APPENDIX F5: Phase 1 Heritage Impact Assessment

LTM GREEN ENERGIES (PTY) LTD







PROPOSED GROOTVLEI 600MW SOLAR PV PLANT, BATTERY ENERGY STORAGE SYSTEM & GRID CONNECTION PROJECT, NEAR VENTERSDORP, DR KENNETH KAUNDA AND NGAKA MODIRI MOLEMA DISTRICT MUNICIPALITIES, NORTH WEST PROVINCE

HERITAGE IMPACT ASSESSMENT

31 JULY 2026 (revised 26 October 2026)

Submitted to : Nemai

Prepared by:
Jennifer Kitto
Nitai Consulting (PTY) Ltd
147 Bram Fischer Drive
Ferndale
2194

NITAI CONSULTING
Sustainability Specialists

The heritage impact assessment report has been compiled considering the NEMA Appendix 6 requirements for specialist reports as indicated in the table below.

Requirements of Appendix 6 – GN R326 EIAs Regulations (2014, amended 2017)	**Relevant section in report**
1.(1) (a) (i) Details of the specialist who prepared the report	Section 1.1.3 of Report
(ii) The expertise of that person to compile a specialist report including a curriculum vita	Section 1.1.3 and of Report and **Appendix 2**
(b) A declaration that the person is independent in a form as may be specified by the competent authority	Page iii of the report
(c) An indication of the scope of, and the purpose for which, the report was prepared	Section 1.1
(cA) An indication of the quality and age of base data used for the specialist report	N/A
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 9
(d) The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment	Section 6
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used	Section 8
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 5.1 and 5.2, Section 7
(g) An identification of any areas to be avoided, including buffers	Section 6, Section 13
(h) A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	**Appendix 1**
(i) A description of any assumptions made and any uncertainties or gaps in knowledge;	Section 3
(j) A description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives, on the environment	Sections 6, 8
(k) Any mitigation measures for inclusion in the EMPr	Sections 11, 12
(l) Any conditions for inclusion in the environmental authorisation	N/A
(m) Any monitoring requirements for inclusion in the EMPr or environmental authorisation	N/A
(n)(i) A reasoned opinion as to whether the proposed activity, activities or portions thereof should be authorised and	Section 13
(n)(iA) A reasoned opinion regarding the acceptability of the proposed activity or activities; and	
(n)(ii) If the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	Section 12, 13
(o) A description of any consultation process that was undertaken during the course of carrying out the study	Not applicable. A public consultation process will be handled as part of the EIAs and EMPr process.

Requirements of Appendix 6 – GN R326 EIAs Regulations (2014, amended 2017)	**Relevant section in report**
(p) A summary and copies if any comments that were received during any consultation process	Not applicable. To date no comments have been raised regarding heritage resources that require input from a specialist.
(q) Any other information requested by the competent authority.	Not applicable.
(2) Where a government notice by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	Section 38(3) of the NHRA

Declaration of Independence

The report has been compiled by Nitai Consulting (Pty) Ltd, an appointed Heritage Specialist for Nemai Consulting (Pty) Ltd for the Proposed Grootvlei 600MW Solar Plant, Battery Energy Storage Systems & Grid Connection Project, Ventersdorp, Dr Kenneth Kaunda and Ngaka Modiri Molema District Municipalities, North West Province. The views contained in this report are purely objective and no other interests are displayed during the decision-making processes discussed in the Heritage Impact Assessment Process.

I, Jennifer Kitto, declare that –

General declaration:

- *I act as the independent heritage specialist for this project*
- *I will perform the work relating to the project in an objective manner, even if this results in views and findings that are not favourable to the applicant*
- *I declare that there are no circumstances that may compromise my objectivity in performing such work;*
- *I have expertise in conducting heritage impact assessments, including knowledge of the National Heritage Resources Act, No 25 of 1999 (NHRA), associated Regulations and any guidelines that have relevance to the proposed activity;*
- *I will comply with the NHRA, associated Regulations and all other applicable legislation, including the National Environmental Management Act, No 107 of 1998 (NEMA);*
- *I will take into account, to the extent possible, the matters listed in section 38 of the NHRA when preparing the application and any report relating to the application;*
- *I have no, and will not engage in, conflicting interests in the undertaking of the activity;*
- *I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;*
- *I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;*
- *I will provide the competent authority with access to all information at my disposal regarding the project, whether such information is favourable to the applicant or not*
- *All the particulars furnished by me in this form are true and correct;*
- *I will perform all other obligations as expected of a heritage specialist in terms of the NHRA and the constitutions of my affiliated professional bodies; and*
- *I realise that a false declaration is an offence in terms of regulation 71 of the NEMA 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 NEMA Regulations;

