

HERITAGE IMPACT ASSESSMENT

(REQUIRED UNDER SECTION 38(8) OF THE NHRA (No. 25 OF 1999))

**For the proposed SolarReserve Kotulo Tsatsi Photovoltaic Power Plant 2
Facility, Kenhardt District, Northern Cape.**

Type of development:

Renewable Energy Development

Client:

SolarReserve

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Project Reference:

SAHRA Case ID: 5884

HCAC Project number 217032

Report date:

March 2017

APPROVAL PAGE

Project Name	SolarReserve Kotulo Tsatsi Photovoltaic Power Plant 2
Report Title	Heritage Impact Assessment SolarReserve Kotulo Tsatsi Photovoltaic Power Plant 2
Authority Reference Number	SAHRA Case 5884
Report Status	Draft Report
Applicant Name	SolarReserve

	Name	Signature	Qualifications and Certifications	Date
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DOCUMENT PROGRESS**Distribution List**

Date	Report Reference Number	Document Distribution	Number of Copies
6 March 2017	217032	Savannah Environmental (Pty) Ltd	Electronic Copy
28 March 2017	217032	SolarReserve	Electronic Copy

Amendments on Document

Date	Report Reference Number	Description of Amendment
27 March 2017	217032	Addressed comments and revised report.

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REPORT OUTLINE

Appendix 6 of GN 982 of 4 December 2014 provides the requirements for specialist reports undertaken as part of the environmental authorisation process. In line with this, Table 1 provides an overview of Appendix 6 together with information on how these requirements have been met.

Table 1. Specialist Report Requirements.

Requirement from Appendix 6 of GN 982 of 4 December 2014	Chapter
(a) Details of - (i) the specialist who prepared the report; and (ii) the expertise of that specialist to compile a specialist report including a curriculum vitae	Section a Section 12
(b) Declaration that the specialist is independent in a form as may be specified by the competent authority	<i>Declaration of Independence</i>
(c) Indication of the scope of, and the purpose for which, the report was prepared	Section 1
(d) Date and season of the site investigation and the relevance of the season to the outcome of the assessment	Section 3.4
(e) Description of the methodology adopted in preparing the report or carrying out the specialised process	Section 3
(f) Specific identified sensitivity of the site related to the activity and its associated structures and infrastructure	Section 8 and 9
(g) Identification of any areas to be avoided, including buffers	Section 9
(h) Map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers	Section 8
(I) Description of any assumptions made and any uncertainties or gaps in knowledge	Section 3.7
(j) Description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives on the environment	Section 9
(k) Mitigation measures for inclusion in the EMPr	Section 9 and 10
(I) Conditions for inclusion in the environmental authorisation	Section 9 and 10
(m) Monitoring requirements for inclusion in the EMPr or environmental authorisation	Section 9 and 10
(n) Reasoned opinion - (i) as to whether the proposed activity or portions thereof should be authorised; and (ii) if the opinion is that the proposed activity or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	Section 10.2
(o) Description of any consultation process that was undertaken during the course of preparing the specialist report	Section 6
(p) A summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	TBC
(q) Any other information requested by the competent authority	Section 10

Executive Summary

SolarReserve South Africa (Pty) Ltd in a joint venture with Kotulo Tsatsi Energy (Pty) Ltd propose the construction and operation of a photovoltaic (PV) power plant (PV 2) and associated infrastructure on Portion 2 and 3 of Farm Styns Vley 280. The PV 2 Project study area is approximately 350 ha within the larger 20 700 ha study area. The project site is located approximately 70km south west of Kenhardt within the Hantam Local Municipality which falls within the jurisdiction of the Namakwa District Municipality, near to the boundary of the Kai !Garib Local Municipality of the ZF Mgcau District Municipality. The project is to be known as the Solar Reserve Kotulo Tsatsi Photovoltaic Power Plant 2 (hereafter referred to as the proposed PV 2 Solar Facility).

HCAC was appointed to conduct a Heritage Impact Assessment of the proposed PV2 footprint to determine the presence of cultural heritage sites and the impact of the proposed development on these non-renewable resources. The study area was assessed both on desktop level and by a field survey (1 – 3 March 2017). The field survey was conducted as a non-intrusive pedestrian survey to cover the extent of the development footprint and two power line alternatives.


No archaeological sites were recorded during the survey therefore no further mitigation prior to construction is recommended in terms of the archaeological component of Section 35 of the NHRA for the proposed development to proceed. An independent paleontological study (Almond 2014) was commissioned for the study area by the EAP and is not discussed further in this report.

In terms of the built environment (Section 34), no standing structures older than 60 years occur within the impact area. No burial sites (Section 36) were recorded. However if any graves are located in future they should ideally be preserved *in-situ* or alternatively relocated according to existing legislation. During the public participation process no heritage concerns was raised. The potential impacts are therefore rated as of being of low significance with the biggest anticipated impact on the cultural and natural landscape. However the proposed PV 2 site is located in an isolated area and not visible from any major roads.

The impacts to heritage resources are considered low and it is recommended that from a heritage perspective the proposed project can commence on the condition that the following recommendations are implemented as part of the EMPr and based on approval from SAHRA.

- If any graves are located in future they should ideally be preserved *in-situ* or alternatively relocated according to existing legislation.
- The possibility of the occurrence of subsurface finds cannot be excluded. Therefore if during construction any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped and a qualified archaeologist must be contacted for an assessment of the find and therefor chance find procedures should be put in place as part of the EMPr

DECLARATION OF INDEPENDENCE

Specialist Name	Jaco van der Walt
Declaration of Independence	<p>I declare, as a specialist appointed in terms of the National Environmental Management Act (Act No 108 of 1998) and the associated 2014 Environmental Impact Assessment (EIA) Regulations, that I:</p> <ul style="list-style-type: none"> • I act as the independent specialist in this application; • I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant; • I declare that there are no circumstances that may compromise my objectivity in performing such work; • I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity; • I will comply with the Act, Regulations and all other applicable legislation; • I have no, and will not engage in, conflicting interests in the undertaking of the activity; • I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority; • All the particulars furnished by me in this form are true and correct; and • I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.
Signature	
Date	06/03/2017

a) Expertise of the specialist

Jaco van der Walt has been practising as a CRM archaeologist for 15 years. He obtained an MA degree in Archaeology from the University of the Witwatersrand focussing on the Iron Age in 2012 and is a PhD candidate at the University of Johannesburg focussing on Stone Age Archaeology with specific interest in the Middle Stone Age (MSA) and Later Stone Age (LSA). Jaco is an accredited member of ASAPA (#159) and have conducted more than 500 impact assessments in Limpopo, Mpumalanga, North West, Free State, Gauteng, KZN as well as the Northern and Eastern Cape Provinces in South Africa.

Jaco has worked on various international projects in Zimbabwe, Botswana, Mozambique, Lesotho, DRC Zambia and Tanzania. Through this he has a sound understanding of the IFC Performance Standard requirements, with specific reference to Performance Standard 8 – Cultural Heritage.

