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# PHASE 1 ARCHAEOLOGICAL AND HERITAGE IMPACT ASSESSMENT REPORT FOR PROPOSED BUSHVELD ENERGY HYBRID PV PARK IN MADIBENG LOCAL MUNICIPALITY, NORTH WEST PROVINCE.

**DATE: MAY 2019**

## Document Information

| Item | Description |
|---|---|
| Proposed development and location | Proposed Bushveld Hybrid PV Energy Plant in North West Province. |
| Purpose of the study | To carry out a Heritage Impact Assessment to determine the presence/absence of cultural heritage sites and the impact of the proposed Bushveld Hybrid PV Plant |
| 1:50 000 Topographic Map | 2527DA Bapong; 1: 50 000 and Rustenburg 2526 1:250 000 map). |
| Coordinates | 25°34′20.61″S 27°52′30.97″E; 25°34′19.20″S 27°52′31.61″E; 25°34′21.16″S 27°52′32.84″E |
| Municipalities | Madibeng Local Municipality and Bojanala District Municipality |
| Predominant land use of surrounding area | Mining. |
| Applicant | Bushveld Energy<br>Cnr Fricker and Harries roads \| Illovo Edge Office Block \| 2nd Floor<br>Illovo Johannesburg 2196 \| Republic of South Africa<br>Mobile SA +27 82 920 4984 \| Office +27 11 268 6555 \| Fax +27 11 268 5170 |
| Reference No. | |
| EAP | Golder Associates |
| Heritage Consultant | Sativa Travel and Environmental Consultants (Pty) Ltd<br>Constantia Park, Building 16-2, 546, 16th Road, Midrand, 1685<br>Tel: 010 492 4330, Fax: 086 652 9774, Cell: 076 328 1558 / 071 685 9247<br>url: www.sativatec.co.za<br>email: moses@sativatec.co.za / heritage@sativatec.co.za |
| Author | Trust Mlilo (Archaeology and Heritage Specialist) |
| Date of Report | 14/05/2019 |

## NATIONAL LEGISLATION AND REGULATIONS GOVERNING THIS REPORT

This is a specialist report' and is compiled in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014.

## DECLARATION OF INDEPENDENCE

In terms of Chapter 5 of the National Environmental Management Act of 1998 specialists involved in Impact Assessment processes must declare their independence.

I, **Trust Mlilo**, do hereby declare that I am financially and otherwise independent of the client and their consultants, and that all opinions expressed in this document are substantially my own, notwithstanding the fact that I have received fair remuneration from the client for preparation of this report.

### Expertise:

Trust Mlilo, MA. (Archaeology), BA Hons, PDGE and BA & (Univ. of Pretoria) ASAPA (Professional member) with more than 15 years of experience in archaeological and heritage impact assessment and management. Mlilo is an accredited member of the Association for Southern African Professional Archaeologists (ASAPA), Amafa akwaZulu Natali and Eastern Cape Heritage Resources Agency (ECPHRA). He has conducted more than hundred AIA/HIA Studies, heritage mitigation work and heritage development projects over the past 15 years of service. The completed projects vary from Phase 1 and Phase 2 as well as heritage management work for government, parastatals (Eskom) and several private companies such as BHP Billiton, Rhino Minerals.

### Independence

The views expressed in this document are the objective, independent views of Mr Trust Mlilo and the survey was carried out under Golder Associates (Pty) Ltd. Sativa Travel and Environmental Consultants (Pty) Ltd (STEC) has no any business, personal, financial or other interest in the proposed development project apart from fair remuneration for the work performed.

### Conditions relating to this report

The content of this report is based on the author's best scientific and professional knowledge as well as available information. Sativa Travel and Environmental Consultants (Pty) Ltd reserves the right to modify the report in any way deemed fit should new, relevant or previously unavailable or undisclosed information become known to the author from on-going research or further work in this field, or pertaining to this investigation.

This report must not be altered or added to without the prior written consent of the author and Golder Associates (Pty) Ltd. This also refers to electronic copies of the report which are supplied for the purposes of inclusion as part

of other reports, including main reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must make reference to this report. If these form part of a main report relating to this investigation or report, this report must be included in its entirety as an appendix or separate section to the main report.

**Authorship**: This AIA/HIA Report has been prepared by Mr Trust Mlilo (Professional Archaeologist). The report is for the review of the Heritage Resources Agency (PHRA).

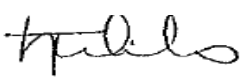
**Geographic Co-ordinate Information:** Geographic co-ordinates in this report were obtained using a hand-held Garmin Global Positioning System device. The manufacturer states that these devices are accurate to within +/- 5 m.

**Maps:** Maps included in this report use data extracted from the NTS Map and Google Earth Pro.

**Disclaimer:** The Authors are not responsible for omissions and inconsistencies that may result from information not available at the time this report was prepared.

The Archaeological and Heritage Impact Assessment Study was carried out within the context of tangible and intangible cultural heritage resources as defined by the SAHRA Regulations and Guidelines as to the authorisation of Hybrid PV Energy Plant being proposed by Bushveld Energy (Pty) Ltd

Signed by



14/ 05/ 2019

## Acknowledgement

The author acknowledges Golder Associates (Pty) Ltd and Bushveld Energy (Pty) Ltd for their assistance with project information, and the associated project BID as well as responding to technical queries related to the project. STEC would like to thank all the farmers /land owners who provided access to their farms and also provided vital information regarding existence of any heritage resources within their respective farms.

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## EXECUTIVE SUMMARY

Bushveld Energy (Pty) Ltd is proposing to establish a Hybrid PV Plant within Vametico Alloys near Brits in the North West Province. The proposed development site is located near Brits in an area that is predominantly residential, farming and mining (See Figure 3), and any listed development in this area must take full cognizance of potential occurrence heritage resources. Various national and provincial legislative arms mandate pre-development assessment to ensure protection of heritage resources. The rich geological and agricultural resources of the project area have also led to numerous farming and mining activities that had robed parts of the area's pristine environments. The implications of this observation are that whatever heritage resources that still exist in the area must be protected from any developments.

Archaeological resources in the general project area stretches in to deep time starting with australopithecines. These australopithecines were gradually displaced by early hominid (Homo Habilis) that was later replaced by the early crude stone tool using hominid (Homo erectus around 1.8 million years ago). This marked the beginning of the Stone Age (ESA), which is not very wide spread in the study area. Nonetheless the area has isolated occurrences of the Middle Stone Age (MSA) industries associated with anatomically modern humans, Homo sapiens that replaced the ESA around 250000 years ago. The subsequent replacement of the MSA by Later Stone Age (LSA) occurred from about 20000 years ago and the new technology is also represented in isolated occurrences. The LSA is triggered a series of technological innovations and social transformations within these early hunter-gatherer societies that included the advent of rock art (paining and engravings), associated with the Khoisan communities. From this period onwards, there has not been significant reports of Early Iron Age (AD200 to 1000) sites in the study area until the post 15th century Ntsuanatsatsi-Uitkomsts (Nguni-speakers) and Olifantsfontein and Buispoort (Sotho-Tswana speakers) period of Late Iron Age that is characterized by stone walling. Key historical events relate to the 19th century encroachment of Boer Trekkers and Mfecane fleeing Mzilikazi's Ndebele people, as well as the aftermaths of Boer-Anglo and European-African military encounters that resulted in the establishment of several towns. These armed encounters left trails of historical battle grounds, cemeteries and unmarked graves that are protected by the South African heritage legislation and must not be disturbed without consultation and approval from national and provincial heritage agencies. Graves in general, and historical (over 60 years) graves in particular, are of high social significance and must be preferably preserved *in situ*. Other historical mining activities relates to the discovery of coal in the project area. All the same, archaeological resources are known to occur in buried contexts that may only be identifiable during construction, such that failure to detect them during field surveys is not absolute evidence of their absence and a clear procedure for reporting chance finds must be followed during construction.

This Archaeological and Heritage Impact Assessment (AIA/HIA) report has been prepared to address requirements of the National Heritage Resources Act, Act 25 of 1999, Section 38. Sativa Travel and Environmental Consultants

(Pty) Ltd (STEC) was retained by Golder Associates (Pty) Ltd to conduct this Archaeological and Heritage Impact Assessment (AIA/HIA) Study for the proposed Hybrid PV Energy plant in Madibeng Local Municipality of North West Province. This report includes an impact study on potential archaeological and cultural heritage resources that may be associated with the proposed development. This study was conducted as part of the specialist input for the Environmental Authorisation process. The project information has been passed to STEC research team by the project EAP. Analysis of the archaeological, cultural heritage, environmental and historic contexts of the study area predicted that archaeological sites, cultural heritage sites, burial grounds or isolated artefacts were likely to be present on the affected landscape. The field survey was conducted to test this proposition and verify this prediction within the proposed development sites. The general project area is predominantly agriculture, tourism, residential and mining.

The report makes the following observations:

- The findings of this report have been informed by desktop data review, field survey and impact assessment reporting which include recommendations to guide heritage authorities in making decisions with regards to the proposed development.
- The proposed development site is very accessible and the field survey was effective enough to cover most sections of the project receiving environs. However, the boundary of the development site had limited access because of tall grass cover
- The immediate project area is predominantly agricultural, mining, commercial and residential.
- The study recorded a scatter of undecorated potsherds within the proposed development site

The report sets out the potential impacts of the proposed development on heritage matters and recommends appropriate safeguard and mitigation measures that are designed to reduce the impacts where appropriate. The report makes the following recommendations:

- ❖ The construction teams must be inducted on the possibility of encountering archaeological resources that may be accidentally exposed during clearance and construction at the development site prior to commencement of work on the site in order to ensure appropriate mitigation measures and that course of action is afforded to any chance finds.
- ❖ If archaeological materials are uncovered, work must cease immediately and the SAHRA/ North West PHRA be notified and activity should not resume until appropriate management provisions are in place.
- ❖ The findings of this report, with approval of the SAHRA, may be classified as accessible to any interested and affected parties within the limits of the legislations.

This report concludes that the impacts of the proposed development on the cultural environmental values are not likely to be significant on the entire development site if the EMP includes recommended safeguard and mitigation measures identified in this report.

**The assessment reached the following conclusions:**

1. The entire development site has been altered significantly by auxiliary mining activities including access roads and pipelines.
2. The recorded potsherds are an indication of the potential to recover significant archaeological resources beneath the surface although the site has been disturbed.

**Recommendations**

1. The proposed development may be allowed to proceed from a heritage perspective.
2. It is also advised that the Archaeology, Palaeontology and SAHRA Meteorites Unit is alerted when site work begins.
3. Strict and clear reporting procedures for chance findings must be followed by Bushveld Energy (Pty) Ltd and its contractors throughout the whole period of construction.