HERITAGE CONSULTANT - Nitai Consulting (Pty) Ltd

PRINCIPAL HERITAGE PRACTITIONER – Jennifer Kitto

CONTACT PERSON - Jennifer Kitto

Tel - [redacted]

Email [redacted]

SIGNATURE - _____

ACKNOWLEDGEMENT OF RECEIPT

CLIENT - Nemai Consulting (Pty) Ltd

CONTACT PERSON - Wendy Ludewig

Tel - +27 (0) 11 781 1730

Fax - +27 (0) 11 781 1731

Email - wendyL@nemai.co.za

SIGNATURE - _____

Executive Summary

Introduction

LTM Green Energies (Pty) Ltd (the "Applicant") is proposing the development of Grootvlei 600MW Solar Photo Voltaic (PV) Plant, Battery Energy Storage Systems (BESS) and Grid Connection Project near Ventersdorp, Dr Kenneth Kaunda and Ngaka Modiri Molema District Municipalities, North West Province (the "Project").

An Environmental Authorisation (EA) was granted for the Project on 13 December 2023 for the Project with a Site Extent of ± 600 hectares (ha). After the Applicant had undertaken further optimisation of the Project layout it was determined that the extent of land originally secured for the Project is insufficient to accommodate the required generation capacity. As a result, based on guidance received from the Department of Forests , Fisheries and Environment (DFFE), the Applicant is applying to lapse the existing Environmental authorisation (EA) and undertake a new EA Application for the entire Project extent of ±1200 hectares (an additional 580 hectares from what was originally authorised).

Nemai Consulting (Nemai) has been appointed by the Applicant to undertake the new Scoping and Environmental Impact Reporting (S&EIR) Process for the entire Project in terms of the Environmental Impact Assessment (EIA) Regulations of 2014, as amended. It is noted that the Project may also require additional environmental approvals, which may be identified during the S&EIR Process. Nemai appointed Nitai Consulting to undertake the Heritage Sensitivity Verification and the Heritage Impact Assessment (HIA) study.

Methodology

The desktop study provided information on the Heritage Background of the general region and project area. This included a literature review of published sources as well as past HIA studies conducted for the project area and surrounding region. An examination of historical 1:50 000 topographical maps and/or archival maps (if available) was also undertaken. The relevant early editions of the 2727CD topographical map sheets were obtained from the Department of Rural Development & Land Reform, Cape Town. An examination of satellite images of the project area (Google Earth) was also conducted.

The on-site inspection of the footprint took place over several separate days between 2023 and 2026 (22 March and 24 April 2023; 27 March 2026) by the author (heritage specialist) as part of a specialist team. The landowner accompanied the team on the first visit in 2023. The PV site was covered as extensively as possible both by vehicle and on foot and particular attention was paid to soil around burrows and patches of bare ground. The survey focussed on identifying and documenting heritage resources situated within and immediately adjacent to the proposed project area footprint, such as graves, historical structures or remains and archaeological sites or material.

Significance Assessment

The project area that will be impacted by the proposed Grootvlei Solar PV project contains some areas that are currently disturbed by grazing activities as well as past agricultural activity, including extensive field clearance.

The impact significance of the project on **graves and cemeteries is medium,** as one potential informal grave was identified.

The impact significance of the proposed project on **protected historical structures is Low-medium,** as two sites comprising historical structures were identified: an historical stone kraal with associated large trough situated within the PV site footprint (GVL-04) and a small historical farmstead (GVL-01) situated just outside the PV site footprint. Since both of these sites are depicted on the 1966 topographic map, it is very likely that these structures are older than 60 years of age and therefore the sites are protected by section 34 of the NHRA.