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ABBREVIATIONS

AIA: Archaeological Impact Assessment
ASAPA: Association of South African Professional Archaeologists
BGG Burial Ground and Graves
BIA: Basic Impact Assessment
CFPs: Chance Find Procedures
CMP: Conservation Management Plan
CRR: Comments and Response Report
CRM: Cultural Resource Management
DEA: Department of Environmental Affairs
EA: Environmental Authorisation
EAP: Environmental Assessment Practitioner
ECO: Environmental Control Officer
EIA: Environmental Impact Assessment*
EIA: Early Iron Age*
EIA Practitioner: Environmental Impact Assessment Practitioner
EMPr: Environmental Management Programme
ESA: Early Stone Age
ESIA: Environmental and Social Impact Assessment
GIS Geographical Information System
GPS: Global Positioning System
GRP Grave Relocation Plan
HIA: Heritage Impact Assessment
LIA: Late Iron Age
LSA: Late Stone Age
MEC: Member of the Executive Council
MIA: Middle Iron Age
MPRDA: Mineral and Petroleum Resources Development Act
MSA: Middle Stone Age
NEMA National Environmental Management Act, 1998 (Act No. 107 of 1998)
NHRA National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NID Notification of Intent to Develop
NoK Next-of-Kin
PHRA: Provincial Heritage Resource Agency
SADC: Southern African Development Community
SAHRA: South African Heritage Resources Agency

**Although EIA refers to both Environmental Impact Assessment and the Early Iron Age both are internationally accepted abbreviations and must be read and interpreted in the context it is used.*

GLOSSARY

Archaeological site (remains of human activity over 100 years old)
 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)
 The Iron Age (~ AD 400 to 1840)
 Historic (~ AD 1840 to 1950)
 Historic building (over 60 years old)

1 Introduction and Terms of Reference:

Heritage Contracts and Archaeological Consulting CC (HCAC) was appointed to comment on the potential impacts of the proposed SolarReserve Kotulo Tsatsi Photovoltaic Power Plant 2 (hereafter referred to as the "PV2 Project") on heritage resources within the development footprint. The proposed facility will have a capacity of up to 100MW.

The aim of the study is to survey the proposed development footprint to identify cultural heritage sites, document, and assess their importance within local, provincial and national context. It serves to assess the impact of the proposed project on non-renewable heritage resources, and to submit appropriate recommendations with regard to the responsible cultural resources management measures that might be required to assist the developer in managing the discovered heritage resources in a responsible manner. It is also conducted to protect, preserve, and develop such resources within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999). The report outlines the approach and methodology utilized before and during the survey, which includes: Phase 1, review of relevant literature; Phase 2, the physical surveying of the area on foot and by vehicle; Phase 3, reporting the outcome of the study.

During the survey no heritage sites were identified. General site conditions and features on sites were recorded by means of photographs, GPS locations, and site descriptions. Possible impacts were identified and mitigation measures are proposed in the following report. The South African Heritage Resources Agency (SAHRA) as a commenting authority under section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) require all environmental documents, compiled in support of an Environmental Authorisation application as defined by NEMA EIA Regs section 40 (1) and (2), to be submitted to SAHRA. As such the Environmental Impact Assessment report and its appendices must be submitted to the case as well as the Environmental Management Programme (EMPr), once it's completed by the Environmental Assessment Practitioner (EAP).

1.1 Terms of Reference

Field study

Conduct a field study to: (a) locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest; b) record GPS points of sites/areas identified as significant areas; c) determine the levels of significance of the various types of heritage resources affected by the proposed towers.

Reporting

Reporting aims to:

- Report on the identification of anticipated and cumulative impacts that the proposed project may have on heritage resources for all 3 phases of the project; i.e., construction, operation and decommissioning phases.
- Consider alternatives, should any significant sites be impacted adversely by the proposed project.
- Ensure that all studies and results comply with the relevant legislation, SAHRA minimum standards and the code of ethics and guidelines of the Association of South African Professional Archaeologists (ASAPA).
- To assist the developer in managing the discovered heritage resources in a responsible manner, and to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999).

Table 2: Project Description

Size of farm and portions	Approximately 350 ha over Portion 2 and Portion 3 of Farms Styns Vley 280
Magisterial District	Namakwa District Municipality, near to the boundary with the Kai !Garib Local Municipality of the ZF Mgcau District Municipality
1: 50 000 map sheet number	2920 DC
Central co-ordinate of the development	29° 48' 33.2626" S, 20° 34' 14.3177" E

Table 3: Infrastructure and project activities

Type of development	A photovoltaic (PV) power plant 2 and associated infrastructure
Project size	350 Hectares
Project Components	<p>The PV 2 Solar facility will have a contracted capacity of up to 100MW, and include (but not limited to) the following infrastructure:</p> <ul style="list-style-type: none"> » Power plant: Photovoltaic (PV) panels including inverters; and » Associated infrastructure: access roads, plant substation, power line, fence, workshop, office buildings, temporary man camp, temporary laydown areas <p>The Project Site is situated adjacent to the Aries/Helios 1 400kV power line and approximately 40km from the Eskom Aries Substation.</p> <p>The interconnection solution includes grid connection infrastructure required to evacuate electricity into the national grid and include the construction of:</p> <ul style="list-style-type: none"> » On-site IPP/Project Substation » Grid connection infrastructure up to 132kV between the IPP/Project Substation and the Eskom Substation infrastructure to Aries MTS

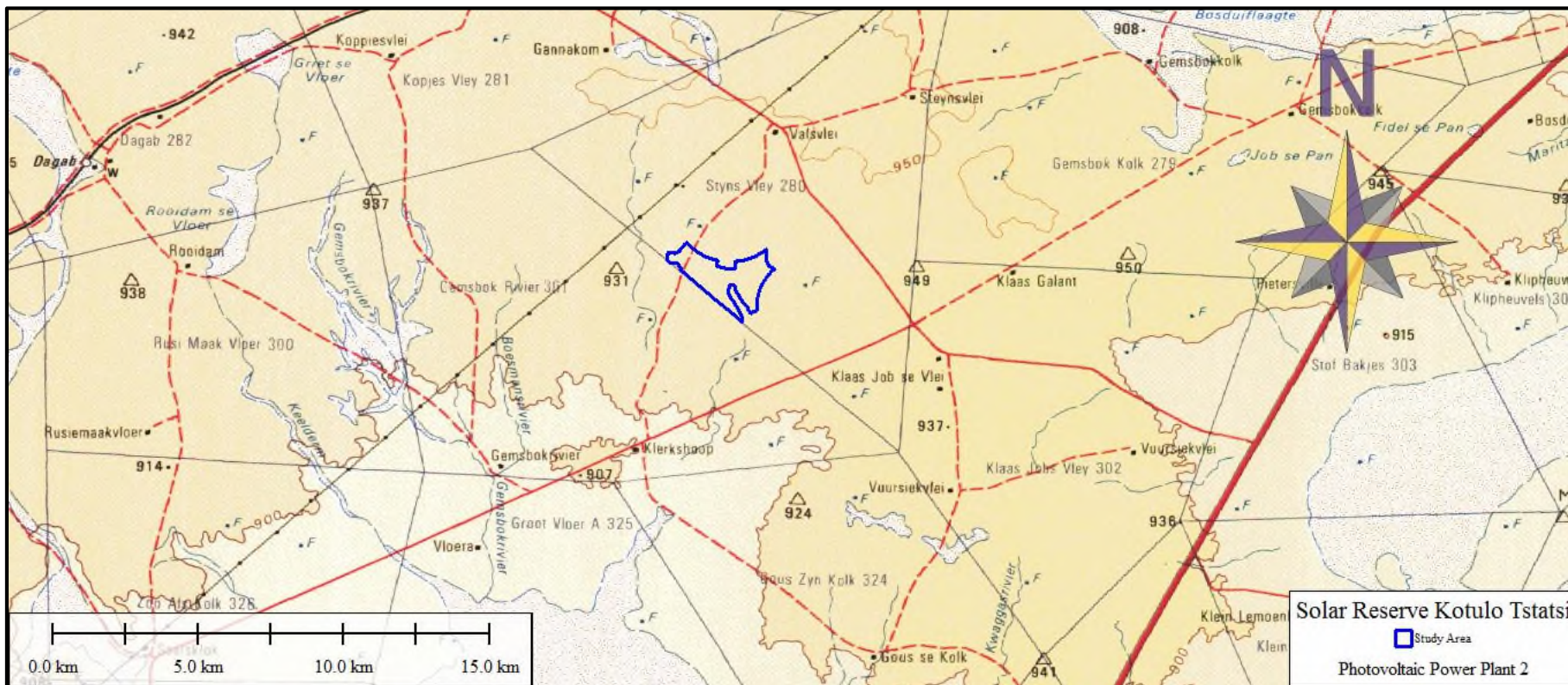


Figure 1. Provincial map (1 : 250 000 topographical map)

