



Setjo Sesho Consultants

PREPARED FOR:

SOLA



HERITAGE IMPACT ASSESSMENT

**FOR THE PROPOSED DEVELOPMENT OF THE
LICHTENBURG 1 PV SOLAR ENERGY FACILITY
AND ASSOCIATED INFRASTRUCTURE ON A SITE
NEAR LICHTENBURG NORTH WEST PROVINCE**

Phase 1 Heritage Impact Assessment

Report

FOR THE PROPOSED DEVELOPMENT OF THE
LICHTENBURG 1 PV SOLAR ENERGY FACILITY AND
ASSOCIATED INFRASTRUCTURE ON A SITE NEAR
LICHTENBURG NORTH WEST PROVINCE

Prepared by:



Setjo Sesho Consultants

Prepared for:

SOLA

DECEMBER 2022

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EXECUTIVE SUMMARY

This summary is intended to quickly provide accurate results and facilitate management decisions. The executive summary focuses on the conclusions of the report rather than repeating all of the information contained therein. This report focuses only on the proposed development of the Lichtenburg 1 PV solar energy facility and associated infrastructure at a site near Lichtenburg under the local municipality of Ditsobotla of Ngaka Modiri Molema in the North West Province.

SCOPE OF WORK

This heritage impact investigation was conducted to determine the impacts on heritage resources within the study area. The following objectives structured the assessment:

- To produce a desk-top investigation in the area.
- To complete a site inspection of the proposed area of development.
- To locate potential historical, cultural, and archaeological resources within the planned development area.
- To assess the potential effects of the planned development's construction and operation on archaeological, cultural, built, and historical sites within the proposed region.
- To provide mitigation strategies for any potential detrimental effects on important archaeological, cultural, architectural, and historical sites.

The main purpose of this study is to determine the potential significance of the heritage sites within the proposed development area. The research is based on archival and documentary research combined with field research.

FINDINGS

The proposed site of development noted three archaeological materials

- An informal graveyard consisting of three graves belonging to the farm workers of the previous farm owner.
- A farm house assumed to be more than 60 years.
- Stones that were previously used as brick manufacturing place (brick burning)

RECOMMENDATION

The graves should be barricaded with the barricading fence, the stones that were used for brick burning can be destroyed as they have less archaeological significance and the farm house can be destroyed following Section 34 processes. It should be noted that although no other archaeological or cultural resources were identified during the field survey, archaeological material, including artefacts and tombs, may be buried underground and as such may not have been identified during the initial survey and site visits. In addition, should archaeological material be excavated during construction, it is recommended that development be halted immediately, the site demarcated, and the North West Provincial Heritage Resources Authority (NWPHRA) and Heritage Specialist notified.

Table 1: Requirements for specialist reports, as detailed in the NEMA Act No. 25 of 2014.

NEMA Regulation (2014)	Relevant section in the report
Details of the specialist who prepared the report	Page (vii) of the report- Project management
The expertise of that person to compile a specialist report, including a curriculum vitae	Section 1.5
A declaration that the person is independent in a form as may be specified by the competent authority	Page (vi) of the report
An indication of the scope of, and the purpose for which the report was prepared	Section 1.4
The date and season of the site investigation and the relevance of the season to the outcome of the	Section 4.3

assessment

A description of the methodology adopted in preparing the report or carrying out the specialized process	Section 4
The specific identified sensitivity of the site related to the activity and its associated structures and infrastructure	Not applicable
An identification of any areas to be avoided, including buffer	Section 5
A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Section 5
A description of any assumptions made and any uncertainties or gaps in knowledge	Section 3
Any mitigation measures for inclusion in the EMPr	Section 5
Any conditions for inclusion in the environmental authorization	Section 11
Any monitoring requirements for inclusion in the EMPr or environmental authorization	None

A reasoned opinion as to whether the proposed activity or portions thereof should be authorized and

Section 11

If the opinion is that the proposed activity or portions thereof should be authorized, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan

A description of any consultation process that was undertaken during the course of carrying out the study

Section 8

A summary and copies if any comments that were received during any consultation process

None

Formal consultation was conducted by the Environmental consultants and the heritage aspects were covered. No comments were made by the public

Any other information requested by the competent authority

None

Declaration of Independence

I, **Jennifer Munyai**, declare that –

- I act as the independent heritage practitioner in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favorable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;

- I have expertise in conducting heritage impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity
- I will comply with the Act, Regulations, and all other applicable legislation.
- I will consider, to the extent possible, the matters listed in section 38 of the NHRA when preparing the application and any report relating to the application
- I have no, and will not engage in, conflicting interests in the undertaking of the activity.
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan, or document to be prepared by myself for submission to the competent authority.
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application.
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favorable to the applicant or not
- All the particulars furnished by me in this form are true and correct.
- I will perform all other obligations as expected from a heritage

practitioner in terms of the Act and the constitutions of my affiliated professional bodies; and

- I acknowledge that a false declaration is an offence in terms of regulation 71 of the Regulations and is punishable in terms of section 24F of the NEMA.

Disclosure of Vested Interest

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

PROJECT MANAGEMENT

Site name and location: the proposed development of the Lichtenburg 1 PV solar energy facility and associated infrastructure

Municipal Area: Ditsobotla Local Municipality within the Ngaka Modiri Molema in the North West Province.

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First Draft

November 2022



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Final Report

December 2022

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GLOSSARY OF TERMS

The following terms used in this Archaeology are defined in the National Heritage Resources Act [NHRA], Act Nr. 25 of 1999, South African Heritage Resources Agency [SAHRA] Policies as well as the Australia ICOMOS Charter (*Burra Charter*):

Archaeological Material: remains resulting from human activities, which are in a state of disuse and are in, or on, land and which are older than 100 years, including artefacts, human and hominid remains, and artificial features and structures.

Artifact: Any movable object that has been used, modified, or manufactured by humans.

Conservation: All the processes of looking after a site/heritage place or landscape including maintenance, preservation, restoration, reconstruction, and adaptation.