## ABBREVIATIONS

| | |
|---|---|
| **AIA** | Archaeological Impact Assessment |
| **EAP** | Environmental Assessment Practitioner |
| **ECO** | Environmental Control Officer |
| **EIA** | Environmental Impact Assessment |
| **EM** | Environmental Manager |
| **EMP** | Environmental Management Plan |
| **HIA** | Heritage Impact Assessment |
| **LIA** | Late Iron Age |
| **NHRA** | Nation Heritage Resources Act, Act 25 of 1999 |
| **PHRA** | Provincial Heritage Agency |
| **PM** | Project Manager |
| **SAHRA** | South African Heritage Resources Agency |
| **SM** | Site Manager |
| **STEC** | Sativa Travel and Environmental Consultants (Pty) Ltd |

## KEY CONCEPTS AND TERMS

**Periodization** Archaeologists divide the different cultural epochs according to the dominant material finds for the different time periods. This periodization is usually region-specific, such that the same label can have different dates for different areas. This makes it important to clarify and declare the periodization of the area one is studying. These periods are nothing a little more than convenient time brackets because their terminal and commencement are not absolute and there are several instances of overlap. In the present study, relevant archaeological periods are given below;

Early Stone Age (~ 2.6 million to 250 000 years ago)

Middle Stone Age (~ 250 000 to 40-25 000 years ago)

Later Stone Age (~ 40-25 000, to recently, 100 years ago)

Early Iron Age (~ AD 200 to 1000)

Late Iron Age (~ AD1100-1840)

Historic (~ AD 1840 to 1950, but a Historic building is classified as over 60 years old)

**Definitions** Just like periodization, it is also critical to define key terms employed in this study. Most of these terms derive from South African heritage legislation and its ancillary laws, as well as international regulations and norms of best-practice. The following aspects have a direct bearing on the investigation and the resulting report:

***Cultural (heritage) resources*** are all non-physical and physical human-made occurrences, and natural features that are associated with human activity. These can be singular or in groups and include significant sites, structures, features, ecofacts and artefacts of importance associated with the history, architecture, or archaeology of human development.

***Cultural significance*** is determined by means of aesthetic, historic, scientific, social, or spiritual values for past, present, or future generations.

***Value*** is related to concepts such as worth, merit, attraction or appeal, concepts that are associated with the (current) usefulness and condition of a place or an object. Although significance and value are not mutually exclusive, in some cases the place may have a high level of significance but a lower level of value. Often, the evaluation of any feature is based on a combination or balance between the two.

***Isolated finds*** are occurrences of artefacts or other remains that are not in-situ or are located apart from archaeological sites. Although these are noted and recorded, but do not usually constitute the core of an impact assessment, unless if they have intrinsic cultural significance and value.

***In-situ*** refers to material culture and surrounding deposits in their original location and context, for example an archaeological site that has not been disturbed by farming.

***Archaeological site/materials*** are remains or traces of human activity that 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. According to the National Heritage Resources Act (NHRA) (Act No. 25 of 1999), no archaeological artefact, assemblage, or settlement (site) and no historical building or structure older than 60 years may be altered, moved or destroyed without the necessary authorisation from the South African Heritage Resources Agency (SAHRA) or a provincial heritage resources authority.

***Historic material*** are remains resulting from human activities, which are younger than 100 years, but no longer in use, including artefacts, human remains and artificial features and structures.

***Chance finds*** means archaeological artefacts, features, structures or historical remains accidentally found during development.

***A grave*** is a place of interment (variably referred to as burial) and includes the contents, headstone or other marker of such a place, and any other structure on or associated with such place. A grave may occur in isolation or in association with others where upon it is referred to as being situated in a cemetery (contemporary) or burial ground (historic).

***A site*** is a distinct spatial cluster of artefacts, structures, organic and environmental remains, as residues of past human activity.

***Heritage Impact* Assessment (HIA)** refers to the process of identifying, predicting, and assessing the potential positive and negative cultural, social, economic, and biophysical impacts of any proposed project, which requires authorisation of permission by law and which may significantly affect the cultural and natural heritage resources. Accordingly, an HIA must include recommendations for appropriate mitigation measures for minimising or circumventing negative impacts, measures enhancing the positive aspects of the proposal and heritage management and monitoring measures.

***Impact*** is the positive or negative effects on human well-being and / or on the environment.

***Mitigation*** is the implementation of practical measures to reduce and circumvent adverse impacts or enhance beneficial impacts of an action.

***Mining heritage sites*** refer to old, abandoned mining activities, underground or on the surface, which may date from the prehistorical, historical or the relatively recent past.

***Study area or 'project area'*** refers to the area where the developer wants to focus its development activities (refer to plan).

***Phase I studies*** refer to surveys using various sources of data and limited field walking in order to establish the presence of all possible types of heritage resources in any given area

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# 1 INTRODUCTION

## Background

Most heritage sites occur within communities, whose development should not be neglected in the name of heritage preservation but should be encouraged and embraced within legal and adaptive management frameworks (Carter and Grimwade 1997; Salafsky *et al* 2001). This case is true for the entire project area, which hosts palaeontological, archaeological, historical, natural and contemporary heritage resources. Bushveld Energy (Pty) Ltd is proposing to establish a Hybrid PV Energy plant within Vametico Alloys near Brits in the North West Province. A Heritage study was done for mining development (Pistorius 2014). The study recorded a range of heritage resources in the general project area. As such this current report must be read in conjunction with the previous HIA report by Pistorius (2014). This study focuses on the site ear marked for Hybrid PV Plant development (see Figure 1).

The purpose of this archaeology and Heritage Study is to assess presence/absence of heritage resources on the development footprint of the proposed development. The study was designed to ensure that any significant archaeological or cultural physical property or sites are located and recorded, and site significance is evaluated to assess the nature and extent of expected impacts from the proposed development. The assessment includes recommendations to manage the expected impact of the proposed development. The report includes recommendations to guide heritage authorities in making appropriate decision with regards to the environmental approval process for the proposed development. The report concludes with detailed recommendations on heritage management associated with the proposed development. Sativa Travel and Environmental Consultants (Pty) Ltd (STEC), an independent consulting firm, conducted an assessment; research and consultations required for the preparation of the archaeological and heritage impact report in accordance with its obligations set in the NHRA as well as the environmental management legislations.

In line with SAHRA guidelines, this report, not necessarily in that order, provides:

1) Management summary
2) Methodology
3) Information with reference to the desktop study
4) Map and relevant geodetic images and data
5) GPS co-ordinates
6) Directions to the site
7) Site description and interpretation of the cultural area where the project will take place
8) Management details, description of affected cultural environment, photographic records of the project area
9) Recommendations regarding the significance of the site and recommendations regarding further monitoring of the site.
10) Conclusion

**Description of the proposed project**

Bushveld Energy (Pty) Ltd is proposing to establish a Hybrid PV Energy plant within Vametico Alloys premises.

**Location of the proposed development**

The Project Area falls under the Madibeng Local Municipality in the Bojanala Platinum District in the North-West Province (Bapong 2527DA; 1: 50 000 and Rustenburg 2526 1:250 000 map).

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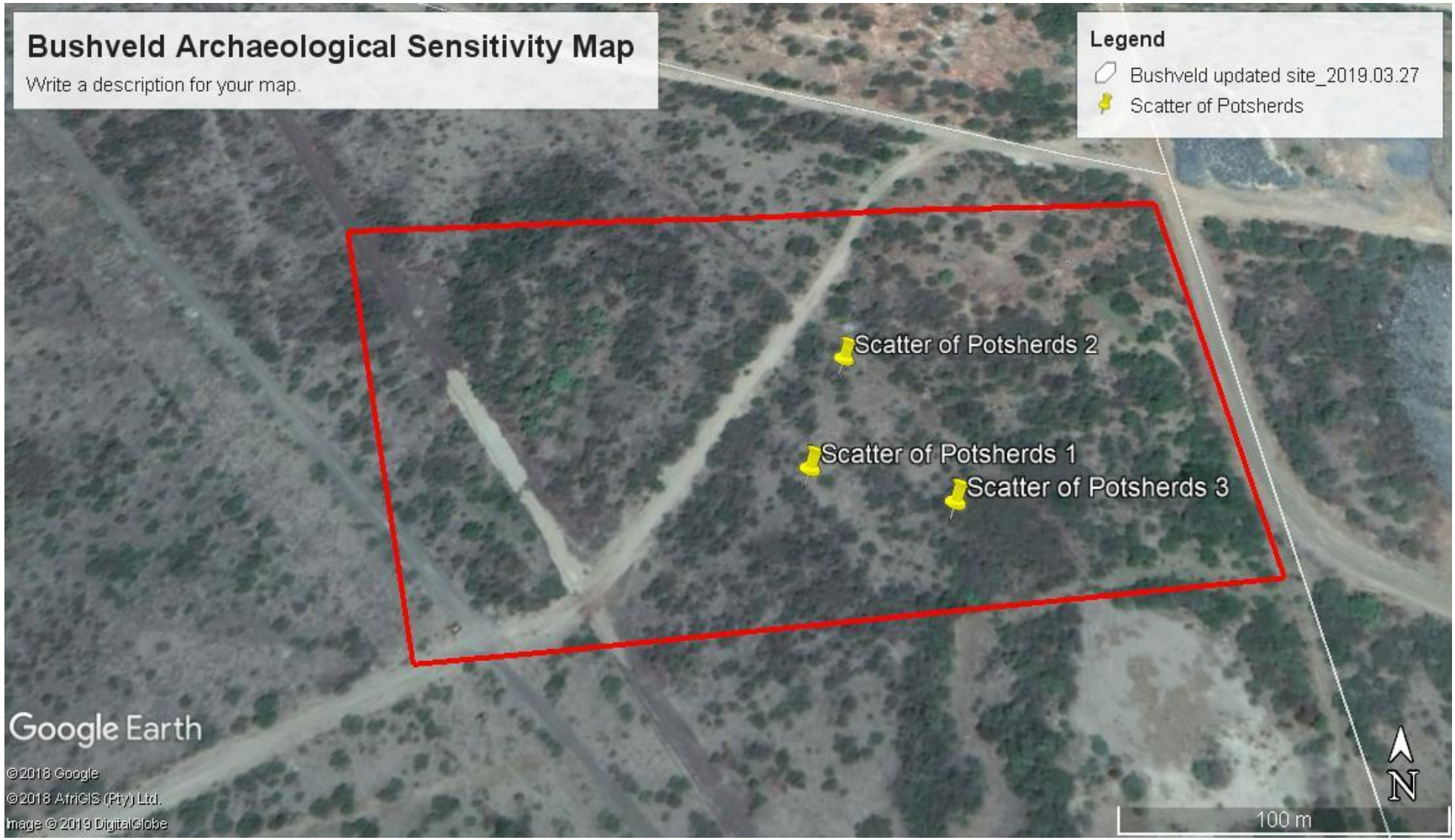


Figure 1: Proposed Bushveld Hybrid PV Plant sites (Golder Associates 2019)

## 2 LEGAL REQUIREMENTS

Relevant pieces of legislations are to the present study are presented here. Under the National Heritage Resources Act, 1999 (Act 25 of 1999) (NHRA), Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002), and the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) and 2014 Regulations, an AIA or HIA is required as a specialist sub-section of the EIA.