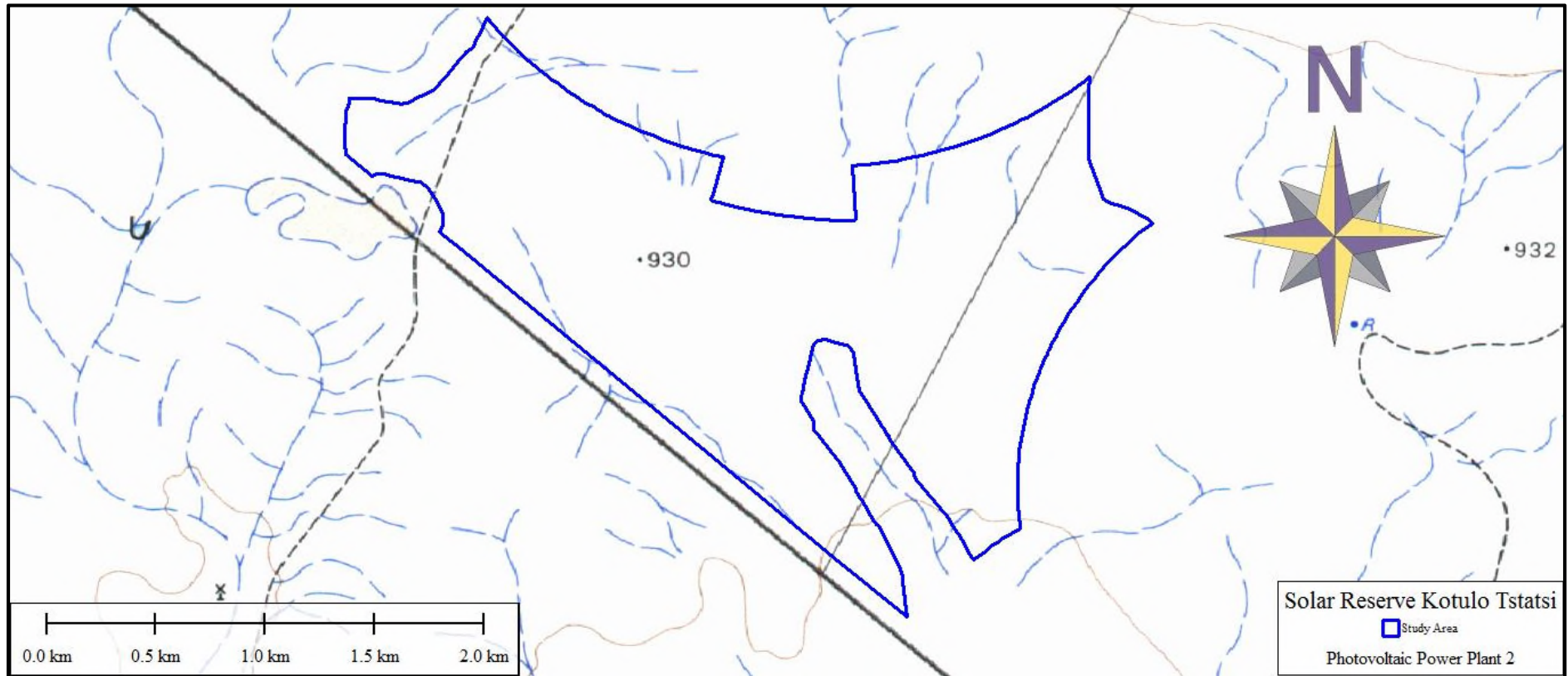


Figure 2: Regional map (1:50 000 topographical map).

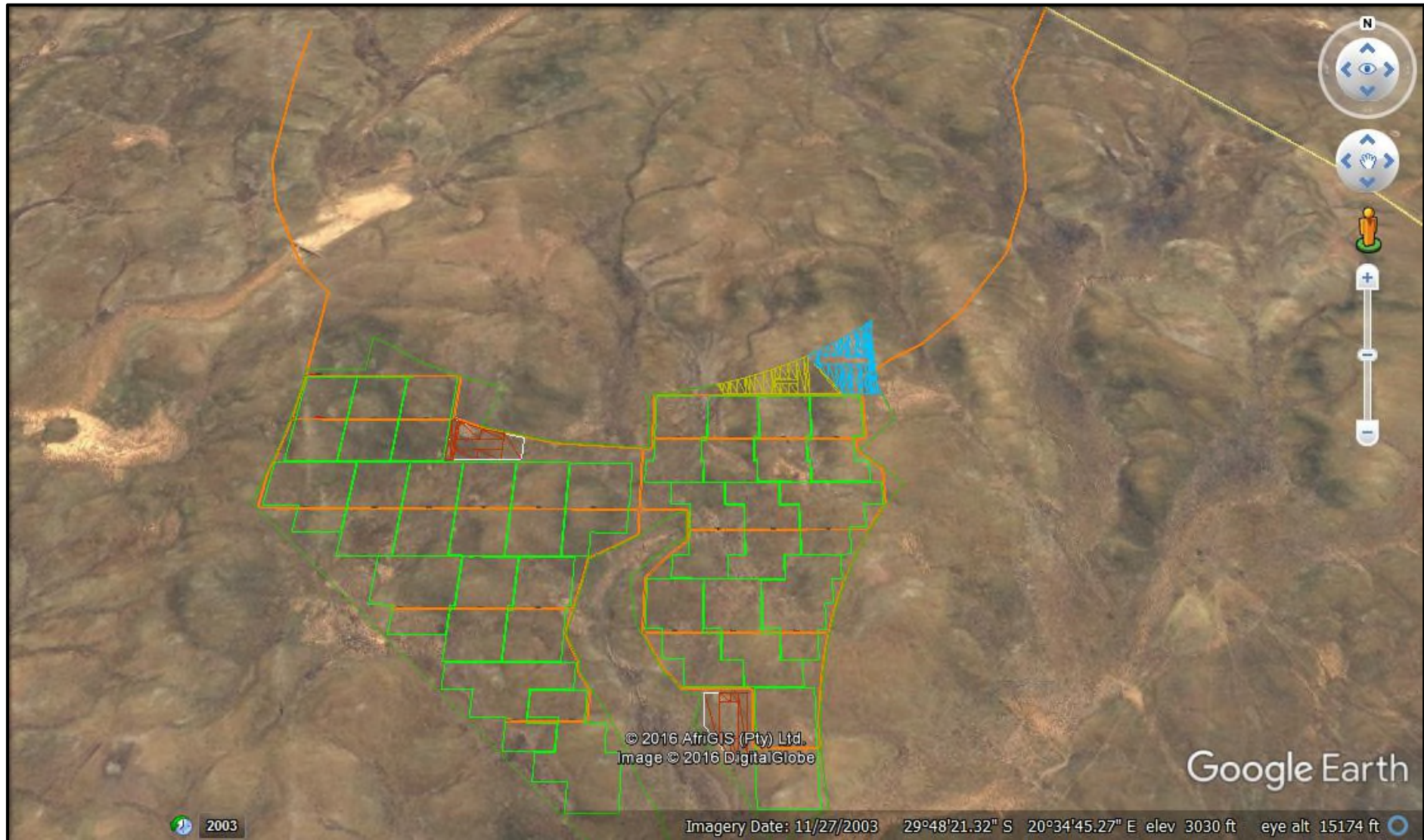


Figure 3. Satellite image indicating the study area (Google Earth).