Cultural Heritage Resources: refers to physical cultural properties such as archaeological sites, palaeontological sites, historic and prehistorical places, buildings, structures, and material remains cultural sites such as places of rituals, burial sites or graves and their associated materials, geological or natural features of cultural importance or scientific significance. This includes intangible resources such as religious practices, ritual ceremonies, oral histories, memories indigenous knowledge.

Cultural landscape: “the combined works of nature and man” and demonstrate “the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both internal and external”.

Cultural Resources Management (CRM): the conservation of cultural

heritage resources, management, and sustainable utilization and present for present and for the future generations.

Cultural Significance: is the aesthetic, historical, scientific, and social value for past, present and future generations.

Chance Finds: means Archaeological artefacts, features, structures, or historical cultural remains such as human burials that are found accidentally in context previously not identified during cultural heritage scoping, screening and assessment studies. Such finds are usually found during earthmoving activities such as water pipeline trench excavations.

Compatible use: means a use, which respects the cultural significance of a place. Such use involves no, or minimal, impact on cultural significance.

Conservation means all the processes of looking after a place so as to retain its cultural significance.

Expansion: means the modification, extension, alteration or upgrading of a facility, structure, or infrastructure at which an activity takes place in such a manner that the capacity of the facility or the footprint of the activity is increased.

Grave: A place of interment (variably referred to as burial), including the contents, headstone, or other markers of such a place, and any other structure on or associated with such a place.

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, plan, program or policy which requires the authorization of permission by law and which may significantly affect the cultural and natural heritage resources. The HIA includes recommendations for appropriate mitigation measures for minimizing or avoiding negative impacts, measures enhancing the positive aspects of the proposal and heritage management and monitoring measures.

Historic Material: 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.

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

In situ material: means material culture and surrounding deposits in their original location and context, for instance, archaeological remains that have not been disturbed.

Interested and Affected Parties: Individuals, communities, or groups, other than the proponent or the authorities, whose interests may be positively or negatively affected by the proposal or activity and/ or who are concerned with a proposal or activity and its consequences.

Interpretation: means all the ways of presenting the cultural significance of a place.

Late Iron Age: this period is associated with the development of complex societies and state systems in southern Africa.

Material Culture means buildings, structure, features, tools, and other artifacts that constitute the remains from past societies.

Mitigate The implementation of practical measures to reduce adverse impacts or enhance beneficial impacts of an action.

Place: means site, area, land, landscape, building or other work, a group of buildings or other works, and may include components, contents, spaces, and views.

Protected Area: means those protected areas contemplated in section 9 of the NEMPAA and the core area of a biosphere reserve and shall include their buffers.

Public Participation Process: A process of involving the public to identify issues and concerns and obtain feedback on options and impacts

associated with a proposed project, program, or development. Public Participation Process in terms of NEMA refers to a process in which potential interested and affected parties are given an opportunity to comment on or raise issues relevant to specific matters.

Setting: means the area around a place, which may include the visual catchment.

Significance: can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. intensity, duration, and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. the level of significance and acceptability). It is an anthropocentric concept, which makes use of value judgments and science-based criteria (i.e. biophysical, physical cultural, social and economic).

Site: a spatial cluster of artifacts, structures, and organic and environmental remains, as residues of past human activity.

LIST OF ABBREVIATIONS

BP.....	Before Present
EIA.....	Early Iron Age
ESA.....	Early Stone Age
GPS.....	Geographic Positioning System
HIA.....	Heritage Impact Assessment
LIA.....	Late Iron Age
LSA.....	Late Stone Age
MYA.....	Million Years Ago
MSA.....	Middle Stone Age
NWPHRA.....	Northwest Provincial Heritage Resource Authority
NHRA.....	National Heritage Resources Act no 22 of 1999
SAHRA.....	South African Heritage Resource Agency
S&EIR.....	Scoping & Environmental Impact Reporting

1. INTRODUCTION

Setjo Sesho Consultants was appointed by SOLA Group to conduct a Phase I Heritage Impact Study (HIA) for the proposed development of the Lichtenburg 1 PV solar energy facility and associated infrastructure at a site near Lichtenburg under the local municipality of Ditsobotla of Ngaka Modiri Molema in the North West Province.

The first study was conducted by CTS Heritage in November 2018, and due to other constraints, the development could not happen within the stipulated three-year lapsing time of Heritage Reports. The study was designed to identify the potential occurrence of cultural heritage resources/materials within the proposed development area. Findings were collected through archival or documentary research in addition to field research.

1.1 Project Background

1.1.1 Project Overview

Photovoltaic (PV) technology is proposed for power generation. The solar array will have a contracted capacity of up to 100MW_{ac} and will use either fixed-tilt, single-axis tracking or dual-axis tracking PV technology. The PV structures/modules will occupy an area of approximately 255 ha, while supporting infrastructure such as internal access roads (18 ha), outbuildings (1 ha) and an on-site substation (1 ha) will occupy the remaining area.

During the construction period, a provisional laydown area of approximately 5 hectares will be required. The project will include approximately 300,000 to 400,000 solar panels that will stand 3.5m above the ground once installed. The solar modules will have a maximum of about 80 central inverter stations at a height of about 3m or about 1120 string inverters mounted at a minimum height of about 300mm above the ground.

A 33 kV on-site substation is required and will occupy an area of approximately 100 x 100 m. A single 33 kV power line is required to connect the solar array to Eskom's national grid. The power line will have a capacity of 33 kV, be approximately 24 m high, developed in a power line service 31 m x 36 m wide (i.e. 15.5 m x 18 m on either side of the centerline) and use monopole or lattice tower structures. The proposed project will have a contracted capacity of up to 100MW_{ac} and will make use of PV solar technology for the generation of electricity. The project will comprise the following key infrastructure and components:

- Arrays of PV solar panels with a contracted capacity of up to 100MW_{ac}.
- Mounting structures to support the PV panels (utilizing either fixed-tilt / static, single-axis tracking, or double-axis tracking systems).
- On-site inverters to convert power from Direct Current (DC) to Alternating Current (AC), and an 88/132kV on-site substation to facilitate the connection between the solar facility and the Eskom grid connection point.
- A new 132kV power line from the PV facility to connect to the step-up/onsite substation and then connect to the collector substation complex located at the Lichtenburg 3 PV facility.
- Cabling between the project's components, to be laid underground where practical.
- Auxiliary buildings such as offices and workshop areas for maintenance and storage.
- Temporary laydown areas required during construction.
- Internal access roads and perimeter security fencing around the development area.

