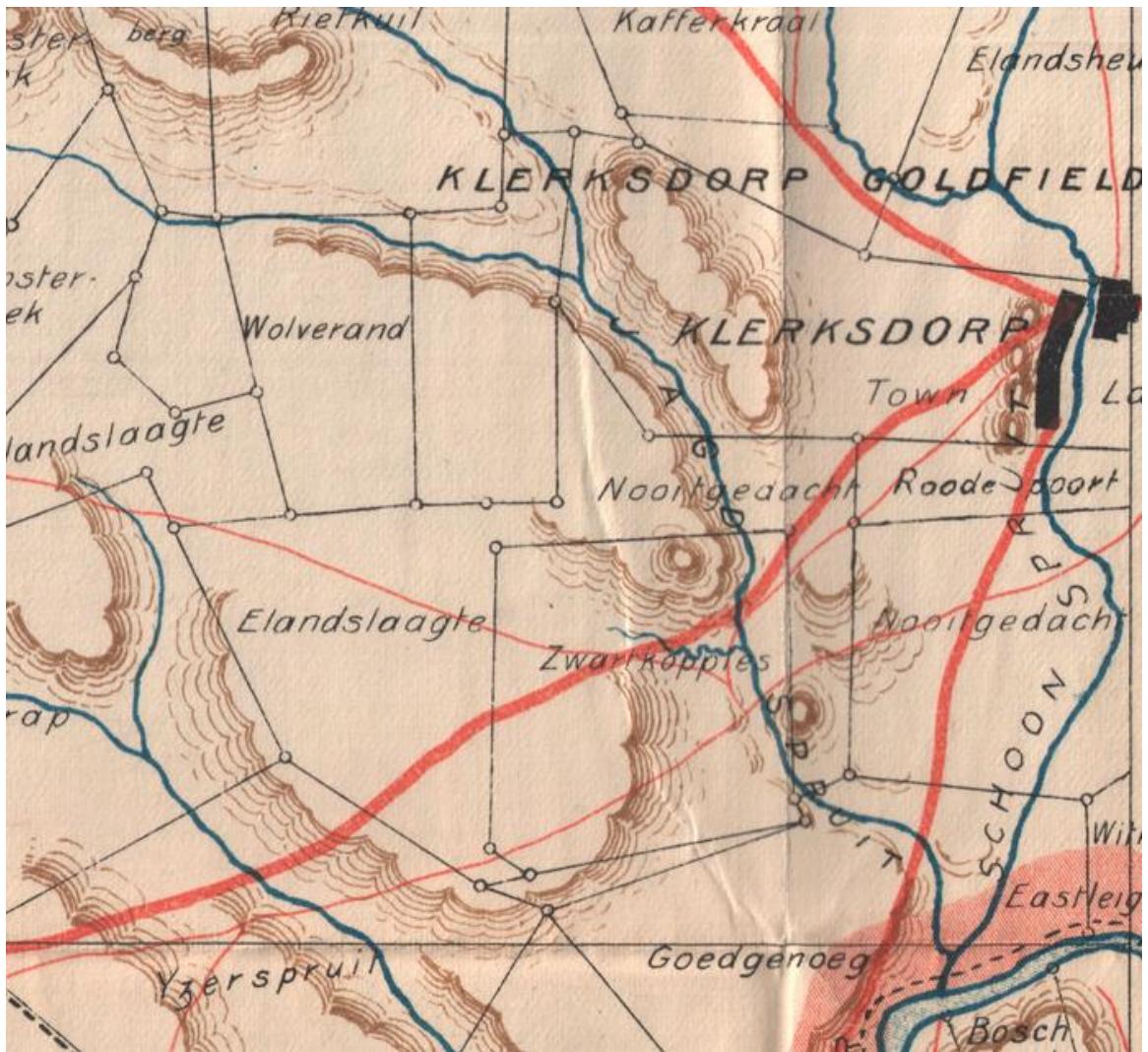


Figure 15 - Section of the 1900 Bloemhof map highlighting the names of the Wolverand, Rietkuil and Elandslaagte farms (University of Cape Town Libraries, South Africa).

#### 4.2.3 First edition of the 2626DC Klerksdorp topographical map dated to 1953

The 2626DC map sheet was based on the 1944 aerial photography, surveyed in 1953 and drawn by in 1957 (**Figure 16**). This map sheet shows a single structure within the study area. The position of this structures correlates with the area where heritage feature **D1-001** was identified during the fieldwork. It is possible that some of the structures in the vicinity can be at least sixty-nine years old.

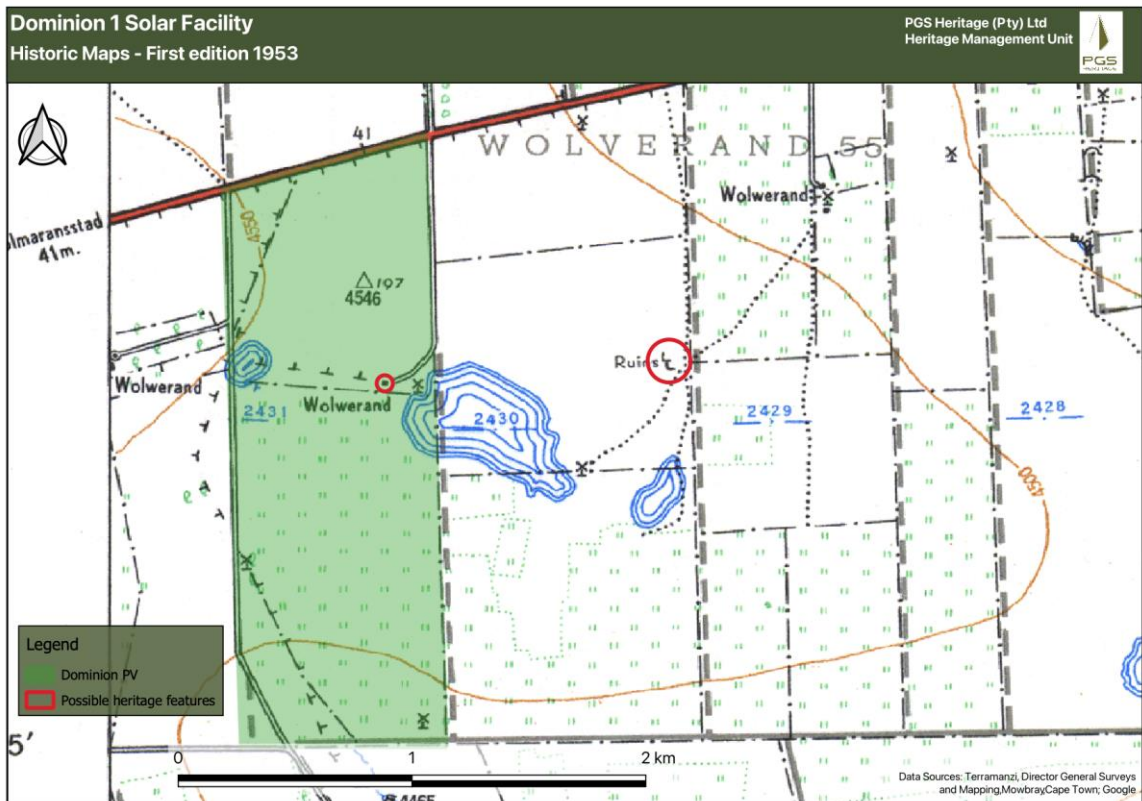


Figure 16 - Section of First Edition of the 2626DC Topographical Map, showing a single structure on the western side of a pan.

#### 4.2.4 Second edition of the 2626DC Klerksdorp topographical map dated to 1968

The 2626DD map sheet was published by the Chief Directorate based on 1966 aerial photography and surveyed in 1968. This map sheet shows several structures within the study area. Overlays of the study area components over this map sheet are provided in **Figure 17**. All these identified sites are likely to be younger than 60 years old, except or the one structure identified in the 1953 map. Sections of the study area are depicted as agricultural areas.