The impact significance of the project on **archaeological sites or material is low,** as four findspots containing flaked stones or fragments were identified (GVL-02, GVL-03, GVL-06, GVL-08), but these are extremely low-density scatters or isolated finds and of low significance.

Mitigation Measures

The proposed Grootvlei Solar PV, BESS and Grid Corridor project will have a negative low-medium impact on heritage resources as eight heritage resources or find spots were identified within or adjacent to the project footprint area: two historical structure sites (GVL-01, GVL-04), one potential informal grave (GVL-07) and four archaeological findspots (GVL-02, GVL-03, GVL-06, GVL-08). One modern stock ramp was also identified (GVL-05).

The recommendations below are provided to mitigate the potential impact of the proposed PV project on the identified heritage resources:

Historical Structures (GVL-01, GVL-04)

- GVL-04 (stone kraal): A buffer of at least 30m must be implemented to ensure that there is no direct or indirect impact during construction related activities. Any proposed alteration for reuse will require a permit from the North-West Provincial Heritage Resource Authority (NW PHRA).
- GVL-01 (historical farm structures): A buffer of at least 30m must be implemented to ensure that there is no indirect impact during construction related activities. Any proposed destruction will require a permit from the NW PHRA.
- The materials demarcating the buffers must be highly visible and made of durable material.

Archaeological material (GVL-02, GVL-03, GVL-06, GVL-08)

- No mitigation is required. However, all archaeological material is protected by section 35 and cannot be removed without a permit (from SAHRA).
- The Heritage Chance Finds procedure must be implemented.

Palaeontological heritage

- A separate palaeontological study is being undertaken by a professional palaeontologist as the project area falls into an area where the underlying geology is mainly of Very High fossil sensitivity.

No fatal flaws were identified during this study, therefore, it is the considered opinion of the heritage specialist that the construction of the proposed Solar PV, BESS and Grid Corridor project within the footprint can proceed. There are no objections from a heritage perspective, provided the recommended mitigation measures contained in this report and in the separate palaeontological impact assessment are implemented.

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List of Abbreviations

APHP	Association of Professional Heritage Practitioners
ASAPA	Association of Southern African Professional Archaeologists
BESS	Battery Energy Storage System
CRM	Cultural Resources Management
DLRRD	Department of Land Reform & Rural Development
DFFE	Department of Forestry, Fisheries and Environment
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EAP	Environmental Assessment Practitioner
EIA	Early Iron Age
EMPr	Environmental Management Programme
ESA	Early Stone Age
GIS	Geographic Information System
ha	Hectare
HIA	Heritage Impact Assessment
IAP	Interested and Affected Party
IAIAsa	International Association for Impact Assessment South Africa
km	Kilometre (1 000m)
LIA	Late Iron Age
kV	Kilo Volt
LSA	Later Stone Age
MSA	Middle Stone Age
MTS	Main Transmission Station
NEMA	National Environmental Management Act (No. 107 of 1998)
NHA	National Health Act, (No. 61 of 2003)
NHRA	National Heritage Resources Act (No 25 of 1999)
NHS	National Heritage Site
NW PHRA	North West Provincial Heritage Resources Authority
PHRA	Provincial Heritage Resources Authority
PV	Photo Voltaic
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
SAHRA	South African Heritage Resources Agency

1 INTRODUCTION

Electricity generation sources need to be diversified to ensure security of supply and reduce the carbon footprint associated with South Africa's (SA) current heavy reliance on coal for electricity generation. LTM Green Energies (Pty) Ltd (the "Applicant") is proposing the development of Grootvlei 600MW Solar Photo Voltaic (PV) Plant, Battery Energy Storage Systems (BESS) and Grid Connection Project near Ventersdorp, Dr Kenneth Kaunda and Ngaka Modiri Molema District Municipalities, North West Province (the "Project").