1.1.2 Project Location

Lichtenburg 1 is proposed on Portion 06 of the Farm Zamenkomst No. 04, which is located approximately 12km north of Lichtenburg and 5.5km south-east of Bakerville. The site falls within Ward 16 of the Ditsobotla Local Municipality (LM), of the Ngaka Modiri Molema District Municipality (DM), in the North West Province. Just like the rest of the Lichtenburg area, the proposed area of development is grazing farmland (beef production) which is characterized by open grassland with scattered *vachellia* trees (figure 2-4). The area was predominately a flat surface that was easily accessible with clear visibility.

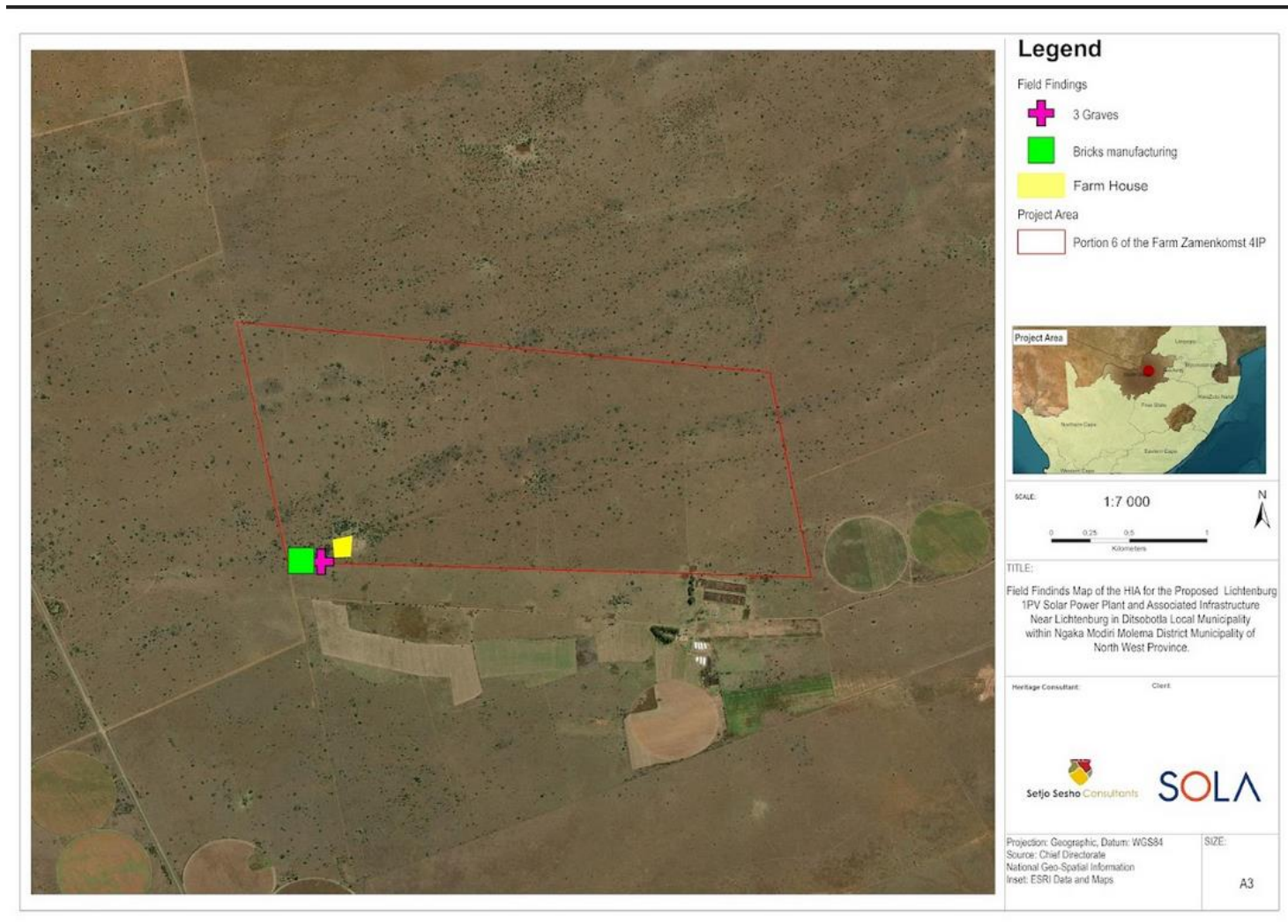


Figure 1: Locality map showing the proposed area of development ©Setjo Sesho







Figure 2: Overview of the proposed area of development @SetjoSesho drone image





Figure 3: Overview of the grazing animals ©Setjo Sesho





Figure 4: View of the scattered *vachellia* trees

1.2 GPS track path

GPS track path is used to provide proof of the areas traversed during the field survey. Setjo Sesho personnel extensively traversed the land under, as shown below