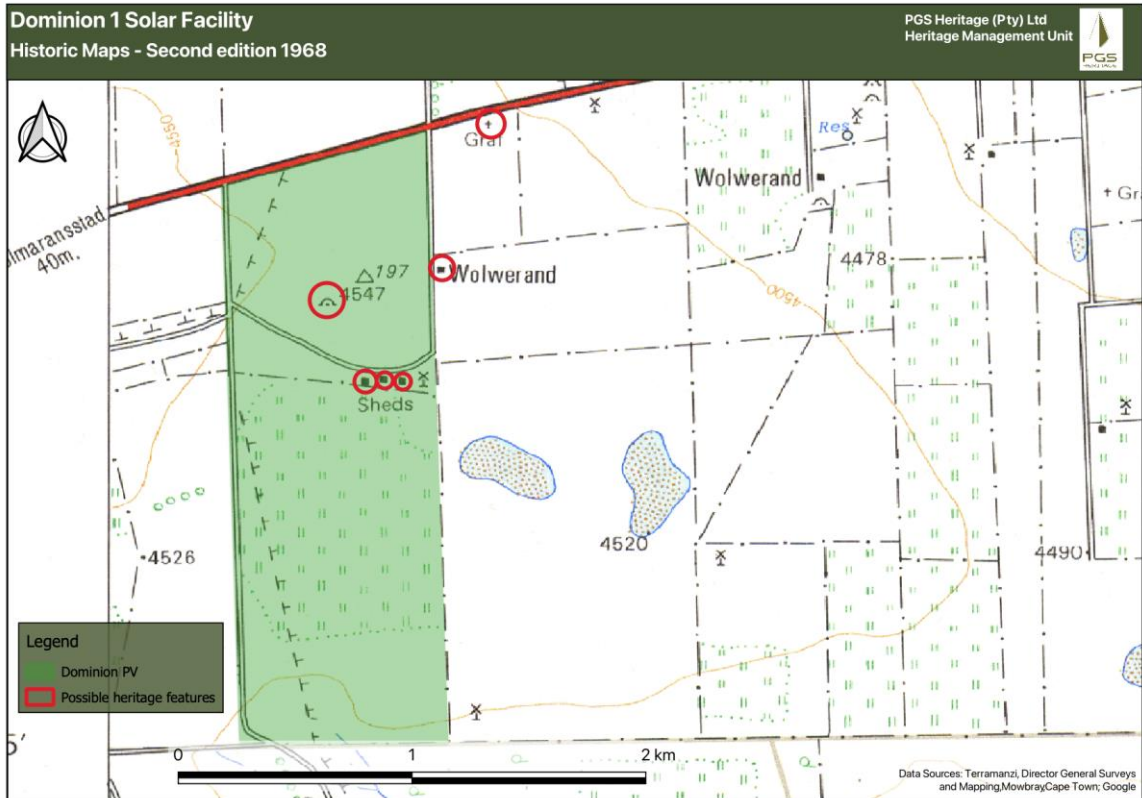


Figure 17 - Section of the Second Edition of the 2626DC Topographical Sheet, showing several structures (red polygon) located within the study area

#### 4.2.5 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 study area. In each case, the results of each study are shown in bold. These previous studies are listed below in ascending chronological order:

- Dreyer, K. 2005. Archaeological and Historical Investigation of the Proposed Residential Developments on Subdivision 13 of the farm Pretoriuskraal 53, Viljoenskroon, Free State

During this fieldwork, only the area around the house was surveyed on foot. **The cleaned area around the house did not produce any archaeological or cultural remains.** This 2005 study area was located roughly 10 km south-west of the current study area.

- Pistorius, J.S.S. 2011. A Phase I Heritage Impact Assessment (HIA) Study for a Proposed Tailings Reclamation Project near the Mine Village of Stilfontein in the North West Province of South Africa. For Ground Water Consulting Services.

The study area for this project comprised two options for the proposed development, namely a property north-east of the town of Stilfontein as well as the general area where the Kareerand Tailings Storage Facility is currently located. **During the fieldwork, numerous cemeteries, and historical structures (in the form of black homesteads) were identified.**

- Coetzee, F. 2012. Cultural Heritage Survey of the Proposed Kabi Vaalkop PV Solar Facility, near Orkney, Dr Kenneth Kaunda District, North West Province. For Savannah Environmental (Pty) Ltd.

The site for this 2012 study was situated 5km east of Orkney. The survey area consisted of three portions which are associated with three phases of the project. A fourth phase consisted of a substation and power line. The combined survey area was situated on the following farm portions: a portion of the farm Vaalkop 439 IP, Portion 7 of the farm Vaalkop 439 IP, a portion of Portion 3 of the farm Vaalkop 439 IP and a portion of Portion 200 of the farm Nooitgedacht 434 IP. **No archaeological sites or material and no graves were identified. Two demolished historical structures were identified but these were assessed to be less than 60 years old. The study area for this 2012 project was located roughly 8 km south-west of the current study area.**

- Birkholtz, P.D. 2014. Heritage Inventory of the Mines Waste Solutions (MWS) Areas located on certain portions of the farms Stilfontein 408 IP, Kromdraai 420 IP, Hartebeestfontein 422 IP, Modderfontein 440 IP, Buffelsfontein 443 IP and Kareerand 444 IP, to the east and south-east of Klerksdorp, North West Province. For AngloGold Ashanti Limited.

This heritage inventory was aimed at compiling a database of known heritage sites from within the Mine Waste Solutions (MWS) areas. As such, a field survey was undertaken of these areas. It must be noted that this field survey was not aimed at a walkthrough of the entire study area, but rather to visit known sites for inclusion in the heritage inventory. The significance of each site was established and general mitigation and conservation recommendations made. **During the fieldwork, a total of 34 heritage sites were identified. These included cemeteries, historic structures (such as farmsteads, farm buildings and farm worker homesteads), a mining accident monument as well as a Stone Age site. Due to the extent of the study area, these sites were identified over a reasonably extensive area which ranged from the surroundings of Stilfontein to the current study area.**

- Miller, S. 2015. Cultural Heritage Impact Assessment for Shafts #1 to #7, Orkney, Northwest Province, South Africa. For CAPM Gold.



The seven sites and shafts that were investigated by the specialist were procured by CAPM Gold from the Pamodzi Gold Company. It was the intent of the new owners to reinstate gold mining on the sites procured. As part of the environmental impact assessment it was therefore necessary to conduct a heritage impact assessment. **A total of seven sites were investigated, all of which were sites of mine shafts. Three of these sites contained traditional riveted steel headgear, which was dated to the end of the 1930's. The remaining four sites had modern concrete headgear which was dated to the period after c. 1960. The study area for this 2015 project is located roughly 5 km south-west of the current study area.**

- Van der Walt, J. 2016. Archaeological Impact Assessment for the Proposed Buffels Solar 1 Solar Energy Facility, North West province. For Savannah Environmental (Pty) Ltd.

The proposed Buffels Solar 1 project area was located on Portion 1 of the farm Hartebeestfontein 422 IP, close to Orkney and Stilfontein, North West province. **No graves or burial grounds or sites of archaeological significance or structures of historical significance were recorded in the study area, except for some demolished mining architecture. The study area for this 2016 project was located almost immediately adjacent to the current study area close to the western end of the proposed Kareerand RW pipeline.**

- Van der Walt, J. 2016. Archaeological Impact Assessment for the Proposed Buffels Solar 2 Solar Energy Facility, North West province. For Savannah Environmental (Pty) Ltd.

The proposed Buffels Solar 2 project area was located on Portion 57 of the farm Hartebeestfontein 422 IP, close to Orkney and Stilfontein, North West province. **No graves or burial grounds or sites of archaeological significance or structures of historical significance were recorded in the study area, except for some demolished mining architecture. The study area for this 2016 project was located almost immediately adjacent to the current study area close to the western end of the proposed Kareerand RW pipeline.**

- Birkholtz, P.D. 2020. Heritage Impact Assessment for the Proposed Kareerand TSF Expansion Project, located on certain portions of the farms Kromdraai 420 IP, Hartebeestfontein 422 IP, Wildebeestpan 442 IP, Buffelsfontein 443 IP, Umfula 575 IP And Megadam 574 IP, east and south-east of Klerksdorp, City of Matlosana and Potchefstroom Local Municipalities, North West Province. For GCS Water & Environmental Consultants.