Heritage management and conservation in South Africa is governed by the NHRA and falls under the overall jurisdiction of the SAHRA and its PHRAs. There are different sections of the NHRA that are relevant to this study. The proposed development is a listed activity in terms of Section 38 of the NHRA which stipulates that the following development categories require a HIA to be conducted by an independent heritage management consultant:

- Construction of a road, wall, powerline, pipeline, canal or other linear form of development or barrier exceeding 300m in length
- Construction of bridge or similar structure exceeding 50m in length
- Development or other activity that will change the character of a site -
  - Exceeding 5000 sq. m
  - Involving three or more existing erven or subdivisions
  - Involving three or more erven or divisions that have been consolidated within past five years
  - Rezoning of site exceeding 10 000 sq. m
  - The costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority
- Any other development category, public open space, squares, parks, recreation grounds

Thus, any person undertaking any development in the above categories, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development. Section 38 (2) (a) of the NHRA also requires the submission of a heritage impact assessment report for authorization purposes to the responsible heritage resources agencies (SAHRA/PHRAs).

Related to Section 38 of the NHRA are Sections 34, 35, 36 and 37. Section 34 stipulates that no person may alter, damage, destroy, relocate etc. any building or structure older than 60 years, without a permit issued by SAHRA or a provincial heritage resources authority. Section 35 (4) of the NHRA stipulates that no person may, without a permit issued by SAHRA, destroy, damage, excavate, alter or remove from its original position, or collect, any archaeological material or object. This section may apply to any significant archaeological sites that may be discovered before or during construction. This means that any chance find must be reported to SAHRA or PHRA

(the relevant PHRA), who will assist in investigating the extent and significance of the finds and inform about further actions. Such actions may entail the removal of material after documenting the find site or mapping of larger sections before destruction. Section 36 (3) of the NHRA also stipulates that no person may, without a permit issued by the SAHRA, destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority. This section may apply in case of the discovery of chance burials, which is unlikely. The procedure for reporting chance finds also applies to the likely discovery of burials or graves by the developer or his contractors. Section 37 of the NHRA deals with public monuments and memorials which exist in the proposed project area.

In addition, the new EIA Regulations (4 December 2014) promulgated in terms of NEMA (Act 107 of 1998) determine that any environmental reports will include cultural (heritage) issues. The new regulations in terms of Chapter 5 of the NEMA provide for an assessment of development impacts on the cultural (heritage) and social environment and for Specialist Studies in this regard. The end purpose of such a report is to alert the applicant (Bushveld Energy (Pty) Ltd, the environmental consultant, SAHRA or PHRA and interested and affected parties about existing heritage resources that may be affected by the proposed development, and to recommend mitigatory measures aimed at reducing the risks of any adverse impacts on these heritage resources.

**Assessing the Significance of Heritage Resources**

The appropriate management of cultural heritage resources is usually determined on the basis of their assessed significance as well as the likely impacts of any proposed developments. Cultural significance is defined in the Burra Charter as meaning aesthetic, historic, scientific, or social value for past, present, or future generations (Article 1.2). Social, religious, cultural, and public significance are currently identified as baseline elements of this assessment, and it is through the combination of these elements that the overall cultural heritage values of the site of interest, associated place or area are resolved.

Not all sites are equally significant and not all are worthy of equal consideration and management. The significance of a place is not fixed for all time, and what is considered of significance at the time of assessment may change as similar items are located, more research is undertaken and community values change. This does not lessen the value of the heritage approach, but enriches both the process and the long-term outcomes for future generations as the nature of what is conserved and why, also changes over time (Pearson and Sullivan 1995:7). This assessment of the Indigenous cultural heritage significance of the Site of Interest as its environments of the study area will be based on the views expressed by the traditional authority and community representatives, consulted documentary review and physical integrity.

African indigenous cultural heritage significance is not limited to items, places or landscapes associated with pre-European contact. Indigenous cultural heritage significance is understood to encompass more than ancient archaeological sites and deposits, broad landscapes, and environments. It also refers to sacred places and story sites, as well as historic sites, including mission sites, memorials, and contact sites. This can also refer to modern sites with particular resonance to the indigenous community. The site of interest considered in this project falls within this realm of broad significance.

Archaeological sites, as defined by the National Heritage Resources Act (Act 25 of 1999) are places in the landscape where people once lived in the past – generally more than 60 years ago – and have left traces of their presence behind. In South Africa, archaeological sites include hominid fossil sites, places where people of the Earlier, Middle and Later Stone Age lived in open sites, river gravels, rock shelters and caves, Iron Age sites, graves, and a variety of historical sites and structures in rural areas, towns and cities. Palaeontological sites are those with fossil remains of plants and animals where people were not involved in the accumulation of the deposits. The basic principle of cultural heritage conservation is that archaeological and other heritage sites are valuable, scarce and non-renewable. Many such sites are unfortunately lost on a daily basis through infrastructure developments such as powerlines, roads and other destructive economic activities such as mining and agriculture. This true for the Madibeng Local Municipality (proposed project area) whose main economic activities are mining and agriculture. It should be noted that once archaeological sites are destroyed, they cannot be replaced as site integrity and authenticity is permanently lost. Archaeological heritage contributes to our understanding of the history of the region and of our country and continent at large. By preserving links with our past, we may be able to appreciate the role past generations have played in the history of our country and the continent at large.

**Categories of Significance**

Rating the significance of archaeological sites, and consequently grading the potential impact on the resources is linked to the significance of the site itself. The significance of an archaeological site is based on the amount of deposit, the integrity of the context, the kind of deposit and the potential to help answer present research questions. Historical structures are defined by Section 34 of the National Heritage Resources Act, 1999, while other historical and cultural significant sites, places and features, are generally determined by community preferences. The guidelines as provided by the NHRA (Act No. 25 of 1999) in Section 3, with special reference to subsection 3 are used when determining the cultural significance or other special value of archaeological or historical sites. In addition, ICOMOS (the Australian Committee of the International Council on Monuments and Sites) highlights four cultural attributes, which are valuable to any given culture:

**Aesthetic Value:**

Aesthetic value includes aspects of sensory perception for which criteria can and should be stated. Such criteria include consideration of the form, scale, colour, texture and material of the fabric, the general atmosphere associated with the place and its uses and also the aesthetic values commonly assessed in the analysis of landscapes and townscape.

**Historical Value:**

Historic value encompasses the history of aesthetics, science and society and therefore to a large extent underlies all of the attributes discussed here. Usually a place has historical value because of some kind of influence by an event, person, phase or activity.

**Scientific Value:**

The scientific or research value of a place will depend upon the importance of the data involved, on its rarity, quality and on the degree to which the place may contribute further substantial information.

**Social Value:**

Social value includes the qualities for which a place has become a focus of spiritual, political, national or other cultural sentiment to a certain group. It is important for heritage specialist input in the EIA process to take into account the heritage management structure set up by the NHR Act. It makes provision for a 3-tier system of management including the South Africa Heritage Resources Agency (SAHRA) at a national level, Provincial Heritage Resources Authorities (PHRAs) at a provincial and the local authority. The Act makes provision for two types or forms of protection of heritage resources; i.e. formally protected and generally protected sites:

**Formally Protected Sites**

- Grade 1 or national heritage sites, which are managed by SAHRA
- Grade 2 or provincial heritage sites, which are managed by the PHRA.
- Grade 3 or local heritage sites.

**General Protection**

- Human burials older than 60 years.
- Archaeological and palaeontological sites.
- Shipwrecks and associated remains older than 70 years.
- Structures older than 60 years.

The certainty of prediction is definite, unless stated otherwise and if the significance of the site is rated high, the significance of the impact will also result in a high rating. The same rule applies if the significance rating of the site is low. The significance of archaeological sites is generally ranked into the following categories:

**Significance Rating Action**

No significance: sites that do not require mitigation.

**Low significance: sites, which may require mitigation.**

**2a**. Recording and documentation (Phase 1) of site; no further action required

**2b**. Controlled sampling (shovel test pits, auguring), mapping and documentation (Phase 2 investigation); permit required for sampling and destruction

**Medium significance: sites, which require mitigation.**

**3.** Excavation of representative sample, C14 dating, mapping and documentation (Phase 2 investigation); permit required for sampling and destruction [including 2a & 2b]

**High significance: sites, where disturbance should be avoided.**

**4a**. Nomination for listing on Heritage Register (National, Provincial or Local) (Phase 2 & 3 investigation); site management plan; permit required if utilised for education or tourism

**High significance: Graves and burial places**

**4b.** Locate demonstrable descendants through social consulting; obtain permits from applicable legislation, ordinances and regional by-laws; exhumation and reinternment [including 2a, 2b & 3]

Furthermore, the significance of archaeological sites was based on six 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),
- Social value,
- Uniqueness, and
- Potential to answer current and future research questions.

An important aspect in assessing the significance and protection status of a heritage resource is often whether or not the sustainable social and economic benefits of a proposed development outweigh the conservation issues at stake. When, for whatever reason the protection of a heritage site is not deemed necessary or practical, its research potential must be assessed and mitigated in order to gain data /information, which would otherwise be lost.

Table 1: Evaluation of the proposed development as guided by the criteria in NHRA, MPRDA and NEMA

| ACT | Stipulation for developments | Requirement details |
|---|---|---|
| NHRA Section 38 | Construction of road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length | No |
| | Construction of bridge or similar structure exceeding 50m in length | No |
| | Development exceeding 5000 sq. m | yes |
| | Development involving three or more existing erven or subdivisions | No |
| | Development involving three or more erven or divisions that have been consolidated within past five years | No |
| | Rezoning of site exceeding 10 000 sq. m | No |
| | Any other development category, public open space, squares, parks, recreation grounds | No |
| NHRA Section 34 | Impacts on buildings and structures older than 60 years | No |
| NHRA Section 35 | Impacts on archaeological and paleontological heritage resources | Subject to identification during Phase 1 walk down survey |
| NHRA Section 36 | Impacts on graves | Subject to identification during Phase 1 |
| NHRA Section 37 | Impacts on public monuments | No |
| Chapter 5 (21/04/2006) NEMA | HIA is required as part of an EIA | Yes |
| Section 39(3)(b) (iii) of the MPRDA | AIA/HIA is required as part of an EIA | No |

### Other relevant legislations

### The Human Tissue Act

Human Tissue Act of 1983 and Ordinance on the Removal of Graves and Dead Bodies of 1925 Graves 60 years or older are heritage resources and fall under the jurisdiction of both the National Heritage Resources Act and the Human Tissues Act of 1983. However, graves younger than 60 years are specifically protected by the Human Tissues Act (Act 65 of 1983) and the Ordinance on the Removal of Graves and Dead Bodies (Ordinance 7 of 1925) as well as any local and regional provisions, laws and by-laws. Such burial places also fall under the jurisdiction of the National Department of Health and the Provincial Health Departments. Approval for the exhumation and re-burial must be obtained from the relevant Provincial Member of the Executive Committee (MEC) as well as the relevant Local Authorities.