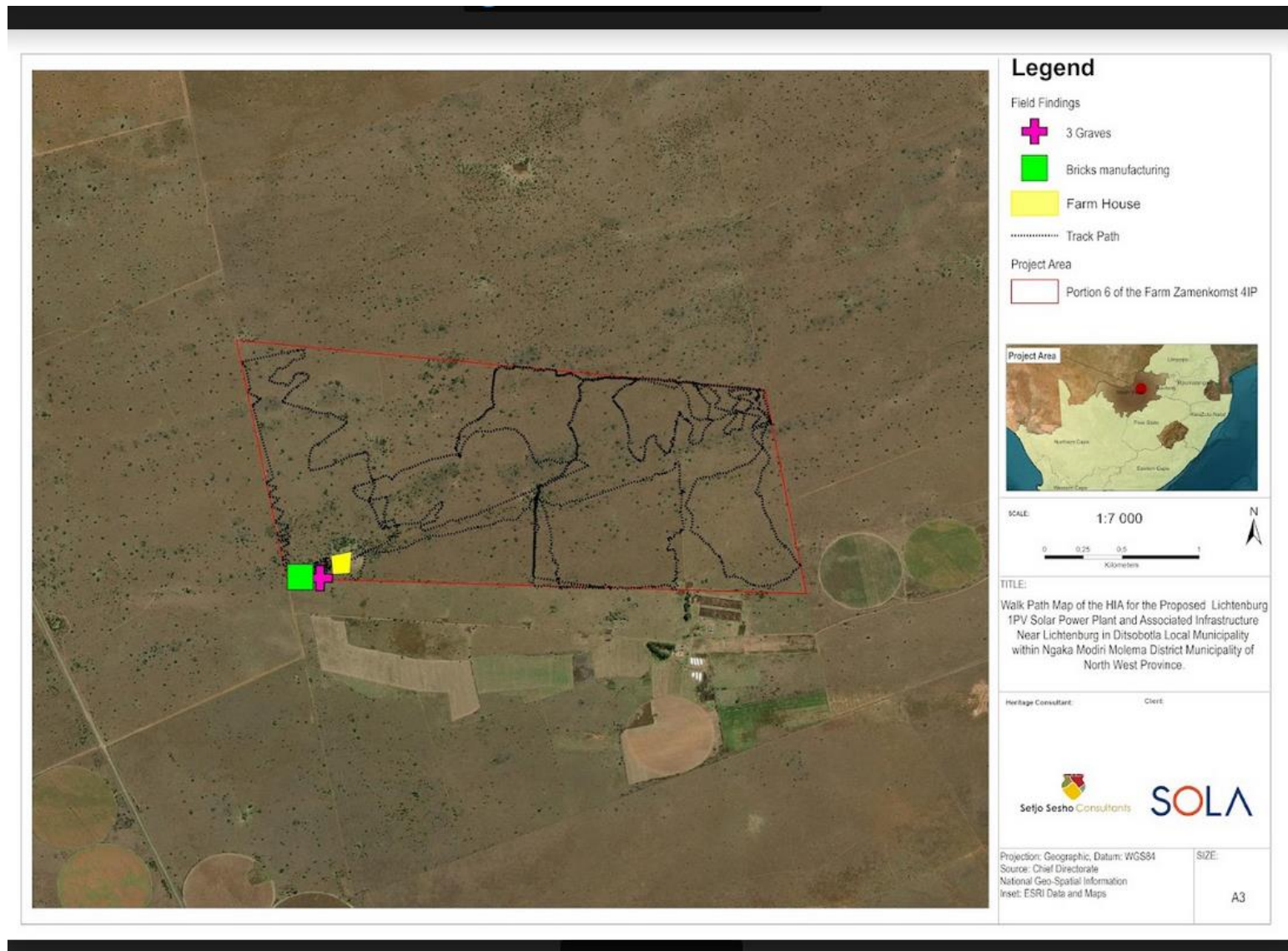


Figure 5: Google Earth image showing the walk path as highlighted in black @Setjo Sesho

1.3 Terms of reference

SOLA Group appointed Setjo Sesho Consultants as the heritage specialists to conduct HIA studies to meet the requirements of Section 38(1) of the South African Heritage Resources Act (SAHRA) (25 of 1999) and Section 38(8) of the National Heritage Resource Act, 1999 (Act 25 of 1999) (NHRA). And for SOLA Group's compliance with the Environment Conservation Act, 1989 (Act 73 of 1989), or the Guidelines for Integrated Environmental Management issued by the Department of Environment Affairs and Tourism, or the Minerals Act, 1991 (Act 50 of 1991), or other legislation.

1.4 Scope of work

A Heritage Impact Assessment study was conducted to determine the impacts on heritage resources within the study area. Below are the tasks that were conducted as part of the investigation:

- Archival search of the proposed development area.
- Field survey investigation of the proposed area of development.
- Identification of possible archaeological, cultural, and historical sites within the proposed area of development.
- An assessment of the potential impacts of construction and operation of the proposed development on archaeological, cultural, architectural, and historical sites within the proposed area; and
- Recommendations for measures to reduce adverse impacts on areas of archaeological, cultural, architectural, and historical importance.

1.5 Expertise of the Specialist

Jennifer Munyai has nine years' experience in the heritage sector. Previously

employed by several consulting companies, she is highly experienced in terms of heritage assessment, archaeological mitigation, grave relocations, rescue excavation and the application of the NHRA section. She holds a Bachelor of Environmental Sciences degree, Bachelor of Arts Honors in Archaeology (*Cum-laude*) and Master of Arts in Ethno-Archaeology, all of which were obtained from the University of Venda.

Jennifer also completed various short courses such as Forensic Anthropology and Archaeology from Durham University (2020), How to do Archaeology from DigVentures (2020) and Heritage Resource Management course with the University of Cape Town (2021). She is a published author of over ten peer-reviewed articles and a chapter in a book. She is a professional member of the Association of Southern African Archaeologist (ASAPA) and accredited by the association's Cultural Resources Management (CRM). Jennifer is also affiliated with AMAFA as a professional heritage specialist and is a member of the South African Archaeologist Society, KZN region.

2. LEGISLATIVE AND POLICY FRAMEWORK

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

- National Environmental Management Act (NEMA) Act 107 of 1998
- National Heritage Resources Act (NHRA) Act 25 of 1999
- Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002
- Development Facilitation Act (DFA) Act 67 of 1 995

The following sections in each Act refer directly to identifying, evaluating, and assessing cultural heritage resources.