Between 2017 and 2018, fieldwork was undertaken by experienced fieldwork teams comprising one heritage specialist/archaeologist and one fieldwork assistant. A total of four

fieldwork trips were undertaken by experienced fieldwork teams between 2017 and 2018. During all these fieldwork trips these teams comprised one heritage specialist/archaeologist and one fieldwork assistant. **The fieldwork resulted in the identification of 48 archaeological and heritage sites. These identified sites comprise the following: six cemeteries, eight possible graves, one Historic Black Homestead containing confirmed graves, twenty Historic Black Homesteads, three Recent Structures, two Historic Farmsteads, seven Stone Age sites (incl. MSA and LSA artefacts) and one old lane of trees.**

#### 4.2.6 Heritage screening

A heritage screening report was compiled by the Department of Environmental Affairs National Web-based Environmental Screening Tool as required by Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended. According to the heritage screening report, the project area has a Low Heritage Sensitivity (**Figure 18**). 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 18 - Screening tool map indicating a high sensitivity rating for archaeology and heritage

#### 4.2.7 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 foot hill	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/streams	MSA and LSA sites, LIA settlements
Farmsteads	Historical archaeological material
Ridges and drainage lines	LSA sites, LIA settlements

#### 4.3 Fieldwork findings<sup>1</sup>

The fieldwork was conducted on 19 and 20 April 2022 by a field team of PGS heritage. Their movement on site was tracked by GPS and a tracklog map can be seen in **Figure 19**.

During the fieldwork a total of eight heritage features and resources were identified (**Figure 20**). These consist of one burial ground with approximately 10 graves (**D1-007**) three localities with recent historic structures (**D1-003-006** and **D1-008**) and two low significance archaeological sites (**D1-002** and **D1-005**). See **Figure 19** and the individual site descriptions as contained in **Appendix C**. The field description forms were collected with ArcGIS Survey123 in field software.

The recent historic structures are all younger than 60 years and varies in preservation from the farmhouse and sheds as utilised by the current owner Mr van Vuuren (**D1-003**) (**Figure 24**), the older warm worker dwelling and large brick and corrugated iron-built barn (**D1-001**) (**Figure 21**)

<sup>1</sup> 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.

and the remains of a worker dwelling indicated on the 1968 as well as 1982 maps (**D1-008**). The structure and remains of structures are not conservation worthy and contain no cultural or scientific value and is consequently graded as not conservation worthy.

Of interest is the trigonometric beacon number 197 on the high point of the property (**D1-006**) (**Figure 25**) that is shown on the 1953 map and older than 60 years any alterations or removal of the beacon will require a S34 permit under the NHRA.

Both archaeological sites are characterised by low density scatters of MSA flakes and prepared cores found in areas of rocky outcrops of ferricrete (**D1-002**) and quartzite (**D1-005**) (**Figure 22**). Of interest is the locality of the scatter at **D1-002** that occur on the side of a deflated area that resulted in a pan forming that created the ideal locality for a basecamp for the early inhabitants of the grasslands around the study area some 300 000 years ago (**Figure 23**). Due to the low-density scatter and lack of any other deposits for these two sites they are graded as not conservation worthy.

A single burial ground consisting of approximately 10 graves were identified at site **D1-007**. The site was indicated by one of the field rangers on the property. He told the survey team that the burial ground was damaged during the construction of a farm road a while back (**Figure 27**). Some of the graves are still identifiable and consist mainly of stone packed or stone lined grave dressings. A single inscribed concrete headstone was also found with an inscription date of 1944 (**Figure 26**). Due to the cultural and religious significance of burial grounds the site is graded as Grade 3A.



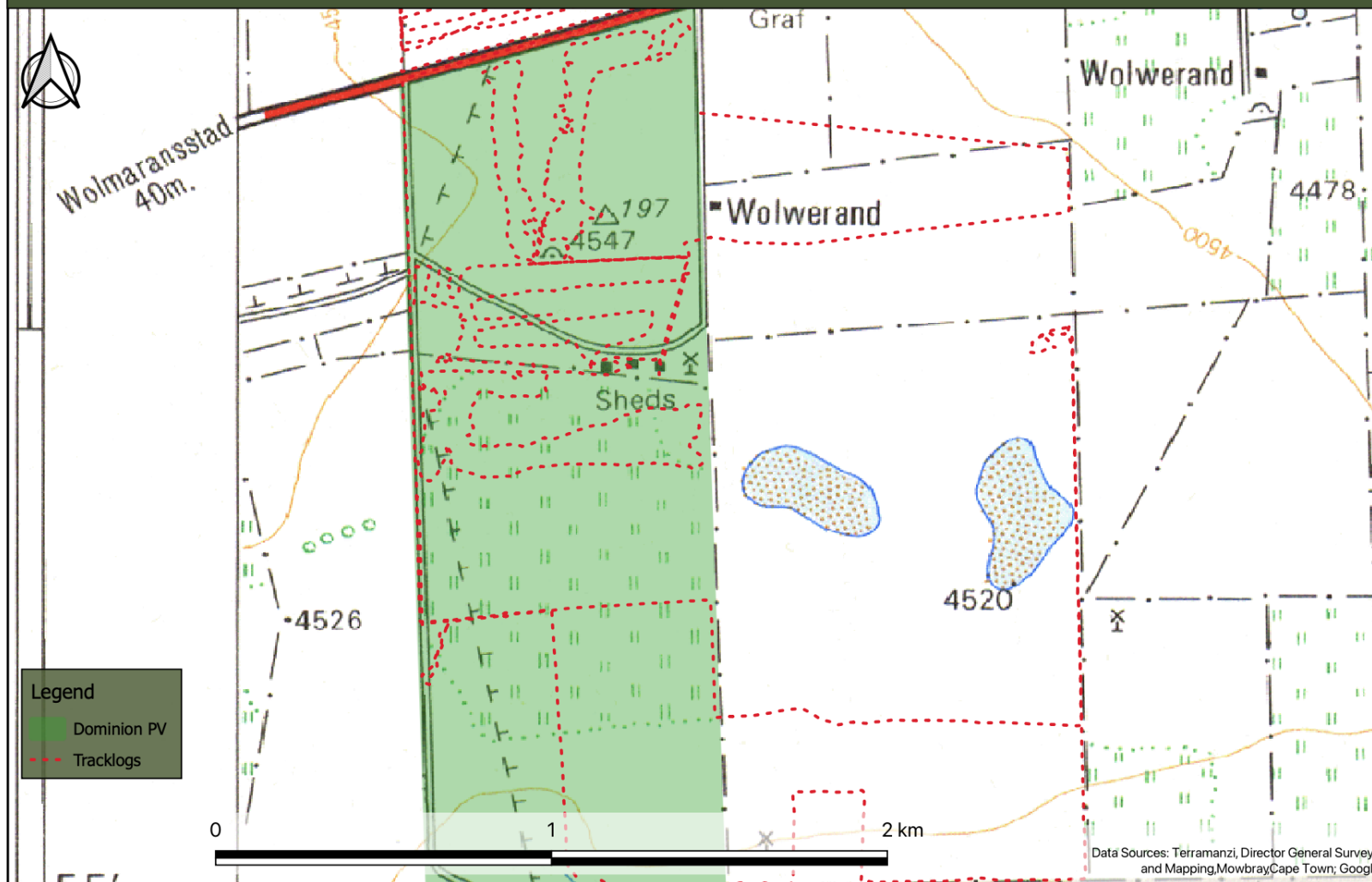


Figure 19 - Fieldwork tracklogs (track in red, study area in green)