### Terms of Reference

The author was instructed to conduct an AIA/HIA study addressing the following issues:

- Archaeological and heritage potential of the proposed development site including any known data on affected areas;
- Provide details on methods of study; potential and recommendations to guide the PHRA/ SAHRA to make an informed decision in respect of authorisation of the proposed development.
- Identify all objects, sites, occurrences and structures of an archaeological or historical nature (cultural heritage sites) located in and around the proposed development site;
- Assess the significance of the cultural resources in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value;
- Describe the possible impact of the proposed development on these cultural remains, according to a standard set of conventions;
- Propose suitable mitigation measures to minimize possible negative impacts on the cultural resources;
- Review applicable legislative requirements;

# PHOTOGRAPHIC PRESENTATION OF THE PROJECT SITE

Plate 1: Photo 1: View of farm road cutting across the proposed Bushveld Hybrid PV Plant site (Photograph © by Author 2019).

Plate 2: Photo 2: View of bore hole within proposed development site (Photograph © by Author 2019).

Plate 3: Photo 3: View of potsherds recorded within development site (Photograph © by Author 2019).

Plate 4: Photo 4: View of potsherds recorded within development site (Photograph © by Author 2019)

Plate 5: Photo 5: View of undecorated potsherds recorded within the proposed project area (Photograph © by Author 2019)

Plate 6: Photo 6: View of undecorated potsherds recovered from the site (Photograph © by Author 2019)

Plate 7: Photo 7: View of powerline and pipeline within proposed development site (Photograph © by Author 2019).

Plate 8 Photo 8: View of a bulk supply water pipeline (Photograph © by Author 2019).

Plate 9 Photo 9: View of proposed development site (Photograph © by Author 2019).

Plate 10: Photo 10: View of heavily disturbed sections of the proposed development site (Photograph © by Author 2019).

Plate 11: Photo 11: View of proposed development site (Photograph © by Author 2019).

Plate 12: Photo 12: View of proposed development site (Photograph © by Author 2019).

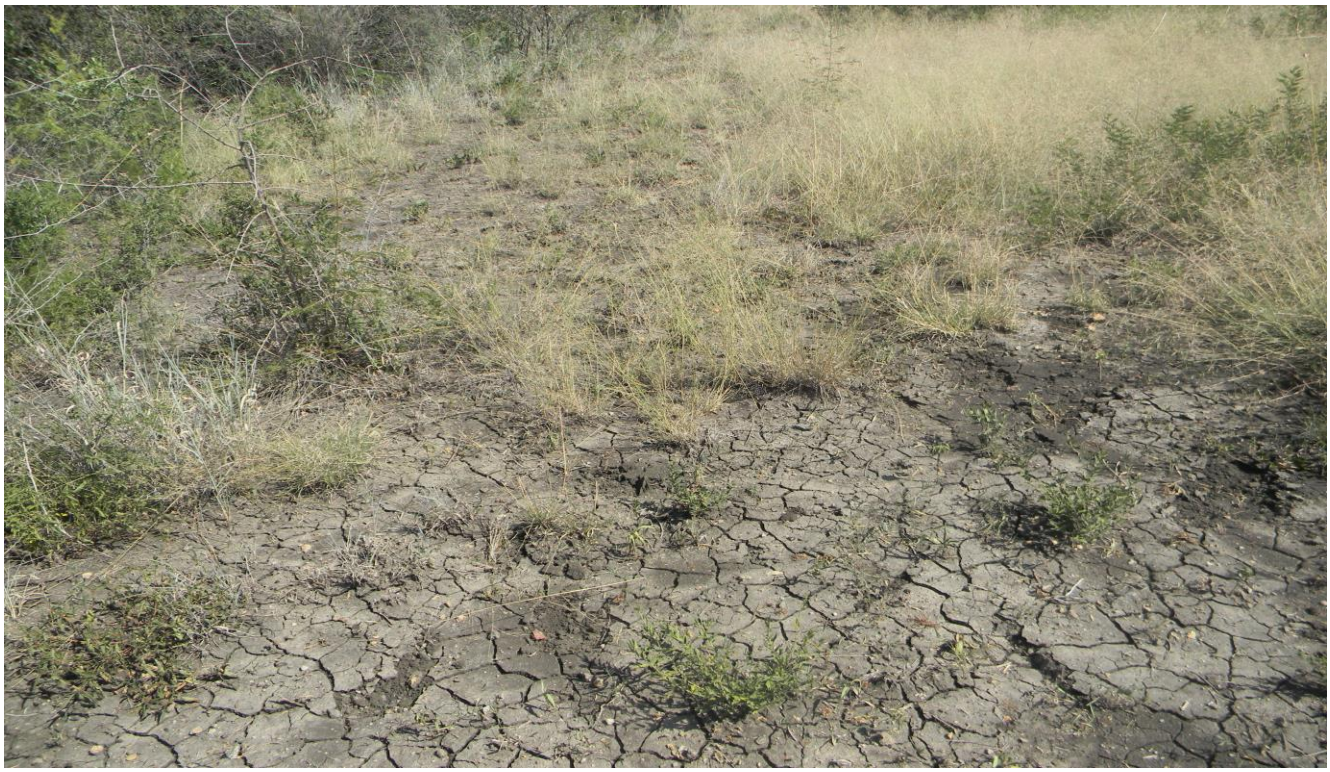

Plate 13 Photo 13: View of proposed development site (Photograph © by Author 2019).

Plate 14: Photo 14: View of a pipeline route cutting through the proposed development site (Photograph © by Author 2019).

Plate 15: Photo 15: View of a powerline running on the boundary of the proposed development site (Photograph © by Author 2019).

## 3 METHODOLOGY

Relevant published and unpublished sources were consulted in generating desktop information for this report. This included online databases such as the UNESCO website, Google Earth, Google Scholar and SAHRIS. Previous HIA in the project area were also consulted. A number of published works on the archaeology, history and palaeontology were also consulted. This included dedicated archaeological, paleontological and geological works by (Breutz 1956; 1968; 1987; Button 1971; Clarck 1971; Eriksson *et al*. 1975; Bertrand and Eriksson 1977; Humphreys 1978; Humphreys and Thackeray 1983; Beaumont and Vogel 1984; Beaumont and Morris 1990; Beaumont 1999; Holmgren *et al*. 1999; Johnson *et al.* 1997; Peabody 1954; Shillington 1985; Wills 1992; Young 1934; 1940, Huffman 2007, Mason 1962). Thus, the proposed Hybrid PV Energy plant by Bushveld Energy (Pty) Ltd was considered in relation to the broader landscape, which is a key requirement of the ICOMOS Guidelines.

The proposed development project requires clearance and authorisation from government compliance agencies including the heritage authority of SAHRA. The objectives of this report are to:

- Fulfil the legislative requirements of the National Heritage Resources Act, Act 25 of 1999.
- Identify and describe, (in terms of their conservation and / or preservation importance) sites of cultural and archaeological importance that may be affected by the proposed development. This study searched for sites and features of traditional historical, social, scientific, cultural, and aesthetic significance within the affected study area; the identification of gravesites.
- Assess the significance of the resources where they are identified.
- Evaluate the impact thereon with respect to the socio-economic opportunities and benefits that would be derived from the proposed development.
- Provide guidelines for protection and management of identified heritage sites and places (including associated intangible heritage resources management that may apply).
- Consult with the affected and other interested parties, where applicable, in regard to the impact on the heritage resources in the project's receiving environment.
- Make recommendations on mitigation measures with the view to reduce specific adverse impacts and enhance specific positive impacts on the heritage resources.
- Take responsibility for communicating with the SAHRA and other authorities in order to obtain the relevant permits and authorization with reference to heritage aspects.

The following tasks were undertaken:

- Preparation of a predictive model for archaeological heritage resources in the study area.
- A review and gap analysis of archaeological, historical, and cultural background information, including possible previous heritage consultant reports specific to the affected project area, the context of the study area and previous land use history as well as a site search;

- Field survey of the proposed development sites in order to test the predictive model regarding that heritage sites in the area;
- Physical cultural property recording of any identified sites or cultural heritage places;
- Identification of heritage significance; and
- Preparation of AIA/HIA report with recommendation, planning constraints and opportunities associated with the proposed development.

Walking survey was conducted on the 19th March 2019 in order to identify and document archaeological and cultural sites within the proposed development site. Cultivated cornfield, formal settlements, grazing lands; farm roads and main road infrastructures, distribution & transmissions lines and other auxiliary infrastructures dominate the affected project area. The entire project area was accessible through a network of mine roads. Although some sections of the proposed development site were covered by tall grass, this did not hinder identification of possible archaeological sites in surveyed areas. Geographic coordinates were obtained with a handheld Garmin GPS global positioning unit. Photographs were taken as part of the documentation process during field study.

### 3.1 Assumptions and Limitations

The investigation has been influenced by the unpredictability of buried archaeological remains (absence of evidence does not mean evidence of absence) and the difficulty in establishing intangible heritage values. It should be noted that archaeological deposits (including graves and traces of archaeological heritage) usually occur below the ground level. Should artefacts or skeletal material be revealed at the site during construction, such activities should be halted immediately, and a competent heritage practitioner, SAHRA must be notified in order for an investigation and evaluation of the find(s) to take place (see NHRA (Act No. 25 of 1999), Section 36 (6). Recommendations contained in this document do not exempt the applicant from complying with any national, provincial and municipal legislation or other regulatory requirements, including any protection or management or general provision in terms of the NHRA. The author assumes no responsibility for compliance with conditions that may be required by SAHRA in terms of this report.

The field survey did not include any form of subsurface inspection beyond the inspection of burrows, road cut sections, and the sections exposed by erosion. Some assumptions were made as part of the study and therefore some limitations, uncertainties and gaps in information would apply. It should however, be noted that these do not invalidate the findings of this study in any significant way:

- The proposed project activities will be limited to specific right of site as detailed in the development layout (Figure 1).
- The construction team to provide link and access to the proposed site by using the existing access roads and there will be no construction beyond the demarcated site.

- No excavations or sampling were undertaken, since a permit from heritage authorities is required to disturb a heritage resource. As such the results herein discussed are based on surficially observed indicators. However, these surface observations concentrated on exposed sections such as road cuts and clear farmland.
- This study did not include any ethnographic and oral historical studies nor did it investigate the settlement history of the area.

## 3.2 Consultations

Public consultations are being conducted by an independent practitioner and issues raised by Interested and Affected parties will be presented during Specialist integration meetings. Issues relating to heritage will be forwarded to the heritage specialist. Sativa Travel and Environmental Consultants (Pty) Ltd team consulted farm owners in respect of heritage resources such as graves, historical buildings and structures located in their farms. The study team consulted land owners who confirmed that the general project area contains historical, graves and archaeological remains which need to be protected before any construction activities commence

# 4 CULTURE HISTORY BACKGROUND OF THE PROJECT AREA

The project area is located near Brits in the Madibeng Local Municipality of North West Province. The project area is located in the North West Province of South Africa that boosts a rich traditional homeland of the contemporary Western Sotho-Tswana including Hurutshe, Kwena, and Kgatla (Huffman 2007, Coetzee 2010). Archaeological and heritages studies in the region indicate that the area is of high pre-historic and heritage significance. It is in fact a cultural landscape where palaeontological, Stone Age, Iron Age and Historical period sites contribute the bulk of the cultural heritage of the region (also Berg 1999, Calebrese 1996; Huffman, 2007; Murimbika, 2006; Schoeman, 2006; Meyer, 2000; van Doornum, 2008).