- National Environmental Management Act (NEMA) Act 107 of 1998

- a. Basic Environmental Assessment (BEA) – Section (23) (2)(d)
- b. Environmental Scoping Report (ESR) – Section (29) (1)(d)
- c. Environmental Impacts Assessment (EIA) – Section (32) (2)(d)
- d. Environmental Management Plan (EMP) – Section (34) (b)
- National Heritage Resources Act (NHRA) Act 25 of 1999
 - a. Protection of Heritage Resources – Sections 34 to 36; and
 - b. Heritage Resources Management – Section 38
- Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002a. Section 39(3)

NHRA prohibits disturbing heritage resources without permission from the local heritage authority. The NHRA states in Section 34(1) that "No building or part of a building older than 60 years shall be altered or demolished without the permission of the National Monument Authority of the country of jurisdiction...". According to NEMA (Act No. 107 of 1998), an integrated EMP (23: 2 (b)) should identify, predict, and assess impacts on the environment, socio-economic conditions, and cultural heritage. In addition to including legal requirements and EIA classification criteria, SAHRA and ASAPA regulations are also incorporated to ensure a comprehensive and legally compliant HIA report.

3. ASSUMPTIONS AND LIMITATIONS

The limitations and assumptions associated with this heritage impact assessment are as follows:

- The first initial EIA study that included a heritage impact assessment and public participation was conducted in 2018.
- Every attempt was made to obtain the most up-to-date information available. The literature reviewed does not constitute an exhaustive list of sources for the various fields of study.
- Archaeological materials are commonly found at subterranean levels. Without it, reviewers may not be able to properly record or document

these types of materials. Therefore, the reviewed literature, previously completed evaluations, and results of field investigations are essentially limited to surface observations.

- Information provided by clients is deemed accurate and up to date.
- No underground exploration (excavation or sampling) was conducted as permission was required from SAHRA.
- This report does not consider the possibility of paleontological elements or sites.
- An archaeologist and a field technician from Setjo Sesho Consultants conducted the field survey on foot in the proposed development area.
- The proposed development site was easily accessed.

4. METHODOLOGY

4.1 Inventory

Inventory studies involve the in-field survey and recording of archaeological resources within a proposed development. The nature and scope of this type of study is defined predominantly by the results of the overview study. In the case of site-specific developments, direct implementation of an inventory study may preclude the need for an overview.

There are several different methodological approaches of conducting inventory studies. Therefore, in collaboration with the Heritage consultant, the developer should develop an inventory plan for review and approval by the SAHRA prior to implementation.

4.2 Evaluating Heritage Impacts

A combination of document research and determining the geographic suitability of areas and evaluating aerial photographs determined which areas could and should be entered. After recording the location with GPS, it

was reached on foot. Locations were documented by digital photographs taken with a Canon EOS 1300D, DJI Mavic Air 2 drone and geolocated with GPS readings using a GPS application downloaded to an Android phone. All this information is combined with information from an extensive literature review and archival research based on the SAHRIS database. This HIA relies heavily on the analysis of written documents, maps, aerial photographs, and other archival sources combined with site survey results.

4.3 Fieldwork and Report Compilation

On the 12 and 13 of November 2022, a field survey was conducted by archaeologists from Setjo Sesho Consultants. Fieldwork was conducted on foot at the proposed development footprint and aimed to identify heritage and cultural related materials/artifacts. The survey was tracked using GPS and a route-tracking app (Figure 5). The study area was surveyed using standard archaeological survey methods. Information gathered from archives and site surveys was then consolidated and compiled into reports.

5. FIELD FINDINGS

Field survey was only limited to the proposed development of the Lichtenburg 1 PV solar energy facility and associated infrastructure at a site near Lichtenburg under the local municipality of Ditsobotla of Ngaka Modiri Molema in the North West Province. In terms of Section 36, an informal graveyard consisting of three graves was discovered near a tree closer to what is proposed to be a road. Even though only three graves were discovered on site, the possibilities of finding more on site is not limited.

In terms of the area's-built environment (Section 34), an old farm house was identified on site assumed to have been built in the 1920s. The building will be directly impacted by the proposed development. It was recorded by CT Heritage and given the recording ID: 2626AA. Based on the architectural qualities of the building, it has low archaeological significance. There is also a brick manufacturing area that was used to burn bricks. It could be associated

with the same time frames as the houses based on the bricks used on them.