2 Legislative Requirements

The HIA, as a specialist sub-section of the EIA, is required under the following legislation:

- National Heritage Resources Act (NHRA), Act No. 25 of 1999)
- National Environmental Management Act (NEMA), Act No. 107 of 1998 - Section 23(2)(b)
- Mineral and Petroleum Resources Development Act (MPRDA), Act No. 28 of 2002 - Section 39(3)(b)(iii)

A Phase 1 HIA is a pre-requisite for development in South Africa as prescribed by SAHRA and stipulated by legislation. The overall purpose of heritage specialist input is to:

- Identify any heritage resources, which may be affected;
- Assess the nature and degree of significance of such resources;
- Establish heritage informants/constraints to guide the development process through establishing thresholds of impact significance;
- Assess the negative and positive impact of the development on these resources; and
- Make recommendations for the appropriate heritage management of these impacts.

The HIA should be submitted, as part of the impact assessment report or EMPr, to the Provincial Heritage Resource Agency (PHRA) if established in the province or to SAHRA. SAHRA will ultimately be responsible for the professional evaluation of Phase 1 AIA reports upon which review comments will be issued. 'Best practice' requires Phase 1 AIA reports and additional development information, as per the impact assessment report and/or EMPr, to be submitted in duplicate to SAHRA after completion of the study. SAHRA accepts Phase 1 AIA reports authored by professional archaeologists, accredited with ASAPA or with a proven ability to do archaeological work.

Minimum accreditation requirements include an Honours degree in archaeology or related discipline and 3 years post-university Cultural Resources Management (CRM) experience (field supervisor level). Minimum standards for reports, site documentation and descriptions are set by ASAPA in collaboration with SAHRA. ASAPA is based in South Africa, representing professional archaeology in the Southern African Development Community (SADC) region. ASAPA is primarily involved in the overseeing of ethical practice and standards regarding the archaeological profession. Membership is based on proposal and secondment by other professional members.

Phase 1 AIA's are primarily concerned with the location and identification of heritage sites situated within a proposed development area. Identified sites should be assessed according to their significance. Relevant conservation or Phase 2 mitigation recommendations should be made. Recommendations are subject to evaluation by SAHRA.

Conservation or Phase 2 mitigation recommendations, as approved by SAHRA, are to be used as guidelines in the developer's decision making process.

Phase 2 archaeological projects are primarily based on salvage/mitigation excavations preceding development destruction or impact on a site. Phase 2 excavations can only be conducted with a permit, issued by SAHRA to the appointed archaeologist. Permit conditions are prescribed by SAHRA and includes (as minimum requirements) reporting back strategies to SAHRA and deposition of excavated material at an accredited repository.

In the event of a site conservation option being preferred by the developer, a site management plan, prepared by a professional archaeologist and approved by SAHRA, will suffice as minimum requirement.

After mitigation of a site, a destruction permit must be applied for with SAHRA by the applicant before development may proceed.

Human remains older than 60 years are protected by the National Heritage Resources Act (Act 25 of 1999), with reference to Section 36. Graves older than 60 years, but younger than 100 years fall under Section 36 of the National Heritage Resources Act (Act 25 of 1999), as well as the Human Tissues Act (Act 65 of 1983), and are the jurisdiction of SAHRA. Graves older than 100 years fall under Section 35 of the Act. The procedure for Consultation Regarding Burial Grounds and Graves (Section 36[5] of Act 25 of 1999) is applicable to graves older than 60 years that are situated outside a formal cemetery administered by a local authority. Graves in this age category, located inside a formal cemetery administered by a local authority, require the same authorisation as set out for graves younger than 60 years, in addition to SAHRA authorisation. If the grave is not situated inside a formal cemetery, but is to be relocated to one, permission from the local authority is required and all regulations, laws and by-laws, set by the cemetery authority, must be adhered to.

Human remains that are less than 60 years old are protected under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance No. 7 of 1925), as well as the Human Tissues Act (Act 65 of 1983), and are the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the office of the relevant Provincial Premier. This function is usually delegated to the Provincial MEC for Local Government and Planning; or in some cases, the MEC for Housing and Welfare. Authorisation for exhumation and reinterment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. To handle and transport human remains, the institution conducting the relocation should be authorised under Section 24 of the Human Tissues Act (Act 65 of 1983) ().

3 METHODOLOGY

3.1 Literature Review

A brief survey of available literature was conducted to extract data and information on the area in question, in order to provide the general heritage context in which the development would be set. Reviewed literature included published material, unpublished commercial reports and online material, including reports sourced from the South African Heritage Resources Information System (SAHRIS).

3.2 Genealogical Society and Google Earth Monuments

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where sites of heritage significance might be located; these locations were marked and visited during the field work phase. The database of the Genealogical Society was consulted to collect data on any known graves in the area.

3.3 Public Consultation and Stakeholder Engagement as part of the EIA process

Stakeholder engagement is a key component of any EIA process, it involves stakeholders interested in, or affected by the proposed development. Stakeholders are provided with an opportunity to raise issues of concern (for the purposes of this report only heritage related issues will be included). The aim of the public consultation process was to capture and address any issues raised by community members and other stakeholders during key stakeholder, land owner, village and public meetings. The process involved:

- Placement of advertisements and site notices
- Stakeholder notification (through the dissemination of information and meeting invitations);
- Stakeholder and I&APs meetings ;
- Authority Consultation
- The compilation of a Comments and Response Report (CRR).

3.4 Site Investigation

Conduct a field study to: a) systematically survey the proposed project area to locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest; b) record GPS points of sites/areas identified as significant areas; c) determine the levels of significance of the various types of heritage resources recorded in the project area.

Table 4: Site Investigation Details

	Site Investigation
Date	1 – 4 March 2017 by two surveyors.
Season	Summer –vegetation in the study area is low and archaeological visibility is high. The impact area was sufficiently covered (Figure 4) to adequately record the presence of heritage resources.