Stone Age sites are general identifiable by stone artefacts found scattered on the ground surface, as deposits in caves and rock shelters as well as in eroded gully or river sections. Archaeological sites recorded in the project region confirms the existence of Stone Age sites that conform to the generic SA periodization split into the Early Stone Age (ESA) (2.5 million years ago to 250 000 years ago), the Middle Stone Age (MSA) (250 000 years ago to 22 000 years ago) and the Late Stone Age (LSA) (22 000 years ago to 300 years ago). Stone Age sites in the region are also associated with rock painting sites. Cave sites also exist on the landscape south west of the project area.

Concentrations of Early Stone Age (ESA) sites are usually present on the flood-plains of perennial rivers and may date to over 2 million years ago. These ESA open sites may contain scatters of stone tools and manufacturing debris and secondly, large concentrated deposits ranging from pebble tool choppers to core tools such as hand axes and cleavers. The earliest hominids who made these stone tools, probably not always actively hunted, instead relying on the opportunistic scavenging of meat from carnivore fill sites.

Middle Stone Age (MSA) sites also occur on flood plains, but are also associated with caves and rock shelters (overhangs). Sites usually consist of large concentrations of knapped stone flakes such as scrapers, points and blades and associated manufacturing debris. Tools may have been hafted but organic materials, such as those used in hafting, seldom preserve. Limited drive-hunting activities are also associated with this period.

Sites dating to the Later Stone Age (LSA) are better preserved in rock shelters, although open sites with scatters of mainly stone tools can occur. Well-protected deposits in shelters allow for stable conditions that result in the preservation of organic materials such as wood, bone, hearths, ostrich eggshell beads and even bedding material. By using San (Bushman) ethnographic data a better understanding of this period is possible. South African rock art is also associated with the LSA.

In the northern regions of South Africa at least three settlement phases have been distinguished for early prehistoric agropastoralist settlements during the Early Iron Age (EIA). Diagnostic pottery assemblages can be used to infer group identities and to trace movements across the landscape. The first phase of the Early Iron Age, known as

Happy Rest (named after the site where the ceramics were first identified), is representative of the Western Stream of migrations, and dates to AD 400 - AD 600. The second phase of Diamant is dated to AD 600 - AD 900 and was first recognized at the eponymous site of Diamant in the western Waterberg (Huffman 2007, Coetzee 2010). The third phase, characterised by herringbone-decorated pottery of the Eiland tradition, is regarded as the final expression of the Early Iron Age (EIA) and occurs over large parts of the North West Province, Limpopo Province, Gauteng and Mpumalanga. The Eiland tradition occurs over large areas in North West Province. The Eiland tradition has been regarded as the last expression of Early Iron Age that has been date to AD 900 – 1200. This phase has been dated to about AD 900 - AD 1200. These sites are usually located on low-lying spurs close to water.

The North West Province region hosts some of southern Africa's most important Late Iron Age archaeological remains. The Iron Age in southern Africa is associated with the recent peopling of South Africa since the arrival of Bantu-speaking mixed farmers who practised food and metal production and sedentarism that stretch as far back at the 5th Century AD (Berg 1999). Stonewalled enclosures situated on hilltops are characteristic of the Late Iron Age (LIA) settlements that are dated between AD 1640-1830 widely found across the affected landscape. These include sites dating to AD 1500 - AD 1700 represented by the Olifantspoort and Madikwe facies of the Urewe tradition (Huffman, 2007). Other LIA sites in the area date to AD 1650 - AD 1840 and include the Uitkomst, Rooiberg, and Buispoort facies of the Urewe tradition (Huffman, 2007). Between AD 1700 and AD 1750 the Kgafela settled in Pilanesberg area named after Chief Pilane ruler of the Kgafela people who reigned between AD 1825 and AD 1859. From AD 1600 to AD 1800 various Sotho-Tswana speaking communities settled in and around the Brits area (Berg, 1999; Pistorius, 2009). These communities included the Kwena, Kgatla, Fokeng and Po and had small farm style settlements throughout the area (Berg, 1999). The Fokeng were very active in this area during the early 19th century and also built their capital at Phokeng. Various Sotho-Tswana sites in the district of Brits have been excavated and yielded faunal remains. These sites include Boitsemagano, Molokwane and Mabjanamatshwana (Plug and Baderhorst, 2006). Some of the sites that are linked to this are found in the neighbouring Waterberg regions.

The province is also endowed with ancient copper mines that date back to pre-colonial times in the Dwarsberg. Grant and Huffman (2007) found 20 homesteads with pottery assemblages belonging to Moloko cluster. According to Grant et al, (2007) Moloko is the archaeological name for the styles of pottery produced by Sotho-Tswana speakers. The facies called Madikwe belongs to the middle phase of the sequence dating between AD 1500 and 1700. Prehistoric copper production was also practiced in the province as is evidenced by copper ore, slag and tuyeres. The North West Province also is host to the Vredofort Dom, which is a meteorite impact site. It is South Africa's one of the eight World Heritage Sites. Also important is the Cradle of Human kind area which also a World Heritage Site.

From the late 1700s, trade in supply of meat to passing ships on the east coast had increased substantially to an extent that by 1800 meat trade is estimated to have surpassed ivory trade. At the same time population was booming following the increased food production that came with the introduction of maize that became the staple food. These changes promoted further westwards movement by the Nguni farming communities. Naturally, there were signs that population groups had to compete for resources and at time move out of region, which may have been under stress. KwaZulu Natal, east of the North West Province has a special place in the history of the region and country at large. This relates to the most referenced Mfecane (wandering hordes) period of tremendous insecurity and military stress. Around the 1805, the region was witnessing the massive movements, which later came to be associated with the mfecane. The causes and consequences of the Mfecane are well documented elsewhere (e.g. Hamilton 1995; Cobbing 1988).

The project falls within a well-documented cultural landscape. Many Iron Age Sites around Brits to Zeerust have been recorded previously (Berg 1999:7-8). The general project area was previousy inhabited by Twana speaking communities from around AD1600. The ceramic sequence for the Sotho Tswana is referred to as Moloko and consists of different facies with origins in either the Icon facies or a different branch associated with Nguni speakers. Several sites belonging to the Madikwe and Olifantspoort facies (from Icon) have been recorded in the Brits area. These sites date to between AD 1500 and 1700 and predate stone walling ascribed to Sotho-Tswana speakers. Thousands of stone walled sites built along the bases of hills and mountain ranges in the Madibeng area (Pistorius 2012). Several LIA stone walled sites were recorded along the Swartkoppies mountain range which is located to the south of the proposed pipeline route. A detailed survey of the mountain range on the farm Hoekfontein recorded more than 470 individual archaeological sites (Kusel 2003) covering an area of about 1000 hectares (Pelser 2007). Unfortunately, due to extensive mining on the mountain range more than 110 of these sites were destroyed for example Mmakau LIA site which is located more than 2km from the pipeline route was rescued after threats by mining (SAHRIS Case ID 3464 & 5686) (Kusel 2005, 2006). Thirty-seven previously recorded sites are on record in the 2527 DB Topographic Map at Wits database (Van der Walt 2012). These include MSA, LSA, Rock Art and LIA Moloko Stone walled sites. One of the sites worth mentioning is the LIA stone walled complex at Medunsa on the southern border of the prospecting area. Mike Taylor (1979) classified the Mmakau sites and the Medunsa sites fell within the group 2, particularly group 2a dating between AD 1650 and AD 1840. Sotho Tswana stonewalled sites with Uitkomst pottery have been recorded in the Birits and dates to the seventeenth to nineteenth centuries.

In recent colonial history, the area played host to different competing local settler communities. The area was a scene of series of colonial wars. By the end of the 19th century, the region was placed under British rule and the local people displaced. This part of North West and Gauteng was scene of the most recorded colonial war, the Anglo-Boer War 1899-1902. At the end of these wars, the colonial era of the Union of South Africa and the

subsequent apartheid regimes on the Republic of South Africa, some areas were reserved for African settlements often referred to as Bantu homelands such as the Bophuthatswana (Tswana Home land.

**Intangible Heritage**

As defined in terms of the UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage (2003) intangible heritage includes oral traditions, knowledge and practices concerning nature, traditional craftsmanship and rituals and festive events, as well as the instruments, objects, artefacts and cultural spaces associated with group(s) of people. Thus, intangible heritage is better defined and understood by the particular group of people that uphold it. In the present study area, very little intangible heritage is anticipated on the development footprint because most historical knowledge does not suggest a relationship with the study area per se, even though several other places in the general area do have intangible heritage.

**SAHRIS Database and Impact assessment reports in the proposed project area**

Several AIA/HIA studies were conducted in the Madibeng area. The studies include powerline, substation and mining projects completed by Pistorius (2000, 2005, 2006a, 2006b, 2006c, 2009, 2010, 2011a, 2011b, 2011c, 2012a, 2012b, 2013a, 2013b), Van Schalkwyk (2007, 2008, 2013, 2014), Pistorius, J.C.C. & Miller, S. (2011), Tomose (2015), Kusel (2005, 2006, 2008, 2011, 2012), Roodt, F. (2005), Roodt, F& H (2006) and Birkholtz (2007). The studies confirm the occurrence of several stone walled Late Iron Age sites in the Madibeng area. The recorded potsherds are a confirmation that the project area is an LIA cultural precinct. A search on the SAHRIS data base confirmed that several sites have been rescued or destroyed by mining, infrastructure developments and agriculture. The reports also mention the existence of structures older than 60 years and traditional burial sites in the project area but none will be affected by the proposed development project

# 5 RESULTS OF THE ARCHAEOLOGICAL/HERITAGE ASSESSMENT STUDY

The main cause of impacts to archaeological sites is direct, physical disturbance of the archaeological remains themselves and their contexts. It is important to note that the heritage and scientific potential of an archaeological site is highly dependent on its geological and spatial context. This means that even though, for example a deep excavation may expose buried archaeological sites and artefacts, the artefacts are relatively meaningless once removed from their original position. The severe impacts are likely to occur during clearance and digging for foundations and fuel tanks, indirect impacts may occur during movement of construction vehicles. The excavation for foundations and fence line posts will result in the relocation or destruction of all existing surface heritage material. Similarly, the clearing of access roads will impact material that lies buried in the surface sand. Since heritage sites, including archaeological sites, are non-renewable, it is important that they are identified, and their significance assessed prior to construction. It is important to note, that due to the localised nature of archaeological resources, that individual archaeological sites could be missed during the survey, although the probability of this is very low within the proposed development. Further, archaeological sites and unmarked graves may be buried beneath the surface and may only be exposed during construction. The purpose of the AIA is to assess the sensitivity of the area in terms of archaeology and to avoid or reduce the potential impacts of the proposed development by means of mitigation measures (see appended Chance Find Procedure). The study concludes that the impacts will be negligible since the site has previously been cleared and ploughed. The following section presents results of the field survey. The following section presents results of the archaeological and heritage survey conducted within the proposed development project site.