An Environmental Authorisation (EA) was granted for the Project on 13 December 2023 for the Project with a Site Extent of ± 600 hectares (ha). After the Applicant had undertaken further optimisation of the Project layout it was determined that the extent of land originally secured for the Project is insufficient to accommodate the required generation capacity. As a result, based on guidance received from the Department of Forests , Fisheries and Environment (DFFE), the Applicant is applying to lapse the existing Environmental authorisation (EA) and undertake a new EA Application for the entire Project extent of ±1300 hectares (an additional 580 hectares from what was originally authorised).

Nemai Consulting (Nemai) has been appointed by the Applicant to undertake the new Scoping and Environmental Impact Reporting (S&EIR) Process for the entire Project in terms of the Environmental Impact Assessment (EIA) Regulations of 2014, as amended. It is noted that the Project may also require additional environmental approvals, which may be identified during the S&EIR Process. Nemai appointed Nitai Consulting to undertake the Heritage Sensitivity Verification and the Heritage Impact Assessment (HIA) study.

In terms of the Grid Connection Capacity Assessment (GCCA) 2024, which is a report that presents the results of available generation connection capacity of all the transmission substations in all the supply areas in all the provinces of South Africa, the Project is located within the North West Supply Area. Based on the latest GCCA that was released by Eskom in March 2022, the GCCA confirms that the North West Supply Area currently has 4370MW generation connection capacity available. The Project Site is located approximately 14 km from the Pluto – Watershed 275kV power line. The Applicant intends to bid for the current and future Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) bid windows and/or other renewable energy markets within SA.

1.1 Scope & Terms of Reference for the HIA report

1.1.1 Summary of Key Issues & Triggers Identified During Scoping

In terms of the National Heritage Resources Act, No 25 of 1999 (NHRA), the following proposed activities trigger the need for a Heritage Impact Assessment (HIA):

- Potential occurrence of heritage resources, graves and structures older than 60 years within the Project's footprint;
- Proposed development that is more than 5000m^2;

- Proposed linear development that is longer than 300m;
- Proposed development where an impact assessment is triggered in terms of the National Environmental Management Act, Act 107 of 1998 (NEMA).

1.1.2 Approach

- Undertake a Heritage Impact Assessment in accordance with the NHRA.
- Identify and map all heritage resources in the area affected, as defined in Section 2 of the NHRA, including archaeological sites on or near the proposed developments.
- Assess the significance of such resources in terms of the heritage assessment criteria as set out in the regulations.
- Assess the impacts of the Project on such heritage resources.
- Prepare a heritage sensitivity map (GIS-based), based on the findings of the study.
- Identify heritage resources to be monitored.
- Comply with specific requirements and guidelines of and South African Heritage Resources Agency (SAHRA) and North West Provincial Heritage Resources Authority (NW PHRA).

1.1.3 Nominated Specialist Details

Organisation:	Nitai Consulting
Name:	Jennifer Kitto
Qualifications:	BA Archaeology and Social Anthropology; BA (Hons) Social Anthropology
No. of years' experience:	28
Affiliation (if applicable):	Association of Professional Heritage Practitioners (APHP) - PHP0156 Association of Southern African Professional Archaeologists (ASAPA) - Technical member No.444 International Association for Impact Assessment (IAIAsa) – Member No. 7151

1.2 Brief Project Description

LTM Green Energies (Pty) Ltd (the "Applicant") has proposed the development of Grootvlei 600MW Solar Plant, Battery Energy Storage Systems (BESS) and Grid Connection Project, located north west of Ventersdorp within the JB Marks and Ditsobotla Local Municipalities in the North West Province (the "Project").

2 LEGISLATION

The identification, evaluation and assessment of any cultural heritage site, artefact or find in the South African context is required and governed by various pieces of legislation, including the National Heritage Resources Act, 25 of 1999 (NHRA) and associated Regulations, National Environmental Management Act, Act 107 of 1998 (NEMA) and associated Regulations, as well as the National Health Act, Act No. 61 of 2003 (NHA), specific Regulations governing human remains.

2.1 National Heritage Resources Act, No 25 of 1999 (NHRA)

The NHRA defines cultural heritage resources (section 3), provides protection to specific types of heritage resources (sections 34, 35, 36) and also requires an impact assessment of such resources for specific development activities (section 38(1)). Section 38(8) further allows for cooperation and integration of the management of such impact assessment between the national or provincial heritage authority (SAHRA or a PHRA) and the national environmental authority (DFFE).