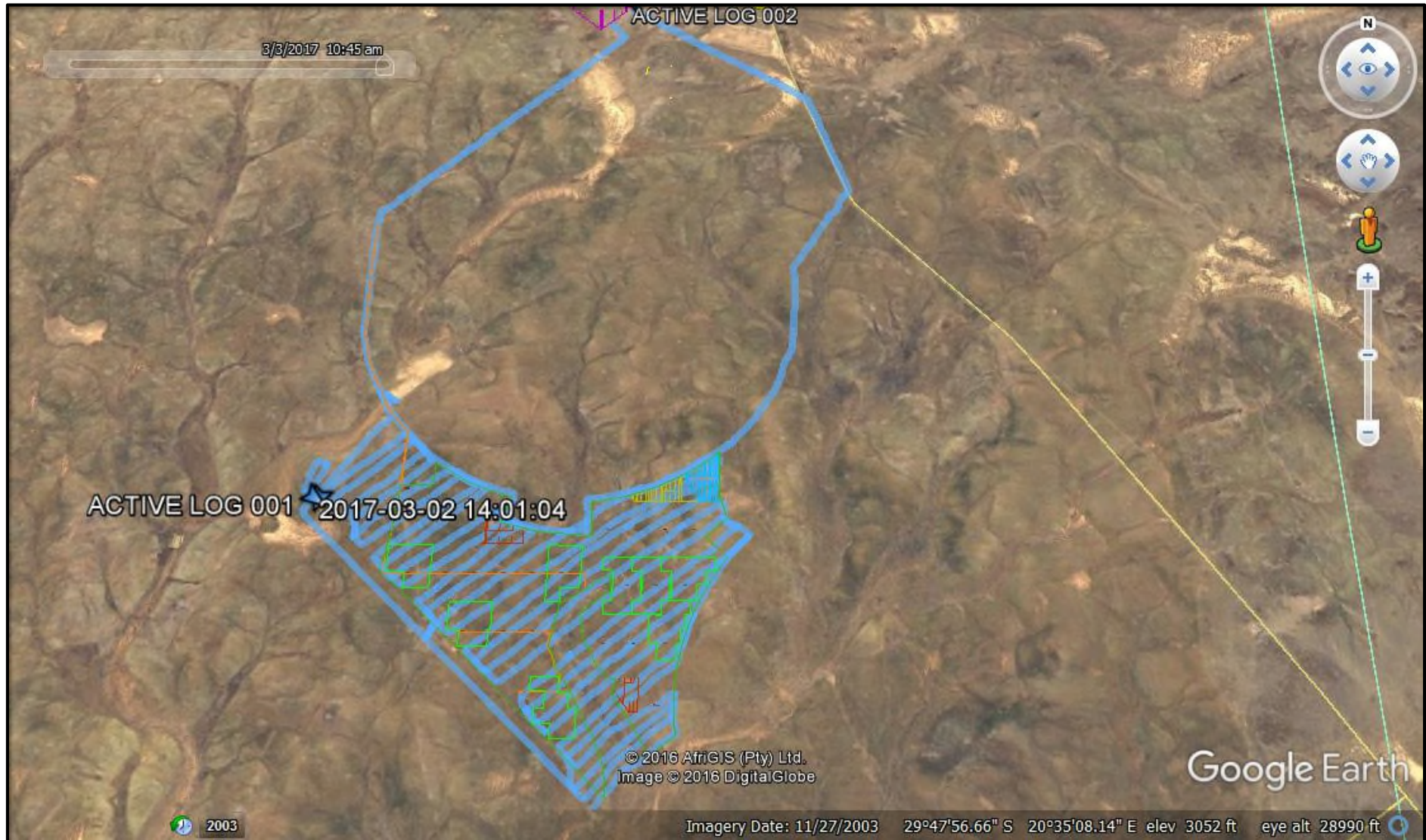


Figure 4: Track logs of the survey in blue.

3.5 Site Significance and Field Rating

Section 3 of the NHRA distinguishes nine criteria for places and objects to qualify as 'part of the national estate' if they have cultural significance or other special value. These criteria are:

- Its importance in/to the community, or pattern of South Africa's history;
- Its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- Its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- Its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- Its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- Its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- Its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa;
- Sites of significance relating to the history of slavery in South Africa.

The presence and distribution of heritage resources define a 'heritage landscape'. In this landscape, every site is relevant. In addition, because heritage resources are non-renewable, heritage surveys need to investigate an entire project area, or a representative sample, depending on the nature of the project. In the case of the proposed project the local extent of its impact necessitates a representative sample and only the footprint of the areas demarcated for development were surveyed. In all initial investigations, however, the specialists are responsible only for the identification of resources visible on the surface. This section describes the evaluation criteria used for determining the significance of archaeological and heritage sites. The following criteria were used to establish site significance with cognisance of Section 3 of the NHRA:

- The unique nature of a site;
- The integrity of the archaeological/cultural heritage deposits;
- The wider historic, archaeological and geographic context of the site;
- The location of the site in relation to other similar sites or features;
- The depth of the archaeological deposit (when it can be determined/is known);
- The preservation condition of the sites; and
- Potential to answer present research questions.

In addition to this criteria field ratings prescribed by SAHRA (2006), and acknowledged by ASAPA for the SADC region, were used for the purpose of this report. The recommendations for each site should be read in conjunction with section 10 of this report.

FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION
National Significance (NS)	Grade 1	-	Conservation; national site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; provincial site nomination
Local Significance (LS)	Grade 3A	High significance	Conservation; mitigation not advised
Local Significance (LS)	Grade 3B	High significance	Mitigation (part of site should be retained)
Generally Protected A (GP.A)	-	High/medium significance	Mitigation before destruction
Generally Protected B (GP.B)	-	Medium significance	Recording before destruction
Generally Protected C (GP.C)	-	Low significance	Destruction

3.6 Impact Assessment Methodology

The criteria below are used to establish the impact rating on sites:

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

The **significance** is calculated by combining the criteria in the following formula:

$$S=(E+D+M)P$$

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

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

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

3.7 Limitations and Constraints of the study

The authors acknowledge that the brief literature review is not exhaustive on the literature of the area. Due to the subsurface nature of archaeological artefacts, the possibility exists that some features or artefacts may not have been discovered/recorded during the survey and the possible occurrence of unmarked graves and other cultural material cannot be excluded. Similarly the depth of the deposit of heritage sites cannot be accurately determined due its subsurface nature. This report only deals with the footprint area of the proposed development and consisted of non-intrusive surface surveys. This study did not assess the impact on medicinal plants and intangible heritage as it is assumed that these components would have been highlighted through the public consultation process if relevant. It is possible that new information could come to light, which might change the results of this Heritage Impact Assessment.

4 Description of Socio Economic Environmental

An independent Social Impact report was conducted by Candice Hunter (2016) and the report summarised the general characteristics of the area:

- » The Northern Cape is the largest province with the smallest population in South Africa.
- » The Namakwa District Municipality is geographically the biggest District Municipality in the Northern Cape.
- » The Kai !Garib Local Municipality covers a smaller area than the Hantam Local Municipality but has a larger total population and a higher population density. However, both local municipalities have a low population density and a low population growth rate.
- » The main population group residing in both Local Municipalities is the coloured population and the most prominent language spoken in the area is Afrikaans.
- » The population age structure consists of predominantly economically active persons aged between 25-64 years. This implies that there is a larger human resource base for development projects to involve the local populations.
- » Poor education levels occur in the area. This means that majority of the population have a low-skill level and would either need job employment in low-skill sectors, or better education opportunities in order to improve the skills level of the area, and therefore income levels.
- » Approximately a third of the households in the area have access to services (i.e. water, electricity, and sanitation as well as refuse removal). This is an indication of a lack of service delivery in the area.

The report further indicated that: *“The proposed project could potentially support social and economic development through enabling skills development and training in order to empower individuals and promote employment creation within the local area. The development would mainly focus on economic benefits to the area and introduce a new industry into the local economy. Negative impacts such as an influx of jobseekers into the area, placing additional stress on the provision of basic services and has been weighed in the impact assessment section”* (Hunter 2016).

5 Description of the Physical Environment:

SolarReserve South Africa (Pty) Ltd in a joint venture with Kotulo Tsatsi Energy (Pty) Ltd proposes the construction and operation of a photovoltaic (PV) power plant 2 and associated infrastructure on Portion 2 and 3 of Farm Styns Vley 280 (Figure 1 and 2). The PV 2 Project study area is approximately 350 ha within the larger 20 700 ha study area. The study area is characterized by a barren undulating surface bisected by a number of shallow drainage basins. Occupation in the area is scarce with a single farmhouse and associated buildings occurring to the north of the development footprint.

The area is rugged and falls within the bioregion described by Mucina *et al* (2006) as the Bushmanland Bioregion with the vegetation described as Bushmanland basin shrub land. The knee high bushy vegetation is sparse and there is numerous exposed sedimentary (mud rock) pavements visible throughout the study area. Land use in the general area is dominated by sheep farming.

6 Results of Public Consultation and Stakeholder Engagement:

Adjacent landowners and the public at large were informed of the proposed activity as part of the EIA process. Site notices and advertisements notifying interested and affected parties were placed at strategic points and in local newspapers as part of the process. All comments were included in the Comments and response report as well as in the EIA report. No heritage concerns were raised during this process.

Mr. Kosie Zandberg, who manages the farm, was interviewed briefly during the survey (17:00 on the 2nd of March 2017) and he said that he was not aware of any heritage sites (such as graves) within the proposed study area.