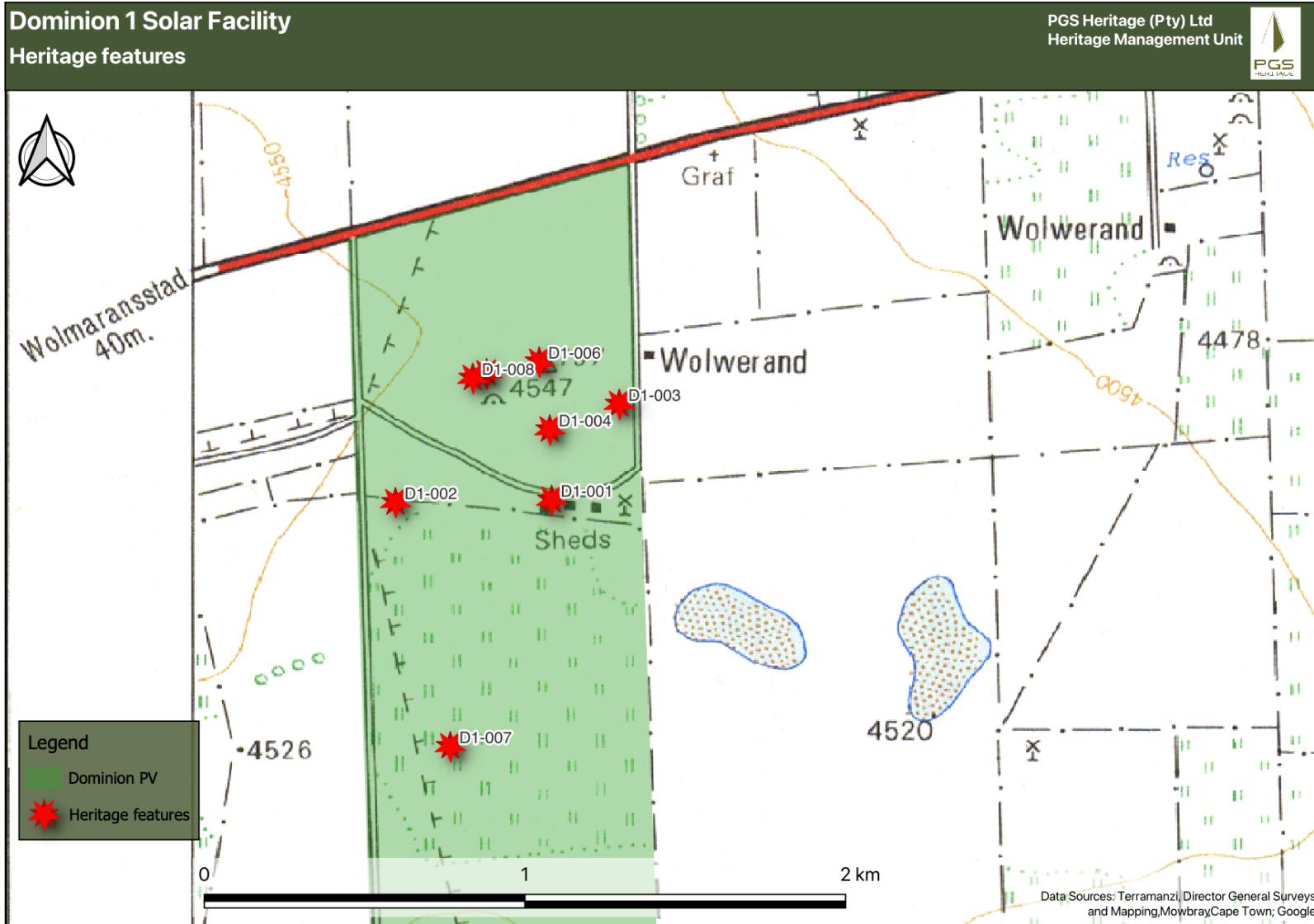


Figure 20 - Identified heritage resources within the Dominion 1 development area.



*Figure 21 - View of some of the structures at D1-001*



*Figure 22 - Lithics found at D1-002*



*Figure 23 - View of the pan at D1-002*



*Figure 24 - Current farm owner's house*





Figure 25 – Trig beacon 197



Figure 26 - Single headstone with inscription at D1-007



Figure 27 - View of the damaged burial ground at D1-007

#### 4.4 Palaeontology

Banzai Environmental was appointed by PGS to conduct the Palaeontological Desktop Assessment (PDA) for the project area. According to this PIA (Butler 2022), the proposed Dominion 1 SF is underlain by the Allanridge Formation and the Rietgat Formation (Platberg Group, Ventersdorp Supergroup). According to the PalaeoMap on the South African Heritage Resources Information System (SAHRIS) database, the Palaeontological Sensitivity of the Allanridge Formation is Zero while that of the Rietgat Formation is Moderate (Almond and Pether 2008, SAHRIS website). (Figure 28).

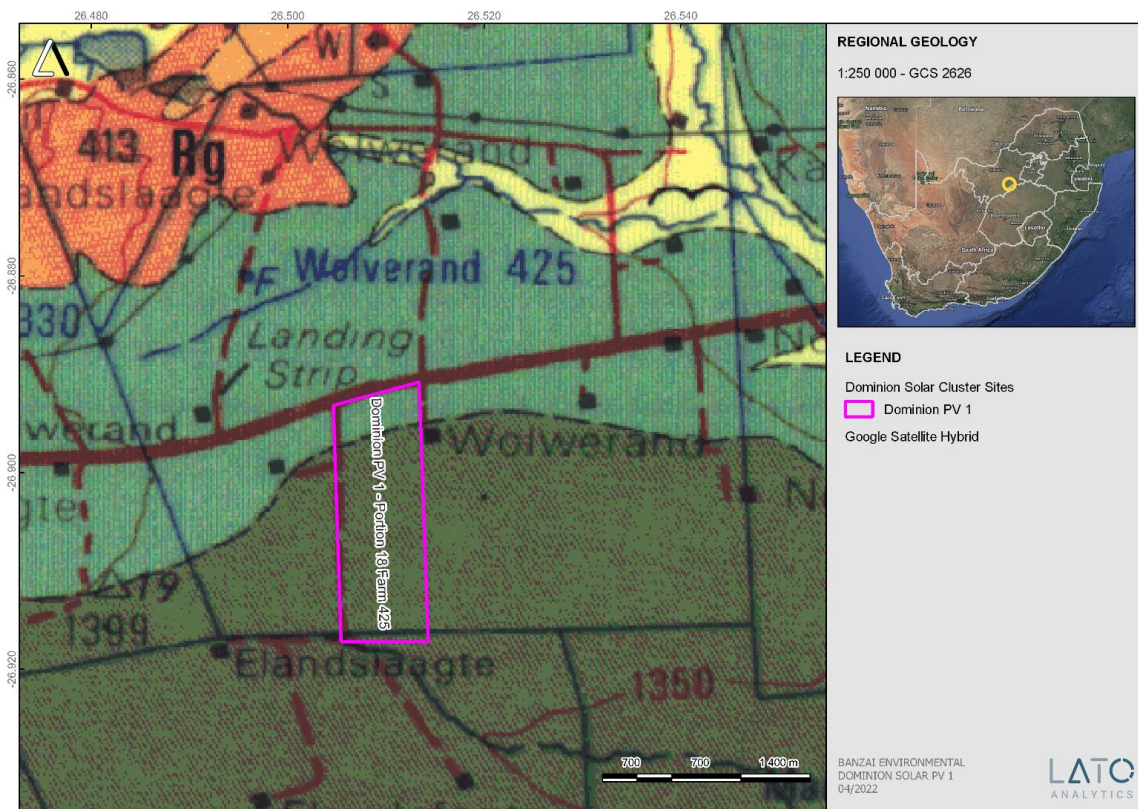


Figure 28 - The proposed Dominion 1 Solar Park near Klerksdorp is underlain by the Allanridge Formation (Ra-dark green) and the Rietgat Formation (R-Vr), (Platberg Group, Ventersdorp Supergroup).

## 5 IMPACT ASSESSMENT

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

The following section provides an analysis of the impact of the proposed project area on heritage resources identified within the Dominion 1 SF.

## **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 from the project.

### *5.1.1 Burial grounds and graves*

The burial ground at site D1-007 has a high local heritage significance with 3A heritage grading. The possibility of the burial ground impacted by the proposed SF cannot be excluded and the project can potentially have a MODERATE impact without mitigation. Implementation of the recommended management and mitigation measures can reduce the impact rating to LOW.

### *5.1.2 Historical Structures*

The impact on the recent historic structures identified during the fieldwork is calculated as having a LOW significance before and after the implementation of the proposed mitigation measures.