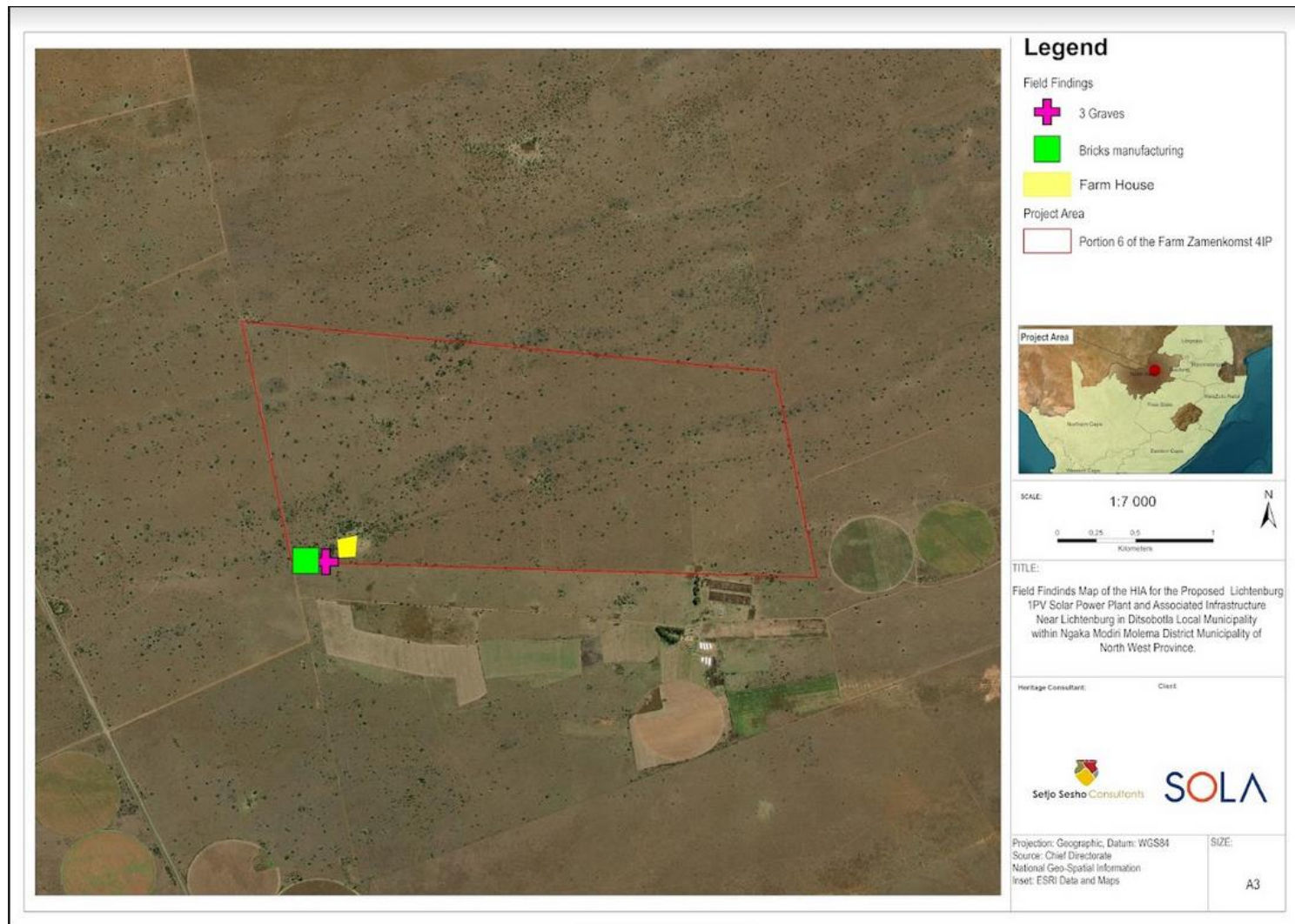





Figure 6: Heritage findings map ©Setjo Sesho

Table 2: Fieldwork findings on the proposed development


Finding name	Coordinates	Description	Images
Setjo 01	26° 2'8.29"S 26° 7'23.17"E	Three graves. The graves belong to one family and are identified by stones (parents and son). One of the graves has a steel headstone while others have rocks. The last grave is hidden under the tree that is closer.	 <p data-bbox="1014 1013 1798 1050">Figure 7: Aerial overview of the informal graveyard</p>


Finding name	Coordinates	Description	Images
			 <p data-bbox="1014 954 1834 991">Figure 8: Ground overview of the informal graveyard</p>


Finding name	Coordinates	Description	Images
			 <p data-bbox="1014 1066 1489 1109">Figure 9: View of the first grave</p>

Finding name	Coordinates	Description	Images
			 <p data-bbox="1016 1098 1585 1136">Figure 10: View of the second grave</p>

Finding name	Coordinates	Description	Images
			 <p data-bbox="1014 1114 1509 1150">Figure 11: View of the last grave</p>

Finding name	Coordinates	Description	Images
Setjo 02	26° 2'5.30"S 26° 7'26.98"E	Farm House The farm house is believed to have been built in the 1920. Based on the architectural style used, it has very low archaeological value	 <p data-bbox="1014 946 1624 981">Figure 12: Aerial view of the farm house</p>

Finding name	Coordinates	Description	Images
Setjo 03	26° 2'8.10"S 26° 7'19.04"E	Bricks manufacturing. These are man-made stones that were used to burn brick before been used. The damaged bricks were dumped at the nearby area.	 <p data-bbox="1016 1155 1756 1190">Figure 13: View of the brick manufacturing area</p>

Finding name	Coordinates	Description	Images
			 <p data-bbox="1016 879 2085 975">Figure 14: View of the dumped damaged brick closer to the manufacturing</p>

6. APPLICABLE HERITAGE LEGISLATION

Several legislations provide the legal basis for protecting and preserving cultural and natural resources. These include the National Environment Management Act (No. 107 of 1998); Mineral Amendment Act (No 103 of 1993); Tourism Act (No. 72 of 1993); Cultural Institution Act (No. 119 of 1998), and the National Heritage Resources Act (Act 25 of 1999). Section 38 (1) of the National Heritage Resources Act requires that where relevant, an Impact Assessment is undertaken in the case where a listed activity is triggered. Such activities include:

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar forms of linear development or barrier exceeding 300m in length.*
- (b) the construction of a bridge or similar structure exceeding 50 m in length;
and*
- (c) any development or other activity which will change the character of an area of land, or water -
 - (i) exceeding 5 000 m² in extent.*
 - (ii) involving three or more existing erven or subdivisions thereof; or*
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or*
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a Provincial Heritage Resources Authority.**
- (d) the re-zoning of a site exceeding 10 000 m² in extent; or*
- (e) any other category of development provided for in regulations by SAHRA or a Provincial Heritage Resources Authority, 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 3 of the National Heritage Resources Act (25 of 1999) lists a wide

range of national resources protected under the act as they are deemed to be a national estate. When conducting Heritage Impact Assessment (HIA) the following heritage resources have to be identified:

- (a) Places, buildings structures, and equipment of cultural significance*
- (b) Places to which oral traditions are attached or which are associated with living heritage*
- (c) Historical settlements and townscapes*
- (d) Landscapes and natural features of cultural significance*
- (e) Geological sites of scientific or cultural importance*
- (f) Archaeological and paleontological sites*
- (g) Graves and burial grounds including-*
 - (i) ancestral graves*
 - (ii) royal graves and graves of traditional leaders*
 - (iii) graves of victims of conflict*
 - (iv) graves of individuals designated by the Minister by notice in the Gazette*
 - (v) historical graves and cemeteries; and*
 - (vi) other human remains which are not covered by in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983)*
- (h) Sites of significance relating to the history of slavery in South Africa*
- (i) moveable objects, including -*
 - (i) objects recovered from the soil or waters of South Africa, including archaeological and paleontological objects and material, meteorites and rare geological specimens*
 - (ii) objects to which oral traditions are attached or which are associated with living heritage*
 - (iii) ethnographic art and objects*

- (iv) military objects
- (v) objects of decorative or fine art
- (vi) objects of scientific or technological interest; and
- (vii) books, records, documents, photographic positives, and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1 of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

Other sections of the Act with direct relevance to the AIA are the following:

Section 34(1) No person may alter or demolish any structure or part of a structure, which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

Section 35(4) No person may, without a permit issued by the responsible heritage resources authority:

- destroy, damage, excavate, alter, deface, or otherwise disturb any archaeological or paleontological site or any meteorite

Section 36 (3) No person may, without a permit issued by SAHRA or a provincial heritage resources authority:

- 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 formal cemetery administered by a local authority; or
- bring onto or use at a burial ground or grave any excavation equipment, or any equipment which assists in detection or recovery of metals.