7 Literature / Background Study:

7.1 Literature Review

Several previous heritage studies were conducted in the general study area (SAHRIS) mostly to the north of the study area (approximately 18 km) by Jonathan Kaplan (2011), Halkett & Orton (2011), Webley & Halkett (2012) and Anton Pelsler (2012). Kaplan conducted a study on the farm Olyvenkolk 187/3 for a solar facility. Webley & Halkett and Pelsler's study were conducted on the farm Klein Zwart Bast 188. To the north east of the study area a study by Van der Walt (2012) also recorded Middle Stone Age material. Further away studies by K van Ryneveld (2007) and Cobus Dreyer (2006) were also consulted. Van Ryneveld conducted a study on the farm Bokspuits 118 and Dreyer's study was conducted on the farm Tampansrus 294/295. Both these studies recorded isolated MSA artefacts scattered over the landscape.

Neither the Genealogical Society nor the monuments database at Google Earth (Google Earth also include some archaeological sites and historical battlefields) have any recorded sites or graves in the development footprint.

7.2 General History of the area

Evidence has been found that the predecessors of today's Khoi-San Bushmen lived in the area thousands of years ago. According to Hocking (1938), the Khoikhoi, nomadic cattle herders, had their forbears in East Africa and lived in the Northern Cape for at least 3000 years and dominated the region until the eighteenth century when the Tswana tribe arrived from the west. The Tswana tribe settled around the present day Kuruman. Evidence of the Khoikhoi's existence in the Cape can for instance be seen in the form of Bushmen drawings at the Damfontein and Brandfontein sites in the Karoo. (Hocking 1983: 2; Marais 1977: 1)

It was in the early nineteenth century that the Griqua frontiersmen of the old Cape Colony crossed the Orange River from the south. The Griquas were half white and half Khoikhoi. These people dressed like Europeans and lived aboard wagons, much like the *Trekboere* who migrated northward from the Cape Colony. (Hocking 1983: 2)

The *Trekboer* movement had already begun by the end of the seventeenth century, as the quest for land, grazing and hunting inspired farmers to move into the central spaces of South Africa. These people were semi-nomadic, moving from fountain to fountain by ox wagon, without any desire to build a house or improve the land in which they were living. For more than a generation before the Great Trek, the first

migration led to settlement across the Orange River. Trekboer families were however discouraged by the scarcity of surface water in the Northern Cape, and therefore advancement into the area was slow. The first Europeans to settle in the Northern Cape were missionaries, but there was a larger influx of white men into the province during the 1860s and 1870s when diamonds were discovered in Griqualand. (Wagenaar 1984: 122, 128; Hocking 1983: 2)

When Willem Adriaan van der Stel issued grazing licences to stock farmers and lifted the ban on the bartering of cattle in the early eighteenth century, this opened up a new world of possibilities for white farmers. A new attitude was acquired among the stock farmers; he was able to occupy greater areas of land, and would need more land to obtain farms for his children. (Wagenaar 1984: 122, 125)

By the late 1820's, a mass-movement of Dutch speaking people in the Cape Colony started advancing into the northern areas. This was due to feelings of mounting dissatisfaction caused by economical and other circumstances in the Cape. This movement later became known as the Great Trek. This migration resulted in a massive increase in the extent of that proportion of modern South Africa dominated by people of European descent. (Ross 2002: 39)

The discovery of diamonds and gold in the Northern provinces had very important consequences for South Africa. After the discovery of these resources, the British, who at the time had colonized the Cape and Natal, had intentions of expanding their territory into the northern Boer republics. This eventually led to the Anglo-Boer War, which took place between 1899 and 1902 in South Africa, and which was one of the most turbulent times in South Africa's history. Even before the outbreak of war in October 1899 British politicians, including Sir Alfred Milner and Mr. Chamberlain, had declared that should Britain's differences with the Z.A.R. result in violence, it would mean the end of republican independence. This decision was not immediately publicized, and as a consequence republican leaders based their assessment of British intentions on the more moderate public utterances of British leaders. Consequently, in March 1900, they asked Lord Salisbury to agree to peace on the basis of the status quo ante bellum. Salisbury's reply was, however, a clear statement of British war aims. (Du Preez 1977).

In March 1900 Boer forces had taken Prieska, Kenhardt, Kakamas and Upington, attracting rebel support in the process. British columns were able to recapture the towns and the invasion had ended by June 1900. Local militias, including the Border Scouts (Upington), Bushmanland Borderers (Kenhardt) and Namaqualand Border Scouts (from the west) were established and patrolled the area.

7.3 Pre-colonial background to the study area

South Africa has a long and complex Stone Age sequence of more than 2 million years. The broad sequence includes the Later Stone Age, the Middle Stone Age and the Earlier Stone Age. Each of these phases contains sub-phases or industrial complexes, and within these we can expect regional variation regarding characteristics and time ranges. For Cultural Resources Management (CRM) purposes it is often only expected/ possible to identify the presence of the three main phases.

Yet sometimes the recognition of cultural groups, affinities or trends in technology and/or subsistence practices, as represented by the sub-phases or industrial complexes, is achievable (Lombard 2011). The three main phases can be divided as follows:

- Later Stone Age: associated with Khoi and San societies and their immediate predecessors. Recently to ~30 thousand years ago
- Middle Stone Age: associated with Homo sapiens and archaic modern humans. 30-300 thousand years ago.
- Earlier Stone Age: associated with early Homo groups such as Homo habilis and Homo erectus. 400 000-> 2 million years ago.

The archaeology of the Northern Cape is rich and varied covering long spans of human history. According to Beaumont et al (1995) “thousands of square kilometres of Bushmanland are covered by a low density lithic scatter”. CRM surveys in the immediate vicinity provide some insight as to the occupation of the area (such as Portions 14 and 15 of Olyven Kolk 187 (Halkett & Orton 2011), Olyvenkolk 187/3 (Jonathan Kaplan 2011), Portion 1 of Klein Swart Bast 118 (Pelser 2011), remainder of Klein Swart Bast 118 (Webley & Halkett 2012), and in the wider region (Beaumont et al 1995), provides a good basis for understanding the local archaeology. Collection of surface samples by Beaumont and Pelsler means that stone artefacts north of the study area have been analysed and indicates the presence of humans in the area for the last two million years. The area to the north of the development footprint also probably represented a rich source of rocks for knapping.

8 Findings of the Survey

Previous work to the north of the study area (approximately 40 km) by Jonathan Kaplan (2011), Halkett & Orton (2011), Webley & Halkett (2012) and Anton Pelsler (2012) recorded vast quantities of ESA, MSA and LSA material scattered in the respective study areas, and was thought to provide a good comparison for what can be expected in the area earmarked for the PV 2 facility during the scoping phase of the project. However contrary to the expectations in the scoping report a marked paucity of sites were noted during the survey of the larger geographical area surrounding PV2. In fact only a few Stone Age sites (quarry sites) were recorded to the north of the PV 2 facility. Apart from these sites Stone Age Material was restricted to isolated widely dispersed low density scatters (less than 2 artefacts per 3m²) of miscellaneous flakes.

The lack of Stone Age material/sites or even high density clusters in the area surrounding the Farm Styns Vley 280 vs the area of Klein Swartbast to the north can possibly be attributed to the local geology. In the area of the PV 2 facility, no locally available raw material exists suitable for knapping apart from a few granite outcrops that were utilized. The study area is characterised by areas barren of vegetation on sedimentary surfaces consisting of mud rock and possibly shale, belonging to the Karoo Supergroup, these are sometimes mantled by alluvium and pane sediments. The Karoo Supergroup sediments have been locally intruded and baked by intrusive sheets or sills of the Karoo Dolerite Suite. The wealth of stone artefacts further north can be attributed to the locally available Dwyka tillite, known to be a favourite source of raw material in Early Stone Age times (Morris 2006).