| Heritage resource | Status/Findings |
|---|---|
| Buildings, structures, places and equipment of cultural significance | None exist |
| Areas to which oral traditions are attached or which are associated with intangible heritage | None exists on the study area |
| Historical settlements and townscapes | There are historical settlements outside the proposed development area |
| Landscapes and natural features of cultural significance | None |
| Archaeological and palaeontological sites | The project area is archaeologically and palaeontological sensitive however no significant archaeological remains were recorded during the survey except for a scatter of undecorated potsherds |

| | |
|---|---|
| Graves and burial grounds | None recorded within the proposed development site |
| Movable objects | None |
| Overall comment | The proposed development site is significantly altered however, the occurrence of potsherds is an indication that the site has potential to yield LIA potsherds |

**Archaeological and Heritage Sites**

A section of the proposed project site (see figure 1) yielded undecorated potsherds which were possibly exposed by erosion. Most of the potsherds were not in their original positions, they were probably washed away by erosion from their original place. Although visibility within the development site was seriously compromised by thick vegetation cover, the discoveries within the proposed development site provides an insight of the potential of recovering similar findings during clearance and construction. The affected landscape is heavily degraded from previous and current mining activities, and associated infrastructure developments. This limited the chances of encountering significant in situ archaeological sites to be preserved *in situ*. The area affected by the proposed development is broad and it was assumed that there was always a very high chance of finding archaeological sites. However, the chances of recovering significant archaeological materials were seriously compromised and limited due to infrastructure developments and other destructive land use activities such as bulk water pipeline, road works and powerlines that already exist on the project area.

Based on the field study results and field observations, the author concluded that the receiving environment for the proposed development is medium to high potential to yield previously unidentified archaeological sites during subsurface excavations and construction work.

**Buildings and Structures older than 60 years**

The field study identified remains of an abandoned farm house in the vicinity of the study site. The study did not assess the remains in detail because the farm house falls outside the current project area. Two clusters of farm dwellings and structures were recorded within the proposed development site. These were deemed to be younger than 60 years and therefore do not trigger Section 34 of the NHRA. Note that buildings and structures older than 60 years regardless of their condition are protected by Section 34 of the NHRA.

**Burial grounds and graves**

Human remains and burials are commonly found close to archaeological sites; they may be found in abandoned and neglected burial sites, or occur sporadically anywhere as a result of prehistoric activity, victims of conflict or crime. It is often difficult to detect the presence of archaeological human remains on the landscape as these burials,

in most cases, are not marked at the surface. Archaeological and historical burials are usually identified when they are exposed through erosion and earth moving activities for infrastructure developments such as powerlines and roads. In some instances, packed stones or stones may indicate the presence of informal pre-colonial burials.

The field survey did not record any burial site within the site earmarked for current Hybrid PV Plant development, however burial sites belonging to local communities sporadically in the project area (see Figure 1). The possibility of encountering previously unidentified burial sites is very low within the proposed development site, should such sites be identified during construction, they are still protected by applicable legislations and they should be protected (also see Appendixes for more details). Burial sites older than 60 years are protected by the NHRA and those younger than 60 years are protected by the Human Tissue Act. Exhumation of graves must confirm to the standards set out in the ordinance on excavation (Ordinance no.12 of 1980 which replaced the old Transvaal Ordinance no.7 of 1925.

### Significance valuation for Burial Ground, Historic Cemeteries, and Individual Graves

The significance of burial grounds and gravesites is closely tied to their age and historical, cultural, and social context. Nonetheless, every burial should be considered as of high socio-cultural significance protected by practices, a series of legislations, and municipal ordinances.

**Historical Monuments and Memorials**

The survey did not identify any historical monument and public memorials within the proposed development site. There are no monuments or plaques within the proposed development site that are on the National Heritage or provincial List. However, it should be noted that there are Historical Monuments listed on SAHRIS Data base in the Madibeng Local Municipality of the North West Province. The proposed development will not impact on any listed monuments and memorials in the project area.

**Battle fields**

No known battles or skirmishes associated with the Anglo-Boer war and the struggle against apartheid were fought on the proposed development site.

**Palaeontology**

The Palaeontological sensitivity map shows that the proposed project area is located within a generally sensitive area. The impacts of the proposed development on palaeontology is low (Baker 2017). However, if any fossil deposits are discovered during any phase of the development, the contractor responsible for construction should alert SAHRA (South African Heritage Research Agency) immediately so that appropriate mitigation (e.g. recording, sampling or collection) can be taken by a professional palaeontologist.

### Archaeo-Metallurgy, Prehistoric Mining and Mining Heritage

There are historical and current mining activities in the entire North West Province, however none are located on the proposed development site.

### Visual impacts

The proposed development site is not on the view shed of any listed heritage site. However, stockpiling of topsoil will the visual quality of the project area.

### Mitigation

The position where potsherds were recovered must be flagged out during construction. Construction workers must be inducted on how to identify heritage resources during construction and the reporting procedure in accordance with the appended Chance find procedure. Preferably an archaeologist must be retained to monitor any clearance activities especially where potsherds were recorded.

## 6 CUMMULATIVE IMPACTS

The European Union Guidelines define cumulative impacts as: "Impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project. Therefore, the assessment of cumulative impacts for the proposed development is considered the total impact associated with the proposed development when combined with other past, present, and reasonably foreseeable future developments projects. An examination of the potential for other projects to contribute cumulatively to the impacts on heritage resources from this proposed development project was undertaken during the preparation of this report. The total impact arising from the proposed project (under the control of the applicant), other activities (that may be under the control of others, including other developers, local communities, government) and other background pressures and trends which may be unregulated. The project's impact is therefore one part of the total cumulative impact on the environment. The analysis of a project's incremental impacts combined with the effects of other projects can often give a more accurate understanding of the likely results of the project's presence than just considering its impacts in isolation. The impacts of the proposed development were assessed by comparing the post-project situation to a pre-existing baseline. Where projects can be considered in isolation this provides a good method of assessing a project's impact. However, in this case there are several infrastructure developments including agricultural activities where baselines have already been affected, the proposed construction will continue to add to the impacts in the region, it was deemed appropriate to consider the cumulative effects of proposed development.

This section considers the cumulative impacts that would result from the combination of the proposed development. There are existing infrastructure developments and agriculture activities within the proposed development sites. As

such increased development in the project area will have a number of cumulative impacts on heritage resource whether known or covered in the ground. For example, during construction phase they will be increase in human activity and movement of heavy construction equipment and vehicles that could change, alter or destroy heritage resources within and outside the proposed development sites given that archaeological remains occur on the surface. Cumulative impacts that could result from a combination of the proposed development and other actual or proposed future developments in the broader study area include site clearance and the removal of topsoil could result in damage to or the destruction of heritage resources that have not previously been recorded for example abandoned and unmarked graves.

Heritage resources such as burial grounds and graves and archaeological as well as historical sites are common occurrences within the greater study area. These sites are often not visible and as a result, can be easily affected or lost. Furthermore, many heritage resource in the greater study area are informal, unmarked and may not be visible, particularly during the wet season when grass cover is dense. As such, construction workers may not see these resources, which results in increased risk of resource damage and/or loss. Vibrations and earth moving activities associated with drilling and excavation tower have the potential to crack/damage rock art covered surfaces, which are known to occur in the greater study area. In addition, vibration from traffic has the potential to impact buildings and features of architectural and cultural significance. A potential interaction between archaeology, architectural and cultural heritage and landscape and visual during both the construction and operational phase of the proposed project is identified. Construction will result in a visual impact and impact on features of architectural and cultural significance. Construction works associated with the provision of material assets such as gravel, in particular underground works have the potential to interact with archaeology, architectural and cultural heritage.

No specific paleontological resources were found in the project area during the time of this study; however, this does not preclude the fact that paleontological resources may exist within the greater study area. As such, the proposed development project has the potential to impact on possible paleontological resources in the area. Sites of archaeological, paleontological, or architectural significance were not specifically identified and cumulative effects are not applicable. The nature and severity of the possible cumulative effects may differ from site to site depending on the characteristics of the sites and variables.

Cumulative impacts refer to additional impacts, which even if acceptable if considered in isolation, would together with the existing impacts, exceed the threshold of acceptability and cause harm to the cultural landscape. Cumulative impacts that need attention are related to the impacts of access roads and impacts to buried heritage resources. Allowing the impact of the proposed development to go beyond the surveyed area would result in a significant negative cumulative impact on sites outside the surveyed area. A significant cumulative impact that needs attention is related to stamping by especially construction vehicles during clearance and excavation within

the development site. Movement of heavy construction vehicles must be monitored to ensure they do not drive beyond the approved sites. No significant cumulative impacts, over and above those already considered in the impact assessment, are foreseen at this stage of the assessment process. Cumulative impacts can be significant, if construction vehicles/equipment are not monitored to avoid driving through undetected heritage resources.

# 7 ASSESSMENT OF SIGNIFICANCE

**Assessment Criteria**

An impact can be defined as any change in the physical-chemical, biological, cultural and/or socio-economic environmental system that can be attributed to human activities related to alternatives under study for meeting a project need. The significance of the aspects/impacts of the process will be rated by using a matrix derived from Plomp (2004) and adapted to some extent to fit this process. These matrixes use the consequence and the likelihood of the different aspects and associated impacts to determine the significance of the impacts.

The significance of the impacts will be determined through a synthesis of the criteria below:

**Probability: This describes the likelihood of the impact actually occurring**

**Improbable:** The possibility of the impact occurring is very low, due to the circumstances, design or experience.

**Probable:** There is a probability that the impact will occur to the extent that provision must be made therefore.

**Highly Probable:** It is most likely that the impact will occur at some stage of the development.

**Definite:** The impact will take place regardless of any prevention plans and there can only be relied on mitigatory measures or contingency plans to contain the effect.

**Duration: The lifetime of the impact**

**Short Term:** The impact will either disappear with mitigation or will be mitigated through natural processes in a time span shorter than any of the phases.

**Medium Term:** The impact will last up to the end of the phases, where after it will be negated.

**Long Term:** The impact will last for the entire operational phase of the project but will be mitigated by direct human action or by natural processes thereafter.

**Permanent:** The impact is non-transitory. Mitigation either by man or natural processes will not occur in such a way or in such a time span that the impact can be considered transient.