7. DEGREE OF SIGNIFICANCE

The Heritage Impact Assessment (HIA) report was compiled by Setjo Sesho Consultants for the proposed development of the Lichtenburg 1 PV solar

energy facility and associated infrastructure at a site near Lichtenburg under the local municipality of Ditsobotla of Ngaka Modiri Molema in the North West Province. The relevant maps, tables and figures are included, as stipulated in the NHRA (no 25 of 1999) and the National Environmental Management Act (NEMA) (no 107 of 1998). The HIA process consisted of three steps:

- **Literature Review:** The background information to the field survey relies greatly on the heritage background research. This is obtained through SAHRIS website, journals, books etc.
- **Physical Survey:** Field survey was conducted on the 12th and 13th of November 2022 on foot by an archaeologist and a fieldwork technician from Setjo Sesho Consultants throughout the proposed project area. The survey was aimed at locating and documenting sites falling within and adjacent to the proposed development footprint.
- The final step involved the **recording and documentation** of relevant archaeological resources, the assessment of resources in terms of the HIA criteria and report writing, as well as mapping and constructive recommendations.

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

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

- Potential to answer present research questions.

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

A - No further action necessary.

B - Mapping of the site and controlled sampling required.

C - No-go or relocate development activity position.

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

E - Preserve site.

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

Site Significance

Site significance classification standards prescribed by the SAHRA (2006) and approved by the ASAPA for the Southern African Development Community (SADC) region, were used for the purpose of this report.

Table 3: Site significance classification standards as prescribed by SAHRA.

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)	Grade 4A	High / Medium Significance	Mitigation before destruction
Generally Protected	Grade 4B	Medium	Recording before destruction

B		Significance	
(GP.B)			
Generally Protected	Grade 4C	Low Significance	Destruction
C			
(GP. A)			

Standard impact assessment methodologies have been used to ensure consistency and to evaluate a wide variety of impacts. In line with the methodology for assessing impacts, the following criteria are considered:

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

The impacts of each of the above assessment criteria were described using a combination of quantitative and qualitative methods. Below is a synopsis of and quantitative rating scale for each of the qualitative descriptors:

Table 4: Impact Assessment Criteria

CRITERIA	CATEGORIES	EXPLANATION
Overall nature	Negative	Negative impact on affected biophysical or human environment.
	Positive	Benefit to the affected biophysical or human environment.
Spatial Extent over which impact may be experienced	Site	Immediate area of activity incorporating the 20m zone which extends from the edge of the afforestation area.
	Local	Area up to and/or within 10km of the 'Site' as defined above.
	Regional	Entire community, drainage basin, landscape etc.
	National	South Africa
Duration of impact	Short-term	Impact would last for the duration of the activity – e.g., activities: Land clearing. Quickly reversible.
	Medium-term	Impact would dissipate after the Project activity. E.g., activity: harvesting. Reversible over time.

Probability of occurrence	Long-term	Impact would persist. E.g., operational period the growth periods between each 'short term' activity.
	Permanent	It would continue to have an impact after the proposed development is complete. The process of harvesting and removing the trees.
	Unlikely	<40% probability.
	Possible	40% - 70% probability.
	Probable	>70% probability.
	Definite	>90% probability.
Mitigation Potential [i.e., the ability to manage or mitigate an impact given the necessary resources and feasibility of application]	High	Easy and cheap to manage. It is not generally necessary to have specialized equipment or expertise. By implementing management plans or undergoing good housekeeping, the potential impacts can be mitigated. It is necessary to monitor any negative effects regularly in order to maintain appropriate levels. The likelihood of an adverse impact remains low or negligible after mitigation.
	Moderate	To maintain acceptable levels of impacts, higher levels of expertise and resources are needed. Project design can incorporate mitigation measures. After mitigation, impacts will likely be moderate to low. Possibly impossible to mitigate the effects completely, with a residual impact.
	Low	Will not be possible to mitigate this impact entirely regardless of the expertise and resources applied. The potential to manage the impact may be beyond the scope of the Project. Management of this impact is not likely to result in a measurable change in the level of significance.
Significance of Impact (preliminary only)	Slight	Largely of HIGH mitigation potential.
	Moderate	Largely of MODERATE mitigation potential.
	Substantial	Largely of LOW mitigation potential.

Table 5: Site grading for the proposed area of development

Site name	Grading	Significance	Mitigation measures
Setjo 01	Grade IIIa	High / Medium Significance	Barricading with the barricading fence.
Setjo 02	Grade IIIc	Low significance	Destruction
Setjo 03	Grade IIIc	Low significance	Destruction

8. CONSULTATION

There are typically two types of consultations that take place during onsite development: informal consultations and formal consultations. Informal site surveys may include interviews with key stakeholders such as managers and employees, passers-by, and sometimes older members of the community. Such advice can lead to the identification of burial sites and graves. Graves without visible markings or informal cemeteries may fall into this category. Plus, informal consultation assists in identifying some sacred place that might otherwise go unnoticed. Informal consultation was undertaken by Setjo Sesho on site, where the family of the graves was identified.