### *5.1.3 Archaeological resources*

The two archaeological sites at D1-002 and D1-005 has a low local heritage significance with no heritage grading. The possibility of the archaeological resources impacted by the proposed SF cannot be excluded and the project can potentially have a LOW impact without and with mitigation.

### *5.1.4 Palaeontology*

The PDA notes that the paleontological significance and potential of the geology of the area is rated as low to zero. The impact significance is rated as LOW before and after mitigation.



## 5.2 Impact assessment summary table

Implementing the impact assessment methodology as supplied by the TerraManzi Group, **Table 6** provides a quantitative assessment of the impacts of the proposed Dominion 1 Project.

Table 6: Impact Table - Structures

<b>IMPACT NATURE</b>	<b>Impact – Nature of Impact</b>		<b>STATUS</b>	<b>NEGATIVE</b>
<b>Impact Description</b>	Loss of heritage structures The development can result in the permanent loss of the identified recent historic structures			
<b>Impact Source(s)</b>	Site clearing during construction			
<b>Receptor(s)</b>	Identified heritage resources			
<b>PARAMETER</b>	<b>WITHOUT MITIGATION</b>	<b>SCORE</b>	<b>WITH MITIGATION</b>	<b>SCORE</b>
<b>EXTENT (A)</b>	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	
<b>DURATION (B)</b>	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	4	No-Go Alternative:	
<b>PROBABILITY (C)</b>	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
<b>INTENSITY OR MAGNITUDE (D)</b>	Preferred Alternative:	-1	Preferred Alternative:	-1
	No-Go Alternative:	1	No-Go Alternative:	1
<b>SIGNIFICANCE RATING (F) = (A*B*D)*C</b>	Preferred Alternative:	<b>-12</b>	Preferred Alternative:	<b>-12</b>
	No-Go Alternative:	<b>4</b>	No-Go Alternative:	<b>4</b>
<b>CUMULATIVE IMPACTS</b>	Due to the low cultural significance of the identified structures the cumulative impact is rated as low			
<b>CONFIDENCE</b>	High			
<b>MITIGATION MEASURES</b>	<ol style="list-style-type: none"> <li>1. Avoid the trig beacon at D1-006</li> <li>2. If not possible relocate with the backing of a S34 NHRA permit as issued by SAHRA</li> </ol>			

Table 7: Impact Table – Archaeological sites

<b>IMPACT NATURE</b>	<b>Impact – Nature of Impact</b> <b>Loss of archaeological resources</b>		<b>STATUS</b>	<b>NEGATIVE</b>
<b>Impact Description</b>	The development can result in the permanent loss of the identified archaeological sites			
<b>Impact Source(s)</b>	Site clearing during construction			
<b>Receptor(s)</b>	Identified archaeological resources			
<b>PARAMETER</b>	<b>WITHOUT MITIGATION</b>	<b>SCORE</b>	<b>WITH MITIGATION</b>	<b>SCORE</b>
<b>EXTENT (A)</b>	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	4
<b>DURATION (B)</b>	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	4	No-Go Alternative:	4
<b>PROBABILITY (C)</b>	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
<b>INTENSITY OR MAGNITUDE (D)</b>	Preferred Alternative:	-2	Preferred Alternative:	-1
	No-Go Alternative:	1	No-Go Alternative:	1
<b>SIGNIFICANCE RATING (F) = (A*B*D)*C</b>	Preferred Alternative:	<b>-24</b>	Preferred Alternative:	<b>-12</b>
	No-Go Alternative:	<b>4</b>	No-Go Alternative:	<b>4</b>
<b>CUMULATIVE IMPACTS</b>	Due to the low cultural significance of the identified archaeological sites the cumulative impact is rated as low			
<b>CONFIDENCE</b>	High			
<b>MITIGATION MEASURES</b>	1. Monitoring during site clearing in a 20-meter radius from the identified archaeological sites through the implementing of an archaeological watching brief			



Table 8: Impact Table – Burial grounds

<b>IMPACT NATURE</b>	<b>Impact – Nature of Impact</b>		<b>STATUS</b>	<b>NEGATIVE</b>
<b>Impact Description</b>	The development can result in the permanent loss of the identified burial ground at site D1-007			
<b>Impact Source(s)</b>	Site clearing during construction			
<b>Receptor(s)</b>	Identified burial ground			
<b>PARAMETER</b>	<b>WITHOUT MITIGATION</b>	<b>SCORE</b>	<b>WITH MITIGATION</b>	<b>SCORE</b>
<b>EXTENT (A)</b>	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
<b>DURATION (B)</b>	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	4	No-Go Alternative:	4
<b>PROBABILITY (C)</b>	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	1	No-Go Alternative:	1
<b>INTENSITY OR MAGNITUDE (D)</b>	Preferred Alternative:	-3	Preferred Alternative:	-1
	No-Go Alternative:	1	No-Go Alternative:	1
<b>SIGNIFICANCE RATING (F) = (A*B*D)*C</b>	Preferred Alternative:	<b>-72</b>	Preferred Alternative:	<b>-12</b>
	No-Go Alternative:	<b>4</b>	No-Go Alternative:	<b>4</b>
<b>CUMULATIVE IMPACTS</b>	The potential cumulative impact due to the impact on burial ground identified in the various Dominion SF projects can have an elevated impact on the combined projects			
<b>CONFIDENCE</b>	High			
<b>MITIGATION MEASURES</b>	<ol style="list-style-type: none"> <li>1. Implement a 50-meter no-go buffer as per SAHRA guidelines</li> <li>2. Development of a heritage management plan if the burial ground is to be preserved in place</li> <li>3. If the burial ground must be relocated a complete grave relocation process must be implemented and managed by a competent and experienced grave relocation professional</li> </ol>			

Table 9: Impact Table – Palaeontology

<b>IMPACT NATURE</b>	<b>Loss of Fossil Heritage</b>		<b>STATUS</b>	<b>NEGATIVE</b>
<b>Impact Description</b>	Destruction of fossils			
<b>Impact Source(s)</b>	Direct			
<b>Receptor(s)</b>				
<b>PARAMETER</b>	<b>WITHOUT MITIGATION</b>	<b>SCORE</b>	<b>WITH MITIGATION</b>	<b>SCORE</b>
<b>EXTENT (A)</b>	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:		No-Go Alternative:	
<b>DURATION (B)</b>	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:		No-Go Alternative:	
<b>PROBABILITY (C)</b>	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:		No-Go Alternative:	
<b>INTENSITY OR MAGNITUDE (D)</b>	Preferred Alternative:	-2	Preferred Alternative:	-1
	No-Go Alternative:		No-Go Alternative:	
<b>SIGNIFICANCE RATING (F) = (A*B*D)*C</b>	Preferred Alternative:	<b>-16</b>	Preferred Alternative:	<b>-8</b>
	No-Go Alternative:		No-Go Alternative:	
<b>CUMULATIVE IMPACTS</b>	Medium			
<b>CONFIDENCE</b>	High			
<b>MITIGATION MEASURES</b>	If fossil remains or trace fossils are discovered during any phase of construction, either on the surface or exposed by excavations the Environmental Control Officer (ECO) in charge of these developments must report to SAHRA (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: <a href="http://www.sahra.org.za">www.sahra.org.za</a> ) so that mitigation can be carry out by a palaeontologist			

Table 10: Impact Summary Impact table

DESCRIPTION OF IMPACT	Overall Significance		Overall Significance with mitigation
	No-Go Alternative	Preferred Alternative	Preferred Alternative
Impact on recent historic structures	4	-12 (Low)	-12 (Low)
Impact on archaeological resources	4	-24 (Low)	-12 (Low)
Impact on burial grounds	4	-72 (Medium)	-12 (Low)
Impact on palaeontology		-16 (Low)	-8 (Low)

### 5.3 Final project layout Impact Statement

The final proposed project layout for the Dominion 1 project took the specialist recommendations identified during the various field assessments done during the EIA process into consideration (Figure 29).

From an archaeological and historical structure perspective, the proposed footprint areas have changed the pre- and post-mitigation impact to LOW for the heritage resources identified during the fieldwork (Table 11).