In terms of section 38(1)(a) of the NHRA, the specific types of development activity that may require a Heritage Impact Assessment (HIA) include: a proposed development that is more than 5000m^2, the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length and a proposed development where an impact assessment is triggered in terms of the NEMA. The proposed Solar PV project footprint is 1300ha and includes a powerline option that is longer than 300m, as well as triggering an impact assessment under NEMA, therefore this study falls under s38(8) and requires comment from the relevant heritage resources authority (SAHRA and/or the North West Provincial Heritage Authority).

Sections 34-36 of the NHRA further stipulate the protections afforded to specific types of heritage resources, *i.e*. structures older than 60 years (s34); archaeological, palaeontological, meteorites (s35); graves and burial grounds (s36), as well as the mitigation process to be followed if these resources need to be disturbed. The construction of the solar PV project and powerline may result in impacts to any of these types of heritage resources.

2.2 National Environmental Management Act, Act 107 of 1998 (NEMA)

NEMA states that an integrated Environment Management Plan (EMP) should, (23 -2 (b)) "…identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage". In addition, the NEMA and associated Regulations GNR 982 (Government Gazette 38282, 14 December 2014, amended 2017) state that, "the objective of an environmental impact assessment process is to, … identify the location of the development footprint within the preferred site … focussing on the geographical, physical, biological, social, economic, *cultural and heritage aspects* of the environment" (GNR 982, Appendix 3(2)(c), emphasis added).

The EIA Regulations, 2014 (as amended), published in GNR 982 of 2014 (Government Gazette 38282) promulgated under the (NEMA) contain specific requirements to be addressed in the different types or impact assessment reports (Regulations 19, 21 and 23) as well as requirements for Specialist Reports (Appendix 6).

2.3 The National Health Act, No. 61 of 2003 (NHA), Regulations 2013

In the case of graves and/or burial grounds that could be impacted by a proposed development, and which are identified through an impact assessment, specific Regulations relating to the Management of Human Remains (GNR 363 of 2013 in Government Gazette 36473) address the exhumation and reburial of human remains: Regulations 26, 27 and 28.

3 Assumptions and Constraints

This assessment assumes that all the information provided by the Client and the Environmental Assessment Practitioner (EAP) regarding the project footprint (including the powerline) is correct and current.

The project area traverses various properties separated by fences, and access was restricted in some areas..

The large area of the PV Site project footprint and powerline options meant that it was not feasible to undertake a pedestrian survey of the whole area and the fieldwork therefore comprised a combination of vehicle and pedestrian investigation. The extremely dense and long vegetation in several areas meant that archaeological and heritage visibility was low in those areas. A large number of stone-clearing heaps also occur on the property. Therefore, there is a possibility that some heritage resources were not identified, specifically, informal graves or burial sites.

4 Project Description

4.1 Location

The Project is located approximately 20 km to the northwest of Ventersdorp central business district (CBD) and falls within Ward 34 of the JB Marks Local Municipality and Ward 17 of the Ditsobotla Local Municipality, in the North West Province. The site can be accessed via the N14 (main access) and the R53 (gravel road). The property earmarked for the Solar Project covers a combined area of approximately 1300 hectares (ha). See **Figure 1** and **Figure 2** below.

The location details of the affected properties are provided below:

- Solar PV Plant: Portion number 0 of the farm Grootvlei 161 IP;
- New Main Transmission Substation (MTS): Portion number 1 of the Farm Houtkop 152;

- Overhead Powerline (OHL) Route: Portion number 1, Portion number 9, Portion number 11, Portion number 12 of the Farm Houtkop 152, Portion number 1 of the Farm Roodepoortje 154 and Portion number 0 of the farm Grootvlei 161 IP.