An analysis of artefacts from this area by Lombard (2012) indicated that LSA material was made mainly from Jasper, CCS and Chert. MSA and ESA artefacts were mainly produced from quartzite. All of these are raw material that is almost absent from the PV 2 study area.

For the Farm Styns Vley 280 isolated widely distributed Stone Artefacts were noted. Artefact density is so low within the study area that they do not represent individual sites but rather find spots. All observations are on the surface and there are no indicators that would suggest deeply stratified material in the study area. No associated organic remains (such as bone or ostrich eggshell) were noted with any of the stone scatters. Most of the material observed associated with the background scatter can probably be ascribed to the Middle Stone Age. The artefacts are scattered too sparsely to be of any significance apart from noting their presence, which has been done in this report.

A Single site is known for the farm Styns Vley referred to as site 3 from earlier reports (Van der Walt 2015). The site consists of a farm house and associated outbuildings (29° 45' 46.1231" S, 20° 35' 20.1659" E). To the east of the farmhouse setup (approximately 34m) is a grave/memorial for Danie Taljaard who was born on the 26-01-1942 and passed away on the 16-11-2010. The site is located approximately 4.8 km to the north of the development footprint and will not be impacted on.

It is important to note that only the development footprint was surveyed. The study area measures approximately 350ha in size and is situated approximately 20km to the west of the R27 tar road amongst the plains to the south of Kenhardt town. The PV Facility is situated on the south-western extent of portion 2 of the Farm Styns Vley 280. The proposed PV 2 Facility seems to be divided in two parts as an intermittent stream crosses a part of the site. No development is proposed within the ranges of this intermittent stream.

Two alternative Power Lines are proposed for the integration of the PV 2 Facility into the existing Eskom Network (Please refer to lay out maps in Appendice B). Power Line Option 1 (OHL Alternative 2 as per the EIA) will follow a westerly route towards an existing Eskom Power Line and it will follow the same route as the existing Power Line for some part until it will join up or be connected to it. This Power Line Option will measure approximately 5.3km in length.

Power Line Option 2 (OHL alternative 1 as per the EIA) will follow a more easterly route. This proposed Power Line will head to the gravel road to the north of the proposed PV 2 Facility and will follow it on the northern side of the road until it will cross back again to join the existing Power Line. This Power Line Option will measure approximately 6km in length. The two proposed Power Lines will meet the existing Power Line at approximately the same location.

The proposed site is situated within a property which is fenced off with a four feet fence. Most of this part of the property is flat, but some areas are sloping down to the intermittent streams which cross the site. The area is largely covered with layers of shale in various states of weathering. This abundance of shale prohibits the growth of grasses and other vegetation to the extent that the area is almost barren. The intermittent streams however, provide some alluvial deposits, which suits more vegetation types to settle within these drainage systems. A dam was established at the north-western extent of the study area. Below the dam some previous agricultural activity is evident as is seen by the plough lines and cleared areas. A few fences and farm tracks cross the proposed site and study area, but no other farm infrastructure is present here.



Figure 5. Calcrete outcrop within study area.



Figure 6. Existing powerlines (Aries/Helios 1 400kV).



Figure 7. Dam wall



Figure 8. Existing infrastructure.



Figure 9. General site conditions



Figure 10. General Site conditions

9 Description of Identified Heritage Resources (NHRA Section 34 -36):

No sites or finds of any heritage value or significance were identified within the proposed study area.

9.1 Archaeology (Section 35 of the NHRA)

No archaeological sites were identified in the study area.

9.2 Palaeontological Resources (Section 35 of the NHRA)

An independent paleontological study was conducted by Dr John Almond and the results are included in a stand-alone report.

9.3 Built Environment (Section 34 of the NHRA)

No standing structures older than 60 years occur within the study area.

9.4 Graves and Burial sites

No graves were recorded within the study area. The genealogical society has three graves on record for the larger area.



Figure 11. Known graves in relation to the study area marked by red crosses.

9.5 Cultural Landscapes, Intangible and Living Heritage.

The cultural landscape of the study area is related to agricultural activities especially livestock grazing. New elements related to electricity transmission have however been added in recent years. The main elements of the cultural landscape are the wide open spaces bisected by farm tracks and fences and occasional wind pumps as well as cement reservoirs and dams. The overall landscape character is very natural with rural elements due to the minimally developed landscape.

9.6 Battlefields and Concentration Camps

There are no battlefields or related concentration camp sites located in the study area.

9.7 Potential Impact

9.7.1 Pre-Construction phase:

It is assumed that the pre-construction phase involves the removal of topsoil and vegetation as well as the establishment of road infrastructure needed for the construction phase. These activities can have a negative and irreversible impact on all of the recorded heritage sites. Impacts include destruction or partial destruction of non-renewable heritage resources.

9.7.2 Construction Phase

During this phase the impacts and effects are similar in nature but more extensive than the pre-construction phase. These activities can have a negative and irreversible impact on all of the recorded heritage sites. Impacts include destruction or partial destruction of non-renewable heritage resources.

9.7.3 Operation Phase:

No impact is envisaged for the recorded heritage resources during this phase.

Impact evaluation of the proposed project on heritage resources

Nature: During the pre-construction and construction phases activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological and paleontological material or objects.		
	Without mitigation	With (Preservation/ mitigation of site) excavation
Extent	Local (2)	Local (2)
Duration	Permanent (5)	Permanent (5)
Magnitude	Low (3)	Low (3)
Probability	Improbable (2)	Improbable (2)
Significance	20 (Low)	20 (Low)
Status (positive or negative)	Negative	Negative
Reversibility	Not reversible	Not reversible
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes, but not required.	
Mitigation: No mitigation measures are required as no sites were identified. It is recommended that a chance find procedure should be implemented for the project.		
Cumulative impacts: The study area is subjected to several renewable energy projects and these cumulative impacts on the archaeology of the area must be taken into account during the impact assessment of the other facilities where distinct sites do occur. Archaeological sites are non-renewable and impact on any archaeological context or material will be permanent and destructive.		
Residual Impacts: No sites have been recorded and no residual impacts are expected.		

Cumulative impact table:

Nature: Complete or whole-scale changes to the environment or sense of place.		
	Cumulative Contribution of Proposed Project	Cumulative Impact without Proposed Project
Extent	Low (2)	Low (2)
Duration	Permanent (5)	Permanent (5)
Magnitude	Moderate (5)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (36)	Medium (33)
Status (positive/negative)	Negative	Negative
Reversibility	Irreversible	Irreversible
Loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	Unknown
Confidence in findings: High.		
Mitigation: It is recommended that heritage resources should be preserved. The study area is subjected to several renewable energy projects and these cumulative impacts on the archaeology of the area must be taken into account during the impact assessment of the other facilities where distinct sites do occur.		

10 CONCLUSIONS AND RECOMMENDATIONS

Archaeological knapping sites do occur outside of the development footprint and are concentrated around rocky outcrops where the Granodiorite was utilised. No archaeological sites were however recorded during the survey of the development footprint. Some isolated miscellaneous flakes were noted in the larger area however thousands of square kilometres of Bushmanland are covered by these low density artefact scatters (Beaumont *et al* 1995:240). The artefacts are scattered too sparsely to be of any significance apart from noting their presence, which has been done in this report. Therefore no further mitigation prior to construction is recommended in terms of the archaeological component of Section 35 of the NHRA for the proposed development to proceed. An independent paleontological study (Almond 2014) was commissioned for the study area by the EAP and is not discussed further in this report.

In terms of the built environment of the area (Section 34), no standing structures older than 60 years occur within the study area. Similarly no burial sites (Section 36) were recorded. During the public participation process no heritage concerns were raised and informal consultation with Mr. Kosie Zandberg, the farm manager who was consulted at 17:00 on the 2nd of March 2017, confirmed the lack of known sites within the proposed study area. The greater study area is subjected to several renewable energy projects however the lack of heritage sites within the development footprint of the PV 2 facility means it will not contribute significantly to the cumulative impacts of the larger proposed Kotulo Tsatsi development.