Table 11: Impact Summary Impact table based on final layout

DESCRIPTION OF IMPACT	Overall Significance with mitigation
	Preferred Alternative
Impact on recent historic structures	-12 (Low)
Impact on archaeological resources	-12 (Low)
Impact on burial grounds	-12 (Low)
Impact on palaeontology	-8 (Low)

As such, the recommended mitigation measures as described in the HIA report remain.

We have no objection to the proposed layout.

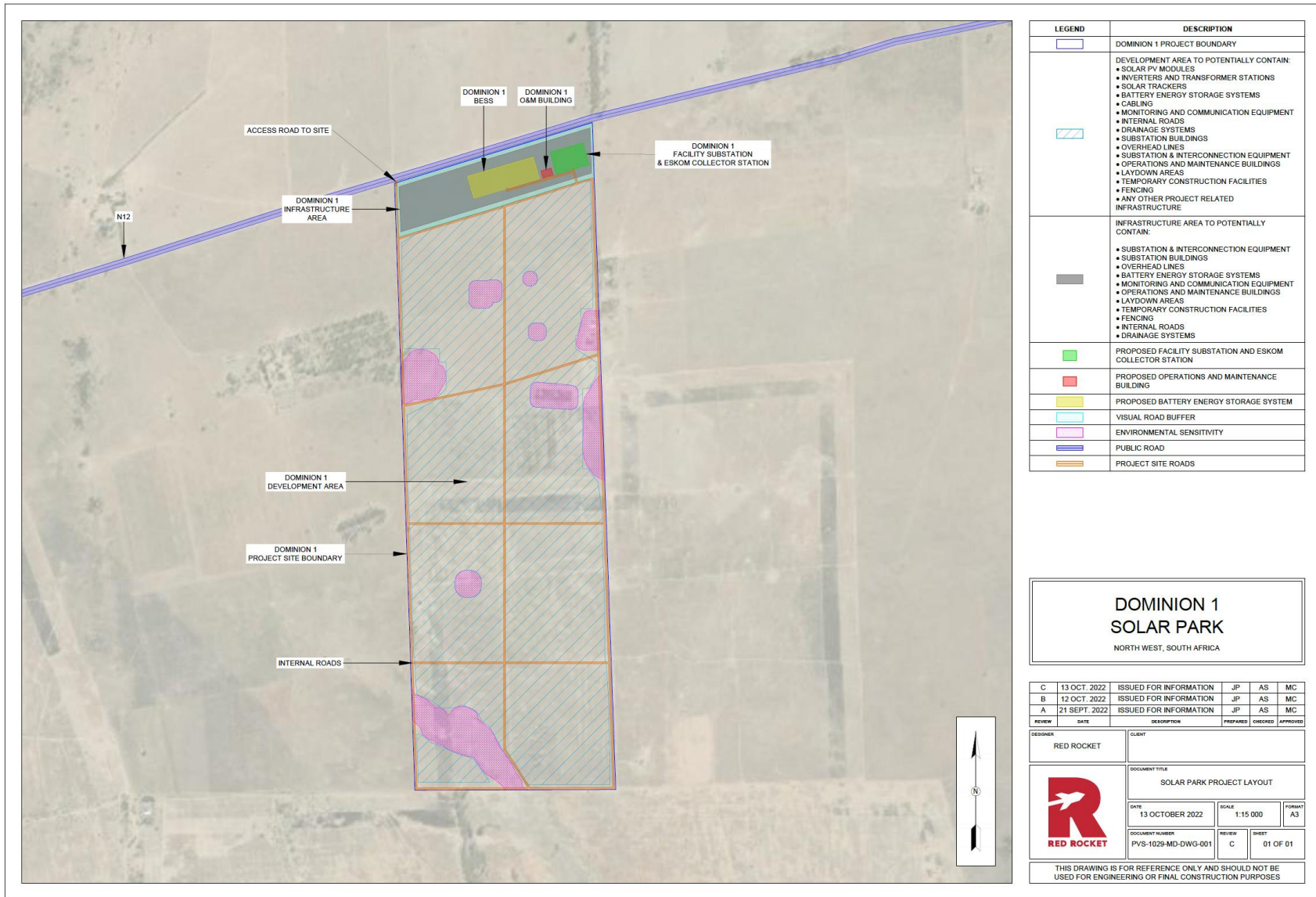


Figure 29 – Final proposed layout incorporating heritage sensitivities

## 6 MANAGEMENT RECOMMENDATIONS AND GUIDELINES

The following section must be read in conjunction with **Table 13** of this report.

### 6.1 Construction and operational phases

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

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

### 6.2 Chance finds procedure

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

### 6.3 Possible finds during construction

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:

- Historical structures and foundations
- unmarked burial grounds and graves

### 6.4 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 12** gives guidelines for lead times on permitting.

*Table 12: Lead times for permitting and mobilisation*

<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>
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 the development	Service provider – Archaeologist, SAHRA, local government and provincial government	6 months

## 6.5 Heritage Management Plan for EMPr implementation

Table 13: Heritage Management Plan for EMPr implementation

Area and site no.	Mitigation measures	Phase	Timeframe	The responsible party for implementation	Monitoring Party (frequency)	Target	Performance indicators (monitoring tool)
<b>General project area</b>	Implement a chance to find procedures in case where possible heritage finds are uncovered.	Construction	During construction	Applicant ECO Heritage Specialist	ECO (monthly / as or when required)	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 34-36 and 38 of NHRA	ECO Monthly Checklist/Report
<b>Burial grounds and graves</b>	All burial grounds and graves should be retained and avoided with a <b>buffer zone of 50m</b> as per SAHRA guidelines. If this is not possible, the graves could be relocated after completion of a detailed grave relocation process, that includes a thorough stakeholder engagement component, adhering to the requirements of s36 of the NHRA and its regulations as well as the National Health Act and its regulations.	Construction	During Construction	Applicant Environmental Control Officer (ECO) Heritage specialist	Monthly	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 36 and 38 of NHRA	ECO Monthly Checklist/Report
<b>Historical Structures</b>	D1-006 to be avoided If it needs to be relocated it must be done with a permit from the North West provincial Heritage Authority (PHRA-NW) in accordance with s34 of the NHRA.	Pre-construction	After the approval of the EA and before construction occurs	Applicant Environmental Control Officer (ECO) Archaeologist		Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35, 36 and 38 of NHRA	ECO Monthly Checklist/Report
<b>Archaeological sites</b>	Monitoring during site clearing in a 20-meter radius from the identified archaeological sites through the implementing of an archaeological watching brief	Construction	Construction	Applicant Archaeologist SAHRA PHRA-G	Monthly	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35 of NHRA	Report after construction
<b>Palaeontological resources</b>	If fossil remains or trace fossils are discovered during any phase of construction, either on the surface or exposed by excavations the	Construction	During Construction	Applicant Environmental Control Officer (ECO)	Monthly	Ensure compliance with relevant legislation and recommendations	ECO Monthly Checklist/Report

Area and site no.	Mitigation measures	Phase	Timeframe	The responsible party for implementation	Monitoring Party (frequency)	Target	Performance indicators (monitoring tool)
	Environmental Control Officer (ECO) in charge of these developments must report to SAHRA (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za) so that mitigation can be carry out by a palaeontologist					from SAHRA under Section 36 and 38 of NHRA	



## 7 CONCLUSIONS AND RECOMMENDATIONS

The HIA identified various heritage resources within the study area 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 eight heritage features and resources were identified (**Figure 20**). These consist of one burial ground with approximately 10 graves (**D1-007**) three localities with recent historic structures (**D1-003-006** and **D1-008**) and two low significance archaeological sites (**D1-002** and **D1-005**). See **Figure 19** and the individual site descriptions as contained in **Appendix C**. The field description forms were collected with ArcGIS Survey123 in field software.