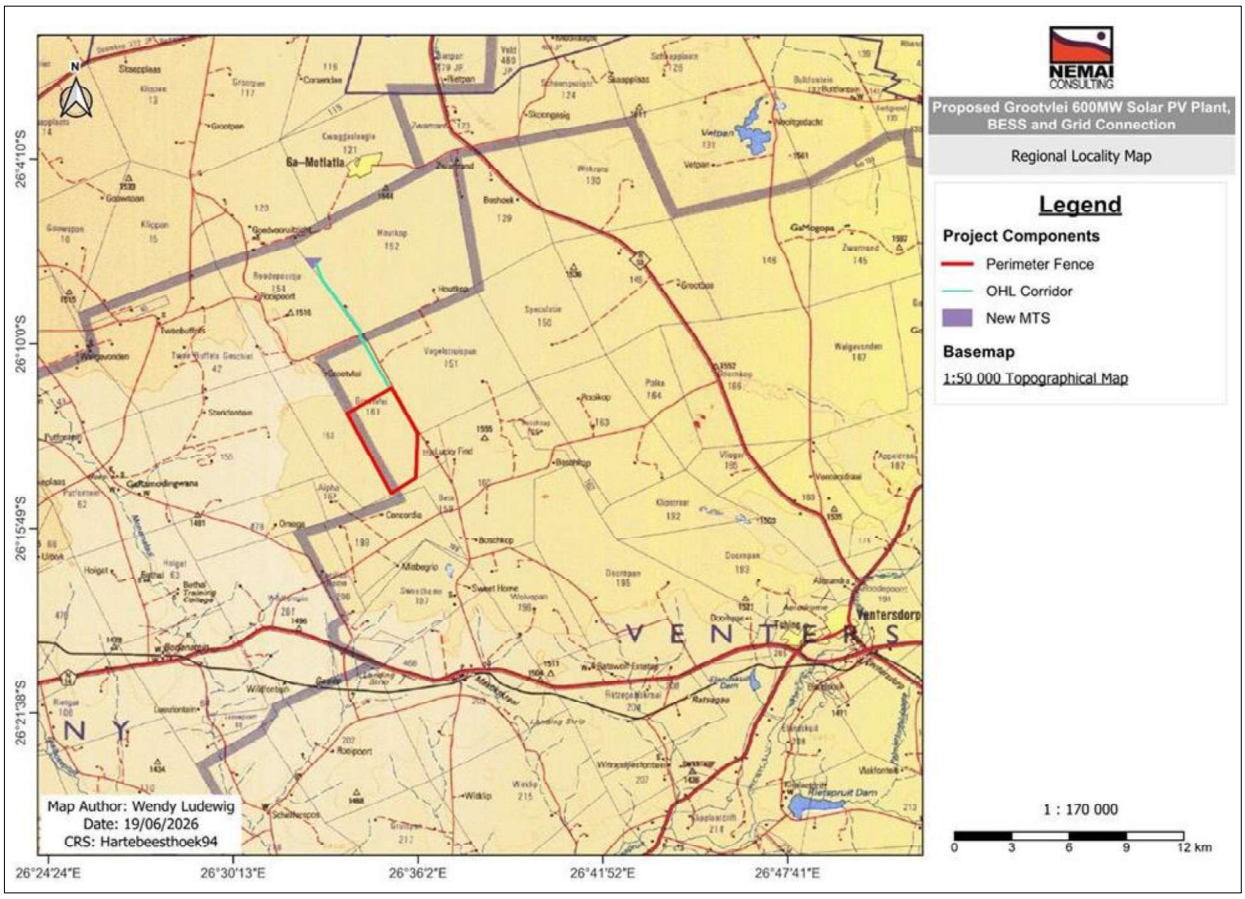

Figure 1: Grootvlei 600MW Solar PV, Regional Locality, northwest of Ventersdorp

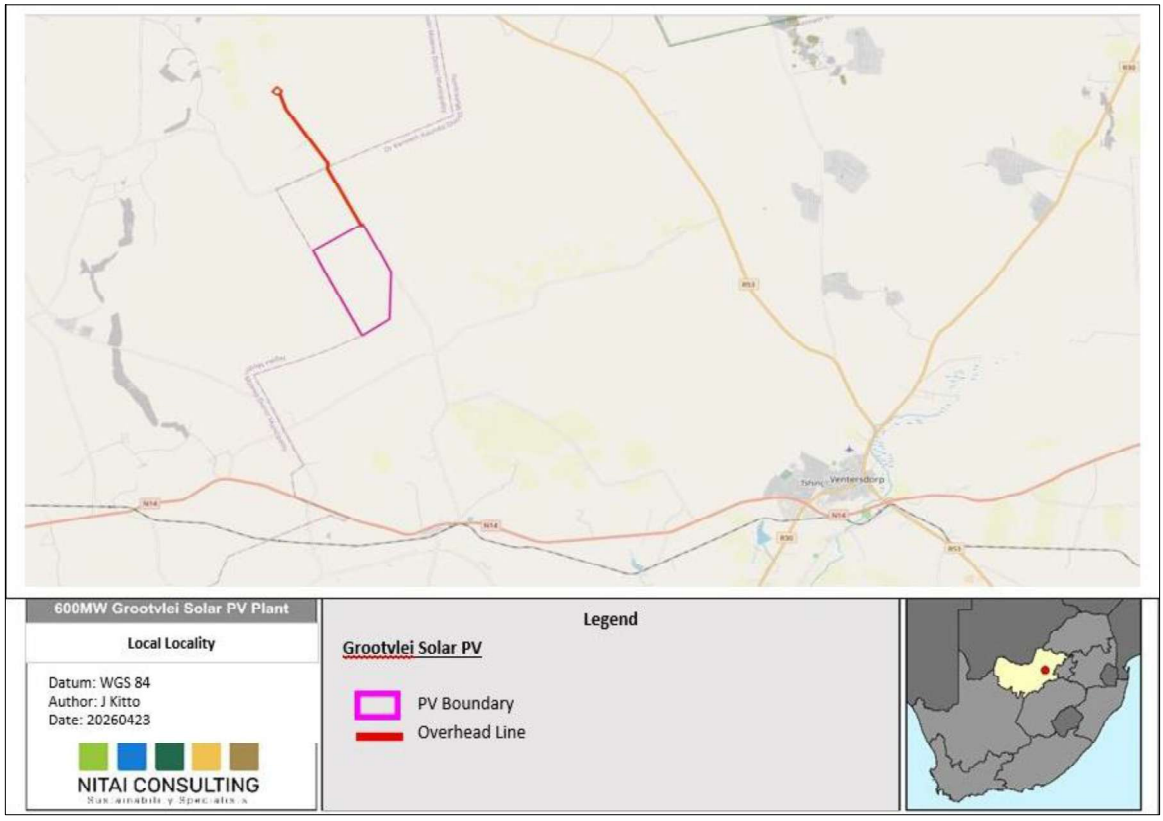

Figure 2: Grootvlei 600 MW Solar PV Project layout

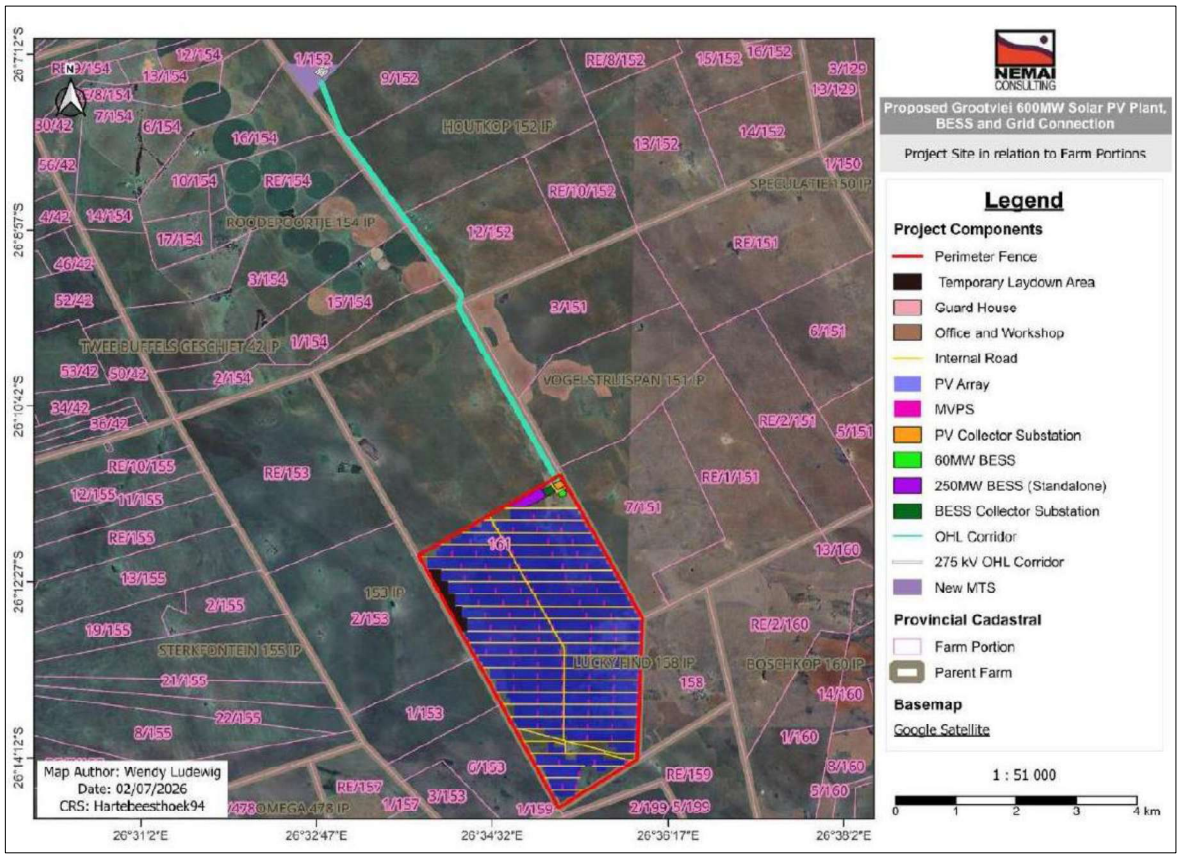

Figure 3: Grootvlei 600 MW Solar PV Project (Cadastral)

4.2 Overview of Technical Details:

The technical details of the proposed Grootvlei 600MW Solar PV Plant are captured in **Table 1** below.

Table 1: Technical details of the proposed PV Plant

No.	Component	Description / Dimensions
1.	Height of PV panels	4.5m (at maximum tilt)
2.	Facility generation capacity (MW)	662.4MWp/ 600MWac
3.	Total area of Project (ha)	1300 ha
4.	Area of PV Array	1060 ha
5.	Area and capacity of substations	• PV Collector Substation: 1.67 ha/640 MVA • MTS: 4.00 ha/1000 MVA