The impacts to heritage resources are considered low and it is recommended that from a heritage perspective the proposed project can commence on the condition that the following recommendations are implemented as part of the EMP and based on approval from SAHRA

- If any graves are located in future they should ideally be preserved *in-situ* or alternatively relocated according to existing legislation.
- The possibility of the occurrence of subsurface finds cannot be excluded. Therefore if during construction any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped and a qualified archaeologist must be contacted for an assessment of the find and therefore chance find procedures should be put in place as part of the EMP. A short summary of chance find procedures is discussed below.

10.1 Chance Find Procedures

This procedure applies to the developer's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. The aim of this procedure is to establish monitoring and reporting procedures to ensure compliance with this policy and its associated procedures. Construction crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds as discussed below.

- If during the construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or rock engraving, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
- It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area.
- The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA.

10.2 Reasoned Opinion

The impact of the proposed project on heritage resources is considered low and no further pre-construction mitigation is required. Furthermore the socio economic benefits, including the provision of renewable energy and creating employment opportunities, also outweigh the possible impacts of the development if the correct mitigation measures are employed.

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MAPS

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12 Appendices:**12.1 Appendice A Curriculum Vitae of Specialist**

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Education:

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Name of University or Institution:	University of Pretoria
Degree obtained :	BA Heritage Tourism & Archaeology
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Name of University or Institution :	University of the Witwatersrand
Degree Obtained :	MA (Archaeology)
Year of Graduation :	2012
Name of University or Institution :	University of Johannesburg
Degree :	PhD
Year :	Currently Enrolled

EMPLOYMENT HISTORY:

2011 – Present: **Owner – HCAC (Heritage Contracts and Archaeological Consulting CC).**

2007 – 2010 : **CRM Archaeologist,** Managed the Heritage Contracts Unit at the University of the Witwatersrand.

2005 - 2007: **CRM Archaeologist,** Director of Matakoma Heritage Consultants

2004: **Technical Assistant,** Department of Anatomy University of Pretoria

2003: **Archaeologist,** Mapungubwe World Heritage Site

2001 - 2002: **CRM Archaeologists,** For R & R Cultural Resource Consultants, Polokwane

2000: **Museum Assistant,** Fort Klapperkop.

Countries of work experience include:

Republic of South Africa, Botswana, Zimbabwe, Mozambique, Tanzania, The Democratic Republic of the Congo, Lesotho and Zambia.

SELECTED PROJECTS INCLUDE:

Archaeological Impact Assessments (Phase 1)

Heritage Impact Assessment Proposed Discharge Of Treated Mine Water Via The Wonderfontein Spruit Receiving Water Body Specialist as part of team conducting an Archaeological Assessment for the Mmamabula mining project and power supply, Botswana
Archaeological Impact Assessment Mmamethlake Landfill
Archaeological Impact Assessment Libangeni Landfill

Linear Developments

Archaeological Impact Assessment Link Northern Waterline Project At The Suikerbosrand Nature Reserve
Archaeological Impact Assessment Medupi – Spitskop Power Line,
Archaeological Impact Assessment Nelspruit Road Development

Renewable Energy developments

Archaeological Impact Assessment Karoshoek Solar Project

Grave Relocation Projects

Relocation of graves and site monitoring at Chloorkop as well as permit application and liaison with local authorities and social processes with local stakeholders, Gauteng Province.
Relocation of the grave of Rifle Man Maritz as well as permit application and liaison with local authorities and social processes with local stakeholders, Ndumo, Kwa Zulu Natal.
Relocation of the Magolwane graves for the office of the premier, Kwa Zulu Natal
Relocation of the OSuthu Royal Graves office of the premier, Kwa Zulu Natal

Phase 2 Mitigation Projects

Field Director for the Archaeological Mitigation For Booyendal Platinum Mine, Steelpoort, Limpopo Province. Principle investigator Prof. T. Huffman
Monitoring of heritage sites affected by the ARUP Transnet Multipurpose Pipeline under directorship of Gavin Anderson.
Field Director for the Phase 2 mapping of a late Iron Age site located on the farm Kameelbult, Zeerust, North West Province. Under directorship of Prof T. Huffman.
Field Director for the Phase 2 surface sampling of Stone Age sites effected by the Medupi – Spitskop Power Line, Limpopo Province

Heritage management projects

Platreef Mitigation project – mitigation of heritage sites and compilation of conservation management plan.

MEMBERSHIP OF PROFESSIONAL ASSOCIATIONS:

- Association of Southern African Professional Archaeologists. Member number 159
Accreditation:
 - Field Director Iron Age Archaeology
 - Field Supervisor Colonial Period Archaeology, Stone Age Archaeology and Grave Relocation
- Accredited CRM Archaeologist with SAHRA
- Accredited CRM Archaeologist with AMAFA
- Co-opted council member for the CRM Section of the Association of Southern African Association Professional Archaeologists (2011 – 2012)

PUBLICATIONS AND PRESENTATIONS

- A Culture Historical Interpretation, Aimed at Site Visitors, of the Exposed Eastern Profile of K8 on the Southern terrace at Mapungubwe.
 - J van der Walt, A Meyer, WC Nienaber
 - Poster presented at Faculty day, Faculty of Medicine University of Pretoria 2003
- 'n Reddingsondersoek na Anglo-Boereoorlog-ammunisie, gevind by Ifafi, Noordwes-Provinsie. South-African Journal for Cultural History 16(1) June 2002, with A. van Vollenhoven as co-writer.
- Fieldwork Report: Mapungubwe Stabilization Project.
 - WC Nienaber, M Hutten, S Gaigher, J van der Walt
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2004
- A War Uncovered: Human Remains from Thabantšho Hill (South Africa), 10 May 1864.
 - M. Steyn, WS Boshoff, WC Nienaber, J van der Walt
 - Paper read at the 12th Congress of the Pan-African Archaeological Association for Prehistory and Related Studies 2005
- Field Report on the mitigation measures conducted on the farm Bokfontein, Brits, North West Province .
 - J van der Walt, P Birkholtz, W. Fourie
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2007
- Field report on the mitigation measures employed at Early Farmer sites threatened by development in the Greater Sekhukhune area, Limpopo Province. J van der Walt
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2008
- Ceramic analysis of an Early Iron Age Site with vitrified dung, Limpopo Province South Africa.
 - J van der Walt. Poster presented at SAFA, Frankfurt Germany 2008

- Bantu Speaker Rock Engravings in the Schoemanskloof Valley, Lydenburg District, Mpumalanga (*In Prep*)
 - J van der Walt and J.P Celliers
- Sterkspruit: Micro-layout of late Iron Age stone walling, Lydenburg, Mpumalanga. W. Fourie and J van der Walt. A Poster presented at the Southern African Association of Archaeologists Biennial Conference 2011
- Detailed mapping of LIA stone-walled settlements' in Lydenburg, Mpumalanga. J van der Walt and J.P Celliers
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2011
- Bantu-Speaker Rock engravings in the Schoemanskloof Valley, Lydenburg District, Mpumalanga. J.P Celliers and J van der Walt
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2011
- Pleistocene hominin land use on the western trans-Vaal Highveld ecoregion, South Africa, Jaco van der Walt.
 - J van der Walt. Poster presented at SAFA, Toulouse, France. Biennial Conference 2016

REFERENCES:

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2. Prof TN Huffman Department of Archaeology Tel: (011) 717 6040
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3. Alex Schoeman University of the Witwatersrand
E-mail: Alex.Schoeman@wits.ac.za

12.2 Appendice B Lay Out Maps