### 7.1 Historical Structures

The recent historic structures are all younger than 60 years and varies in preservation from the farmhouse and sheds as utilised by the current owner Mr van Vuuren (**D1-003**) (**Figure 24**), the older warm worker dwelling and large brick and corrugated iron-built barn (**D1-001**) (**Figure 21**) and the remains of a worker dwelling indicated on the 1968 as well as 1982 maps (**D1-008**). The structure and remains of structures are not conservation worthy and contain no cultural or scientific value and is consequently graded as not conservation worthy. Of interest is the trigonometric beacon number 197 on the high point of the property (**D1-006**) (**Figure 25**) that is shown on the 1953 map and older than 60 years any alterations or removal of the beacon will require a S34 permit under the NHRA.

The impact on the recent historic structures identified during the fieldwork is calculated as having a LOW significance before and after the implementation of the proposed mitigation measures.

### 7.2 Archaeological Site

Both archaeological sites are characterised by low density scatters of MSA flakes and prepared cores found in areas of rocky outcrops of ferricrete (**D1-002**) and quartzite (**D1-005**) (**Figure 22**). Of interest is the locality of the scatter at **D1-002** that occur on the side of a deflated area that resulted in a pan forming that created the ideal locality for a basecamp for the early inhabitants of the grasslands around the study area some 300 000 years ago (**Figure 23**). Due to the low-density scatter and lack of any other deposits for these two sites they are graded as not conservation worthy.

The possibility of the archaeological resources impacted by the proposed SF cannot be excluded and the project can potentially have a LOW impact without and with mitigation.

### 7.3 Burial grounds and graves

A single burial ground consisting of approximately 10 graves were identified at site **D1-007**. The site was indicated by one of the field rangers on the property. He told the survey team that the burial ground was damaged during the construction of a farm road a while back (**Figure 27**). Some of the graves are still identifiable and consist mainly of stone packed or stone lined grave dressings. A single inscribed concrete headstone was also found with an inscription date of 1944 (**Figure 26**). Due to the cultural and religious significance of burial grounds the site is graded as Grade 3A.

The possibility of the burial ground impacted by the proposed SF cannot be excluded and the project can potentially have a MODERATE impact without mitigation. Implementation of the recommended management and mitigation measures can reduce the impact rating to LOW.

### 7.4 Palaeontology

The proposed Dominion 1 SF is underlain by the Allanridge Formation and the Rietgat Formation (Platberg Group, Ventersdorp Supergroup). According to the PalaeoMap on the South African Heritage Resources Information System (SAHRIS) database, the Palaeontological Sensitivity of the Allanridge Formation is Zero while that of the Rietgat Formation is Moderate (Almond and Pether 2008, SAHRIS website).

The PDA notes that the paleontological significance and potential of the geology of the area is rated as low to zero. The impact significance is rated as LOW before and after mitigation.

### 7.5 Mitigation measures

Mitigation measures are described in **Table 13** of this report.

### 7.6 Final project layout Impact Statement

The final proposed project layout for the Dominion 1 project took the specialist recommendations identified during the various field assessments done during the EIA process into consideration.

From an archaeological and historical structure perspective, the proposed footprint areas have changed the pre- and post-mitigation impact to LOW for the heritage resources identified during the fieldwork.

As such, the recommended mitigation measures as described in the HIA report remain.

We have no objection to the proposed layout.

## 7.7 General

It is the combined considered opinion of the heritage specialists that the proposed project will have a direct impact on several identified heritage resources rated being of low to high heritage significance.

With the implementation of recommended mitigation measures the overall impact on heritage resources will be reduced to acceptable levels during the activities of the project.

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RAK 2875

RAK 2876

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## **8.6 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 Dominion 1 SF Project. 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 - <10/50m<sup>2</sup>

Medium - 10-50/50m<sup>2</sup>

High - >50/50m<sup>2</sup>

Uniqueness; and

Potential to answer present research questions.

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

A - No further action necessary;

B - Mapping of the site and controlled sampling required;

C - No-go or relocate development activity position;

D - Preserve site, or extensive data collection and mapping of the site; and

E - Preserve site.

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

*Site Significance*

Site significance classification standards use is based on the heritage classification of s3 in the NHRA and developed for implementation keeping in mind the grading system approved by SAHRA for archaeological impact assessments. The update classification and rating system as developed by Heritage Western Cape (2016) is implemented in this report

Site significance classification standards prescribed by the Heritage Western Cape Guideline (2021), were used for the purpose of this report (**Table 2** and **Table 3**).

*Table 14: Rating system for archaeological resources*

<b>Grading</b>	<b>Description of Resource</b>	<b>Examples of Possible Management Strategies</b>	<b>Heritage Significance</b>
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 fulfils one of the criteria set out in section 3(3) of the Act but that does not fulfil the criteria for Grade II status. Grade III sites may be formally protected by placement on the Heritage Register.		
IIIA	Such a resource must be an excellent example of its kind or must be sufficiently rare. Current examples: Varschedrift; Peers Cave; Brobartia Road Midden at Bettys Bay	Resource must be retained. Specific mitigation and scientific investigation can be permitted in certain circumstances with sufficient motivation.	High Significance
IIIB	Such a resource might have similar significances to those of a Grade III A resource, but to a lesser degree.	Resource must be retained where possible where not possible it must be fully investigated and/or mitigated.	Medium Significance
IIIC	Such a resource is of contributing significance.	Resource must be satisfactorily studied before impact. If the recording already done (such as in an HIA or permit application) is not sufficient, further recording or even mitigation may be required.	Low Significance
NCW	A resource that, after appropriate investigation, has been determined to not have enough heritage significance to be retained as part of the National Estate.	No further actions under the NHRA are required. This must be motivated by the applicant or the consultant and approved by the authority.	No research potential or other cultural significance



Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance

Table 15: 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 local level.	High Significance
IIIB	Such a resource might have similar significances to those of a Grade III A resource, but to a lesser degree.	Like Grade IIIA buildings and sites, such buildings and sites may be representative, being excellent examples of their kind, or may be	Medium Significance

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
	These are heritage resources which are significant in the context of a townscape, neighbourhood, settlement or community.	rare, but less so than Grade IIIA examples. They would receive less stringent protection than Grade IIIA buildings and sites at local level.	
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**

**TERRAMANZI: IMPACT ASSESSMENT METHODOLOGY**

**1. Definitions of terminology**

<b>ITEM</b>	<b>DEFINITION</b>
<b>EXTENT</b>	
Local	Extending only as far as the boundaries of the activity, limited to the site and its immediate surroundings
Regional	Impact on the broader region
National	Will have an impact on a national scale or across international borders
<b>DURATION</b>	
Short-term	0-5 years
Medium-Term	5-15 years
Long-Term	>15 years, where the impact will cease after the operational life of the activity
Permanent	Where mitigation, either by natural process or human intervention, will not occur in such a way or in such a time span that the impact can be considered transient.
<b>MAGNITUDE OR INTENSITY</b>	
Low	Where the receiving natural, cultural or social function/environment is negligibly affected or where the impact is so low that remedial action is not required.
Medium	Where the affected environment is altered, but not severely and the impact can be mitigated successfully and natural, cultural or social functions and processes can continue, albeit in a modified way.
High	Where natural, cultural or social functions or processes are substantially altered to a very large degree. If a negative impact then this could lead to unacceptable consequences for the cultural and/or social functions and/or irreplaceable loss of biodiversity to the extent that natural, cultural or social functions could temporarily or permanently cease.
<b>PROBABILITY</b>	
Improbable	Where the possibility of the impact materialising is very low, either because of design or historic experience
Probable	Where there is a distinct possibility that the impact will occur
Highly Probable	Where it is most likely that the impact will occur
Definite	Where the impact will undoubtedly occur, regardless of any prevention measures
<b>SIGNIFICANCE</b>	
Low	Where a potential impact will have a negligible effect on natural, cultural or social environments and the effect on the decision is negligible. This will not require special design considerations for the project
Medium	Where it would have, or there would be a moderate risk to natural, cultural or social environments and should influence the decision. The project will require modification or mitigation measures to be included in the design
High	Where it would have, or there would be a high risk of, a large effect on natural, cultural or social environments. These impacts should have a major influence on decision making.
Very High	Where it would have, or there would be a high risk of, an irreversible negative impact on biodiversity and irreplaceable loss of natural capital that could result in the project being environmentally unacceptable, even with mitigation. Alternatively, it could lead to a major positive effect. Impacts of this nature must be a central factor in decision making.
<b>STATUS OF IMPACT</b>	
Whether the impact is positive (a benefit), negative (a cost) or neutral (status quo maintained)	
<b>DEGREE OF CONFIDENCE IN PREDICTIONS</b>	
The degree of confidence in the predictions is based on the availability of information and specialist knowledge (e.g. low, medium or high)	
<b>MITIGATION</b>	
Mechanisms used to control, minimise and or eliminate negative impacts on the environment and to enhance project benefits Mitigation measures should be considered in terms of the following hierarchy: (1) avoidance, (2) minimisation, (3) restoration and (4) off-sets.	