**Scale: The physical and spatial size of the impact**

**Local:** The impacted area extends only as far as the activity, e.g. footprint

**Site:** The impact could affect the whole, or a measurable portion of the above mentioned properties.

**Regional:** The impact could affect the area including the neighboring residential areas.

**Magnitude/ Severity: Does the impact destroy the environment, or alter its function**

**Low:** The impact alters the affected environment in such a way that natural processes are not affected.

**Medium:** The affected environment is altered, but functions and processes continue in a modified way.

**High:** Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.

**Significance: This is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required.**

**Negligible:** The impact is non-existent or unsubstantial and is of no or little importance to any stakeholder and can be ignored.

**Low:** The impact is limited in extent, has low to medium intensity; whatever its probability of occurrence is, the impact will not have a material effect on the decision and is likely to require management intervention with increased costs.

**Moderate:** The impact is of importance to one or more stakeholders, and its intensity will be medium or high; therefore, the impact may materially affect the decision, and management intervention will be required.

**High:** The impact could render development options controversial or the project unacceptable if it cannot be reduced to acceptable levels; and/or the cost of management intervention will be a significant factor in mitigation.

**The following weights were assigned to each attribute:**

| Aspect | Description | Weight |
|---|---|---|
| Probability | Improbable | 1 |
| | Probable | 2 |
| | Highly Probable | 4 |
| | Definite | 5 |
| Duration | Short term | 1 |
| | Medium term | 3 |
| | Long term | 4 |
| | Permanent | 5 |
| Scale | Local | 1 |
| | Site | 2 |
| | Regional | 3 |
| Magnitude/Severity | Low | 2 |
| | Medium | 6 |
| | High | 8 |
| Significance | Sum (Duration, Scale, Magnitude) x Probability | |
| | Negligible | ≤20 |
| | Low | >20 ≤40 |
| | Moderate | >40 ≤60 |
| | High | >60 |

The significance of each activity should be rated without mitigation measures (WOM) and with mitigation (WM) measures for both construction, operational and closure phases of the proposed development.

**Impact Assessment Matrix**

| **Bushveld Hybrid PV Plant site** | | | | | | |
|---|---|---|---|---|---|---|
| **Nature of Impact** | **Management Measures** | **Duration** | **Scale** | **Severity** | **Probability** | **Significance** |
| Archaeological Remains | Without management | 3 | 3 | 6 | 2 | Moderate |
| | With management | 3 | 2 | 2 | 2 | Low |
| Graves and Burial Grounds | Without management | 3 | 3 | 1 | 4 | Moderate |
| | With management | 3 | 3 | 1 | 2 | Low |
| Historical buildings and structures | Without management | 3 | 3 | 6 | 3 | Moderate |
| | With management | 3 | 3 | 2 | 2 | Low |
| Mining Heritage | Without management | 3 | 3 | 1 | 4 | Low |
| | With management | 3 | 2 | 1 | 2 | Low |
| Monuments and memorials | Without management | 3 | 3 | 1 | 1 | Moderate |
| | With management | 1 | 3 | 1 | 1 | Low |
| Natural Heritage | Without management | 3 | 3 | 2 | | |

Based on the results of the Impact Assessment Matrix the proposed Hybrid PV plant is viable from a heritage perspective.

## 8 STATEMENT OF SIGNIFICANCE

### Aesthetic Value

The aesthetic values of the AIA Study Area and the overall project area are contained in the valley bushveld environment and landscape typical of this part of the North West Province. The visual and physical relationship between AIA study area and the surrounding historical Cultural Landscape demonstrates the connection of place to the local and oral historical stories of the African communities who populated this region going back into prehistory.

The proposed development site will be situated within an environment and associated cultural landscape, which, although developed by existing settlements, remains representative of the original historical environment and cultural landscape of this part of North West Province. The local communities consider the project area a cultural landscape linked to their ancestors and history. However, the proposed development will not alter this aesthetic value in any radical way since it will add to the constantly changing and developing settlements.

### Historic Value

The Indigenous historic values of the Site of Interest and overall study area are contained in the claim of possible historic homesteads being located on the affected area. The history of generations of the Sotho-Tswana clans is tied to this geographical region. Such history goes back to the pre-colonial period, through the colonial era, the colonial wars and subsequent colonial rule up to modern day North West Province.

### Scientific value

Past settlements and associated roads and other auxiliary infrastructure developments and disturbance within the HIA Study Area associated with the proposed development has resulted in limited intact landscape with the potential to retain intact large scale or highly significant open archaeological site deposits.

### Social Value

The project sites fall within a larger and an extensive cultural landscape that is integrated with the wider inland. The overall area has social value for the local community, as is the case with any populated landscape. Literature review suggests that social value of the overall project area is also demonstrated through local history which associates the area with the coming of European missionaries, explorers and colonialists and the African struggle against settler colonialism in the second half of the 1800s and at the end of the 1800s, the colonial wars of resistance, the century long struggle for democracy that followed colonial subjugation. Several generations of communities originate from the project area and continue to call it home. As such, they have ancestral ties to the area. The land

also provides the canvas upon which daily socio-cultural activities are painted. All these factors put together confirms the social significance of the project area. However, this social significance is unlikely to be negatively impacted by the proposed development especially given the fact that the development will add value to the human settlements and activities already taking place. Some sections of development site are covered by thick bushes and vegetation retains social value as sources of important herbs and traditional medicines. As such, they must be considered as significant social value sites

# 9 DISCUSSION

Several archaeologists and researchers conducted various Phase 1 archaeological studies in the Madibeng area since 2000. The studies were conducted for various infrastructure developments such as powerlines and substations, pipelines and residential developments. These studies recorded stone walled sites which are characteristic of the LIA in the North West Region for example van Schalkwyk (2007 & 2009), Huffman (2007), Pistorius (2000, 2005, 2006, 2009, 2010, 2011, 2012, 2013, 2014), and Tomose (2015). Therefore, the current study should be read in conjunction with previous Phase 1 Impact Studies conducted in the general project area.

The study recorded several potsherds washed within the proposed development site. Although the site has been altered significantly the occurrence of potsherds on the surface is an indication of potential archaeological resources hidden beneath the ground. As such the Chance Find procedure applies. In the event of further potsherds being revealed during clearance, a professional archaeologist must be retained to monitor and document any exposed archaeological remains. Other than a scatter of potsherds, no other heritage resources were recorded within the proposed development sites. The lack of confirmable archaeological sites recorded during the current survey is thought to be a result of two primary interrelated factors:

- That proposed development site is located within a heavily degraded area, and has reduced sensitivity for the presence of highly significant physical cultural site remains, be they archaeological, historical or burial sites, due to previous earth moving disturbances resulting from developments and other land uses in the project area.

- Limited ground surface visibility on sections of all the proposed project area that were not cleared at the time of the study may have impended the detection of other physical cultural heritage site remains or archaeological signatures immediately associated with the mine development. This factor is exacerbated by the fact that the study was limited to general survey without necessarily conducting any detailed inspection of specific locations that will be affected by the proposed development.

The absence of confirmable and significant archaeological cultural heritage site is not evidence in itself that such sites did not exist in the proposed development area. It may be that, given the dense development in most sections of the development site, if such sites existed before, changing earth-moving activities may have destroyed their evidence on the surface. Furthermore, some sections were not accessible due to thick vegetation cover. Significance of the sites of Interest is not limited to presence or absence of physical archaeological sites. The potsherds LIA recorded confirms the fact that the project area has several generations of human settlements. This discovery testifies to the significance of the project area as a cultural landscape of note, which has discernible links to local oral history and folk stories, environmental and ethnobotanical aesthetics, popular memories etc. associated with significance emanating from intangible heritage of the region.

## 10 RECOMMENDATIONS

The study did not find any permanent barriers to the proposed development. It is the considered opinion of the author that the proposed development may proceed from a heritage resources management perspective, provided that mitigation measures are implemented if and when required. The following recommendations are based on the results of the AIA/HIA research, cultural heritage background review, site inspection and assessment of significance.

- From a heritage point of view, the proposed development is viable because the proposed project site has been extensively altered by mining activities and other associated infrastructure developments.
- The proposed development may be approved to proceed as planned under observation that project work does not extend beyond the surveyed site.
- Although located across the main road, the recorded burial site must be demarcated by a danger warning sign and must be clearly marked to avoid any accidental damage by especially heavy construction and haulage trucks.
- The applicant must ensure that the descendants of the recorded graves are sought, and notified about this proposed development has an impact (directly or indirectly) on their burial site.
- No stone robbing, or removal of any material is allowed. Any disturbance or alteration on this burial site would be illegal and punishable by law, under section 36 (3) of the National Heritage Resources Act NHRA of 1999 (Act 25 of 1999).
- Should any unmarked burials be exposed during construction, potential custodians must be trekked, consulted and relevant rescue/ relocation permits must be obtained from SAHRA and or Department of Health before any grave relocation can take place. Furthermore, a professional archaeologist must be retained to oversee the relocation process in accordance with the National Heritage Resources Act 25 of 1999.
- Should chance archaeological materials or human burial remains be exposed during subsurface construction work on any section of the proposed development laydown sites, work should cease on the affected area and the discovery must be reported to the heritage authorities immediately so that an investigation and evaluation of the finds can be made. The overriding objective, where remedial action is warranted, is to minimize disruption in construction scheduling while recovering archaeological and any affected cultural heritage data as stipulated by the NHRA regulations.
- Subject to the recommendations herein made and the implementation of the mitigation measures and adoption of the project EMP, there are no other significant cultural heritage resources barriers to the

proposed development. The Heritage authority may approve the proposed development to proceed as planned with special commendations to implement the recommendations here in made.

- If during development, operational or closure phases of this project, any person employed by the applicant, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance, work must cease at the site of the find and this person must report this find to their immediate supervisor, and through their supervisor to the site manager.
- The site Manager must then make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area before informing Sativa.
- In the event that archaeological materials are unearthed, all construction activities within a radius of at least 20m of such indicator should cease and the area be demarcated by a danger tape. Accordingly, a professional archaeologist should be contacted immediately
- It is the responsibility of the applicant to protect the site from publicity (i.e., media) until a mutual agreement is reached.
- Noteworthy that any measures to cover up the suspected archaeological material or to collect any resources is illegal and punishable by law. In the same manner, no person may exhume or collect such remains, whether of recent origin or not, without the endorsement by SAHRA
- The applicant is reminded that unavailability of archaeological materials (e.g., pottery, stone tools, remnants of stone-walling, graves, etc) and fossils does not mean they do not occur, archaeological material might be hidden underground, and as such the client is reminded to take precautions during construction.
- The foot print impact of the proposed construction activities should be kept to minimal to limit the possibility of encountering chance finds within the proposed development site.
- Overall, impacts to heritage resources are not considered to be significant for the project receiving environment. It is thus concluded that the project may be cleared to proceed as planned subject to the Heritage Authority ensuring that detailed heritage monitoring procedures are included in the project EMP for the construction phase, include chance archaeological finds mitigation procedure in the project EMP (See Appendix 1).
- The chance finds process will be implemented when necessary especially when archaeological materials and burials are encountered during subsurface construction activities.
- The findings of this report, with approval of the SAHRA, may be classified as accessible to any interested and affected parties within the limits of the laws.