Formal consultation includes advertisement and project announcement through newspaper advertisements, site notices, emails, and phone calls. This usually happens at an arranged venue where the community, interested parties, and affected parties are informed of the project and can give their input. Setjo Sesho Consultants did not undertake any form of consultation, however formal consultation was undertaken by the Environmental Assessment Practitioner in accordance with NEMA during the EIA process

9. SOCIO-CULTURAL AND HISTORICAL BACKGROUND

This section provides insights into the archaeology and cultural heritage of the receiving environment. Where necessary, reference to archaeology and other heritage resources found within the broader region of North West will be added. The proposed area of development was not extensively studied, therefore resulting in limited study materials to refer to.

Archaeology in Southern Africa is divided into the Stone Age, Iron Age, and the Historical Period. During these periods, diverse groups of people settled on the Southern African landscape. Majority of the research on the culture, archaeology, rock art in Southern Africa has been conducted by Huffman (2002; 2007); Mason (1968; 1982; 1986); Sutton (2012), Kuman & Field (2009) Kuman et al. (1997).

The North West Region traces the country's heritage back to the dawn of mankind. Sites such as the Cradle of Humankind World Heritage Site showcase the depth of history represented in the North West and Gauteng Province. The Magaliesberg area, like most of the north-west region, has a cultural history dating back to the Stone Age (Deacon and Deacon, 1997). The San hunter-gatherers had inhabited the mountain, hills, and hunting lands of the valleys of modern-day Gauteng for centuries, long before the Bantu-speaking farmers arrived in southern Africa. The San hunter-gatherer left behind a large amount of archaeological evidence including hunting camps marked with stone tools and rock art (Deacon and Deacon 1999).

Stone Age

The remnants of Stone Age hunter-gatherer's activities are customarily divided into the Early, Middle and Late Stone Age. According to Klein (2000) and Mitchell (2002), the ESA is comprised of the Oldowan stone tool complex

(2 and 1.7-1.5 million years ago), and the Acheulean stone tool complex (1.7-1.5 million years ago and 250-200 thousand years ago). And is characterized by small flakes, flaked cobbles, and percussive tools (Klein 2000; Mitchell 2002; Diez-Martín et al., 2015; De La Torre 2016). Stone Age sites are usually associated with stone artefacts found scattered on the surface or as part of deposits in caves and rock shelters.

Iron Age

The Iron Age of the northwestern region dates back to the 4th century AD, when the Proto-Bantu-speaking Early Iron Age (EIA) farming communities arrived in this region, then occupied by hunter-gatherers. These EIA communities are archaeologically referred to as the Olifantspoort, Buispoort, Thabeng and Uitkomst facies of the Urewe EIA tradition (Huffman, 2007:127-9). Iron Age communities occupied the foothills and valley lands and introduced sedentary life, domesticated livestock, crop production, and the use of iron (Huffman 2007).

The North West area is known for its wealth of Iron Age archaeological sites scattered between Brits and Rustenburg and up to the Pilanesberg in the north. Bokfontein closer to Wolhuterskop yielded Uitkomst pottery from stone walls (Birkholtz et al. 2005 cited in Huffman 2007). The Wilhuterskop site to the northwest also produced historic Kwena homesteads with Uitkomst pottery. By 1050 AD Proto-Sotho-Tswana Bantu-speaking groups associated with the Late Iron Age (LJA), referred to as the Blackburn sub-branch of the Urewe tradition, had arrived in the western regions of South Africa, including what is now the North West, and migrated from the Central African region of Lakes Tanganyika and Lake Victoria (Huffman 2007:154-5).

According to available archaeological data, the Blackburn facies ranged from 1050 to 1500 AD (ibid. p. 155). In the north-western regions, the LIA Ntsuanatsatsi, Uitkomst and Rooiberg facies developed between 1350 and

1750 AD. These Iron Age archaeological facies represent the north-west migration of LIA Tswana-speaking groups (Huffman 2007).

Other Iron Age sites are the stone settlement at Kaditshwene in the Madikwe region as well as the 1km long Mzilikazi stone wall built in 1830 as an animal trap. The Kaditshwene site was a major Bahurutshe city between 1699 and 1823 and is the largest Iron Age stone city in South Africa (Marais-Botes 2012). The Tswana speakers such as the Tlhaping, Hurutshe, Fokeng, Kgatla and the Rolong were the earliest Iron Age settlers in the Northwest Province (Breutz 1959). Stone walls erected by the Tswana group have been reported at Hartbessfontein (Breutz 1953, 1986), Lichtenburg and Mafikeng

Early History

The city of Lichtenburg was founded in 1873 and was given the name City of Light. General Del la Rey was buried at Langlaagte in Lichtenburg after a fatal horn honking event. During the 19th century more and more farmers settled in the area. During the Second Boer War, the strategically important town of Lichtenburg was briefly occupied by both Boers and British. In November 1900 a large British force under Colonel Robert Baden-Powell was moved to Lichtenburg and secured the town and with it much of the territory. The city is also known from the poem Lichtenberg by Rudyard Kipling, which tells the story of a foreign fighter in the Second South African War. In 1926 Lichtenburg experienced a gold rush that lasted about 10 years.

10. RECOMMENDATIONS AND CONCLUSIONS

The proposed development area was surveyed on foot by an archaeologist from Setjo Sesho Consultants to identify and record all archaeological materials found on site. The investigation was limited only to the proposed development of the Lichtenburg 1 PV solar energy facility and associated infrastructure at a site near Lichtenburg under the local municipality of

Ditsobotla of Ngaka Modiri Molema in the North West Province. Based on the findings through physical survey, it is recommended that the graves be barricaded with the barricading fence and given 10-meter radius / buffer from the development. The house can be totally demolished adhering to Section 34 regulations. The brick manufacturing factory poses low archaeological significance and can be destroyed to give way for the proposed development.

Taking into consideration and the mitigation measures suggested, Setjo Sesho Consultants therefore recommends that the proposed development be allowed to proceed. It should be noted that although no other archaeological or cultural resources were identified during the field survey, archaeological material, including artifacts and grave may be buried underground and as such may not have been identified during the initial investigation and site visits. In addition, should archaeological material be excavated during construction, it is recommended that development be halted immediately, the site demarcated and the NWPHRA and the Heritage Specialist notified.

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