## 2. Scoring System for Impact Assessment Ratings

To comparatively rank the impacts, each impact has been assigned a score using the scoring system outlined in the Table below. This scoring system allows for a comparative, accountable assessment of the indicative cumulative positive or negative impacts of each aspect assessed.

<b>IMPACT PARAMETER</b>	<b>SCORE</b>	
<b>Extent (A)</b>	<b>Rating</b>	
Local	1	
Regional	2	
National	3	
<b>Duration (B)</b>	<b>Rating</b>	
Short term	1	
Medium Term	2	
Long Term	3	
Permanent	4	
<b>Probability (C)</b>	<b>Rating</b>	
Improbable	1	
Probable	2	
Highly Probable	3	
Definite	4	
<b>IMPACT PARAMETER</b>	<b>NEGATIVE IMPACT SCORE</b>	<b>POSITIVE IMPACT SCORE</b>
<b>Magnitude/Intensity (D)</b>	<b>Rating</b>	<b>Rating</b>
Low	-1	1
Medium	-2	2
High	-3	3
<b>SIGNIFICANCE RATING (F) = (A*B*D)*C</b>	<b>Rating</b>	<b>Rating</b>
Low	0 to - 40	0 to 40
Medium	- 41 to - 80	41 to 80
High	- 81 to - 120	81 to 120
Very High	> - 120	> 120

**APPENDIX C**  
**SITE DESCRIPTION FORMS**

<b>Site coordinates</b>		
<b>site_nr</b>	<b>X</b>	<b>Y</b>
D1-001	26.51098	-26.9013
D1-002	26.50608	-26.901374
D1-003	26.51311	-26.89829
D1-004	26.51093	-26.899091
D1-005	26.50894	-26.897327
D1-006	26.5106	-26.896963
D1-007	26.5078	-26.909033
D1-008	26.50851	-26.897473

**Site Nr**

D1-001

**General Landscape Characteristics**

Grassy vegetation

**Site Conditions**

Overgrown/ limited visibility

**Time Period**

Recent

**Site Tipe**

Recent Structure

**Site Extent**

20m x 20m

**Additional Site Notes**

Site consist of brick shed with corrugated iron roof. Adjacent single room workers house built with hollow core cement bricks and asbestos rood sheets.

**NHRA Site Rating**

NCW

**Site Photos**





**Site Nr**  
D1-002

**General Landscape Characteristics**  
Non-perennial streams/rivers, Pan/wetland

**Site Conditions**  
Overgrown/ limited visibility

**Time Period**  
Stone Age

**Site Tipe**  
Lithics Cluster

**Site Extent**  
10m x 10m

**Additional Site Notes**  
Low density MSA scatter on rock outcrop at the side of a pan/wetland. Material consists of snapped blade, blade with retouch, discoidal core and various flakes with retouch dense vegetation made site characterisation difficult. Various large boulders with obvious rubbed surfaces are present. Exposed subsurface is ferricrete. A section of pan was mined for ferricrete.

**NHRA Site Rating**  
Grade 3 - C (IIIC)

**Site Photos**









**Site Nr**  
D1-003

**General Landscape Characteristics**  
Grassy vegetation

**Site Conditions**  
Disturbed

**Time Period**  
Recent

**Site Tipe**  
Recent Structure

**Site Extent**  
20m x 20m

**Additional Site Notes**  
Recent farmstead. 12 years old. Main house of brick and tile. Two sheds, corrugated iron and brick

**NHRA Site Rating**  
NCW

**Site Photos**





**Site Nr**  
D1-004

**General Landscape Characteristics**  
Grassy vegetation

**Site Conditions**  
Overgrown/ limited visibility

**Time Period**  
Recent

**Site Tipe**  
Historical Homestead

**Site Extent**  
5m x 5m

**Additional Site Notes**  
Remains of a possible hut. Foundation consist of stone lined rocks with a right-angle corner

**NHRA Site Rating**  
NCW

**Site Photos**







**Site Nr**  
D1-005

**General Landscape Characteristics**  
Flat lying area, Grassy vegetation

**Site Conditions**  
Overgrown/ limited visibility

**Time Period**  
Stone Age

**Site Tipe**  
Lithics Low Density Surface Scatter//Single Find Spot

**Site Extent**  
10m x 10m

**Additional Site Notes**  
Low density scatter of MSA material. Mostly flakes with prepared striking surface. In area where rocky outcrop is just visible.

**NHRA Site Rating**  
Grade 3 - C (IIIC)

**Site Photos**







**Site Nr**  
D1-006

**General Landscape Characteristics**  
Grassy vegetation

**Site Conditions**  
Clear

**Time Period**  
Recent

**Site Tipe**  
Recent Structure

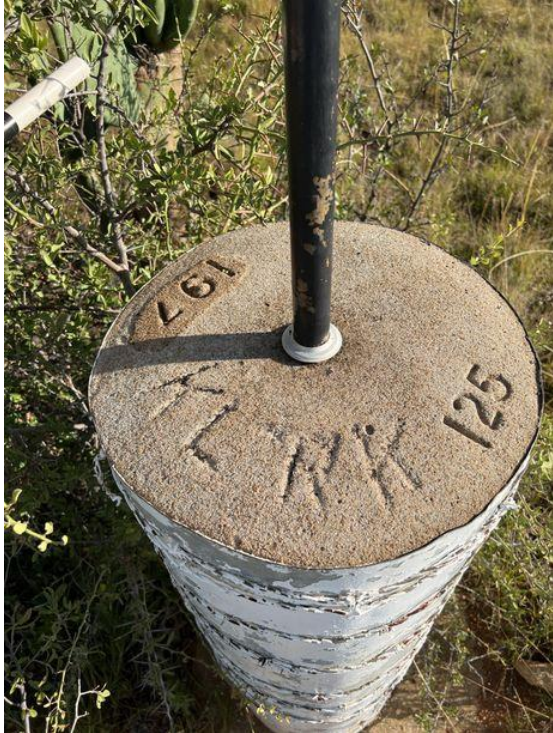
**Site Extent**  
5m x 5m

**Additional Site Notes**  
Trig beacon 125

**NHRA Site Rating**  
NCW

**Site Photos**





**Site Nr**  
D1-007

**General Landscape Characteristics**  
Grassy vegetation

**Site Conditions**  
Disturbed, Demolished/Destroyed

**Time Period**  
Historical Period

**Site Tipe**  
Graves

**Site Extent**  
10m x 10m

**Additional Site Notes**  
Cemetery with approximately 10 graves. Was recently disturbed by dozer pushing a road. 2-3 rows of graves each with 5 graves. Only on headstone visible with date of 1944.

**NHRA Site Rating**  
Grade 2, Grade 3 - A (IIIA)

**Site Photos**







**Site Nr**

D1-008

**General Landscape Characteristics**

Grassy vegetation

**Site Conditions**

Overgrown/ limited visibility

**Time Period**

Recent

**Site Tipe**

Historical Homestead

**Site Extent**

20m x 20m

**Additional Site Notes**

Indications are that this was the position of a farmworkers homestead. Area is heavily overgrown. Building rubble present on site as well as general domestic refuse

**NHRA Site Rating**

NCW

**Site Photos**





**APPENDIX D**  
**PGS 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, Geographic Information Systems, including *inter alia* -

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

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

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

### **Key Qualifications**

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

BA - Archaeology, Geography and Anthropology - 1996

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

- Professional Member

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

CRM Accreditation (ASAPA) -

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

### **Key Work Experience**

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

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

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



2000-2004 - CEO– Matakoma Consultants

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

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

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