## 11 CONCLUDING REMARKS

The literature review and field research confirmed that the project area is situated within a contemporary cultural landscape dotted with settlements with long local history. Field survey established that the proposed development site is degraded by previous and current mining activities. In terms of the archaeology and heritage in respect of the proposed development site, there are no obvious 'Fatal Flaws' or 'No-Go' areas. The recorded potsherds are an indication of the potential to encounter heritage resources during construction, however, development may proceed while the ECO or a professional archaeologist is monitoring. The potential for chance finds is high and the applicant and contractors are advised to be diligent and observant during construction, should construction activities commence on the site. The procedure for reporting chance finds has clearly been laid out. This report concludes that the proposed development may be approved by SAHRA to proceed as planned subject to recommendations herein made and heritage monitoring plan being incorporated into the construction EMP (also see Appendices). The mitigation measures are informed by the results of the AIA/HIA study and principles of heritage management enshrined in the NHRA, Act 25 of 1999.

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## Appendix 1: Heritage Management Plan Input into the proposed Bushveld Hybrid PV Plant project EMP

| Objective | • Protection of archaeological sites and land considered to be of cultural value;<br>• Protection of known physical cultural property sites against vandalism, destruction and theft; and<br>• The preservation and appropriate management of new archaeological finds should these be discovered during construction. | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| No. | Activity | Mitigation Measures | Duration | Frequency | Responsibility | Accountable | Contacted | Informed |
| Pre-Construction Phase | | | | | | | | |
| 1 | Planning | Ensure all known sites of cultural, archaeological, and historical significance are demarcated on the site layout plan, and marked as no-go areas. | Throughout Project | Weekly Inspection | Contractor [C]<br>CECO | SM | ECO | EA<br>EM<br>PM |
| Prospecting Phase | | | | | | | | |
| 1 | Emergency Response | Should any archaeological or physical cultural property heritage resources be exposed during excavation for the purpose of construction, construction in the vicinity of the finding must be stopped until heritage authority has cleared the development to continue. | N/A | Throughout | C<br>CECO | SM | ECO | EA<br>EM<br>PM |
| | | Should any archaeological, cultural property heritage resources be exposed during excavation or be found on development site, a registered heritage specialist or PHRA official must be called to site for inspection. | | Throughout | C<br>CECO | SM | ECO | EA<br>EM<br>PM |
| | | Under no circumstances may any archaeological, historical or any physical cultural property heritage material be destroyed or removed form site; | | Throughout | C<br>CECO | SM | ECO | EA<br>EM<br>PM |
| | | Should remains and/or artefacts be discovered on the development site during earthworks, all work will cease in the area affected and the Contractor will immediately inform the Construction Manager who in turn will inform PHRA. | | When necessary | C<br>CECO | SM | ECO | EA<br>EM<br>PM |
| | | Should any remains be found on site that is potentially human remains, the PHRA and South African Police Service should be contacted. | | When necessary | C<br>CECO | SM | ECO | EA<br>EM<br>PM |
| Rehabilitation Phase | | | | | | | | |
| | | Same as construction phase. | | | | | | |
| Operational Phase | | | | | | | | |
| | | Same as construction phase. | | | | | | |

## Appendix 2: Heritage mitigation measures table

| SITE REF | HERITAGE ASPECT | POTENTIAL IMPACT | MITIGATION MEASURES | RESPONSIBLE PARTY | PENALTY | METHOD STATEMENT REQUIRED |
|---|---|---|---|---|---|---|
| Chance Archaeological and Burial Sites | General area where the proposed project is situated is a historic landscape, which may yield archaeological, cultural property, remains. There are possibilities of encountering unknown archaeological sites during subsurface construction work which may disturb previously unidentified chance finds. | Possible damage to previously unidentified archaeological and burial sites during construction phase.<br>• Unanticipated impacts on archaeological sites where project actions inadvertently uncovered significant archaeological sites.<br>• Loss of historic cultural landscape;<br>• Destruction of burial sites and associated graves<br>• Loss of aesthetic value due to construction work<br>• Loss of sense of place<br>Loss of intangible heritage value due to change in land use | In situations where unpredicted impacts occur construction activities must be stopped and the heritage authority should be notified immediately.<br>Where remedial action is warranted, minimize disruption in construction scheduling while recovering archaeological data. Where necessary, implement emergency measures to mitigate.<br>• Where burial sites are accidentally disturbed during construction, the affected area should be demarcated as no-go zone by use of fencing during construction, and access thereto by the construction team must be denied.<br>• Accidentally discovered burials in development context should be salvaged and rescued to safe sites as may be directed by relevant heritage authority. The heritage officer responsible should secure relevant heritage and health authorities permits for possible relocation of affected graves accidentally encountered during construction work. | • Contractor /<br>• Project Manager<br>• Archaeologist<br>• Project EO | Fine and or imprisonment under the PHRA-G Act & NHRA | Monitoring measures should be issued as instruction within the project EMP.<br><br>PM/EO/Archaeologists<br>Monitor construction work on sites where such development projects commences within the farm. |

## Appendix 3: Legal background in South Africa

Extracts relevant to this report from the National Heritage Resources Act No. 25 of 1999, (Sections 5, 36 and 47):

General principles for heritage resources management

5. (1) All authorities, bodies and persons performing functions and exercising powers in terms of this Act for the management of heritage resources must recognise the following principles:

(a) Heritage resources have lasting value in their own right and provide evidence of the origins of South African society and as they are valuable, finite, non-renewable and irreplaceable they must be carefully managed to ensure their survival;

(b) every generation has a moral responsibility to act as trustee of the national heritage for succeeding generations and the State has an obligation to manage heritage resources in the interests of all South Africans;

(c) heritage resources have the capacity to promote reconciliation, understanding and respect, and contribute to the development of a unifying South African identity; and

(d) heritage resources management must guard against the use of heritage for sectarian purposes or political gain.

(2) To ensure that heritage resources are effectively managed—

(a) the skills and capacities of persons and communities involved in heritage resources management must be developed; and

(b) provision must be made for the ongoing education and training of existing and new heritage resources management workers.

(3) Laws, procedures and administrative practices must—

(a) be clear and generally available to those affected thereby;

(b) in addition to serving as regulatory measures, also provide guidance and information to those affected thereby; and

(c) give further content to the fundamental rights set out in the Constitution.

(4) Heritage resources form an important part of the history and beliefs of communities and must be managed in a way that acknowledges the right of affected communities to be consulted and to participate in their management.

(5) Heritage resources contribute significantly to research, education and tourism and they must be developed and presented for these purposes in a way that ensures dignity and respect for cultural values.

(6) Policy, administrative practice and legislation must promote the integration of heritage resources conservation in urban and rural planning and social and economic development.

(7) The identification, assessment and management of the heritage resources of South Africa must—

(a) take account of all relevant cultural values and indigenous knowledge systems;

(b) take account of material or cultural heritage value and involve the least possible alteration or loss of it;

(c) promote the use and enjoyment of and access to heritage resources, in a way consistent with their cultural significance and conservation needs;

(d) contribute to social and economic development;

(e) safeguard the options of present and future generations; and

(f) be fully researched, documented and recorded.

Burial grounds and graves

36. (1) Where it is not the responsibility of any other authority, SAHRA must conserve and generally care for burial grounds and graves protected in terms of this section, and it may make such arrangements for their conservation as it sees fit.

(2) SAHRA must identify and record the graves of victims of conflict and any other graves which it deems to be of cultural significance and may erect memorials associated with the grave referred to in subsection (1), and must maintain such memorials.

(3) (a) No person may, without a permit issued by SAHRA or a provincial heritage resources authority—

(a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;

(b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or

(c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

(4) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction or damage of any burial ground or grave referred to in subsection (3)(a) unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources

authority.

(5) SAHRA or a provincial heritage resources authority may not issue a permit for any activity under subsection (3)(b) unless it is satisfied that the applicant has, in accordance with regulations made by the responsible heritage resources authority—

(a) made a concerted effort to contact and consult communities and individuals who by tradition have an interest in such grave or burial ground; and

(b) reached agreements with such communities and individuals regarding the future of such grave or burial ground.

(6) Subject to the provision of any other law, any person who in the course of development or any other activity discovers the location of a grave, the existence of which was previously unknown, must immediately cease such activity and report the discovery to the responsible heritage resources authority which must, in co-operation with the South African Police Service and in accordance with regulations of the responsible heritage resources authority—

(a) carry out an investigation for the purpose of obtaining information on whether or not such grave is protected in terms of this Act or is of significance to any community; and

(b) if such grave is protected or is of significance, assist any person who or community which is a direct descendant to make arrangements for the exhumation and re-interment of the contents of such grave or, in the absence of such person or community, make any such arrangements as it deems fit.

(7) (a) SAHRA must, over a period of five years from the commencement of this Act, submit to the Minister for his or her approval lists of graves and burial grounds of persons connected with the liberation struggle and who died in exile or as a result of the action of State security forces or agents provocateur and which, after a process of public consultation, it believes should be included among those protected under this section.

(b) The Minister must publish such lists as he or she approves in the Gazette.

(8) Subject to section 56(2), SAHRA has the power, with respect to the graves of victims of conflict outside the Republic, to perform any function of a provincial heritage resources authority in terms of this section.

(9) SAHRA must assist other State Departments in identifying graves in a foreign country of victims of conflict connected with the liberation struggle and, following negotiations with the next of kin, or relevant authorities, it may re-inter the remains of that person in a prominent place in the capital of the Republic.

General policy

47. (1) SAHRA and a provincial heritage resources authority—

(a) must, within three years after the commencement of this Act, adopt statements of general policy for the management of all heritage

resources owned or controlled by it or vested in it; and

(b) may from time to time amend such statements so that they are adapted to changing circumstances or in accordance with increased knowledge; and

(c) must review any such statement within 10 years after its adoption.

(2) Each heritage resources authority must adopt for any place which is protected in terms of this Act and is owned or controlled by it or vested in it, a plan for the management of such place in accordance with the best environmental, heritage conservation, scientific and educational principles that can reasonably be applied taking into account the location, size and nature of the place and the resources of the authority concerned, and may from time to time review any such plan.

(3) A conservation management plan may at the discretion of the heritage resources authority concerned and for a period not exceeding 10 years, be operated either solely by the heritage resources authority or in conjunction with an environmental or tourism authority or under contractual arrangements, on such terms and conditions as the heritage resources authority may determine.

(4) Regulations by the heritage resources authority concerned must provide for a process whereby, prior to the adoption or amendment of any statement of general policy or any conservation management plan, the public and interested organisations are notified of the availability of a draft statement or plan for inspection, and comment is invited and considered by the heritage resources authority concerned.

(5) A heritage resources authority may not act in any manner inconsistent with any statement of general policy or conservation management plan.

(6) All current statements of general policy and conservation management plans adopted by a heritage resources authority must be available for public inspection on request.