6.	Area occupied by both permanent and construction laydown areas	19.8 ha
7.	Area and Capacity of BESS	○ 60MW BESS: • Area: 1.15 ha • Capacity: 60MW/240MWh ○ 250MW BESS: • Area: 9.2 ha • Capacity: 250MW/1000MWh • o Collector Substation: 2.12ha/300MVA
8.	Area occupied by buildings	• Office & Workshop: 0.29 ha • Guard House: 0.02 ha
9.	Length of internal roads	77.2 km
10.	Width of internal roads	6 m
11.	Proximity to grid connection	8.4 km
12.	Height of fencing	3m
13.	Type of fencing	Type will vary around the site, welded mesh, palisade and electric fencing

4.3 Solar Technology

Solar energy facilities operate by converting solar energy into a useful form (i.e. electricity). The use of solar energy for electricity generation is a non-consumptive use of a natural resource and consumes no fuel for continuing operation. Solar power produces an insignificant quantity of greenhouse gases over its lifecycle as compared to conventional coal-fired power stations. The operational phase of a solar facility does not produce carbon dioxide, sulphur dioxide, mercury, particulates, or any other type of air pollution, as fossil fuel power generation technologies do.

Photovoltaic PV technology produces direct current (DC), which is then converted to alternating current (AC) via power electronic inverters. The main technology categories are crystalline modules (mono- or poly-

crystalline), thin-film, and concentrated photovoltaics (CPV). **Figure 4** below, provides an overview of a Solar PV Power Plant.

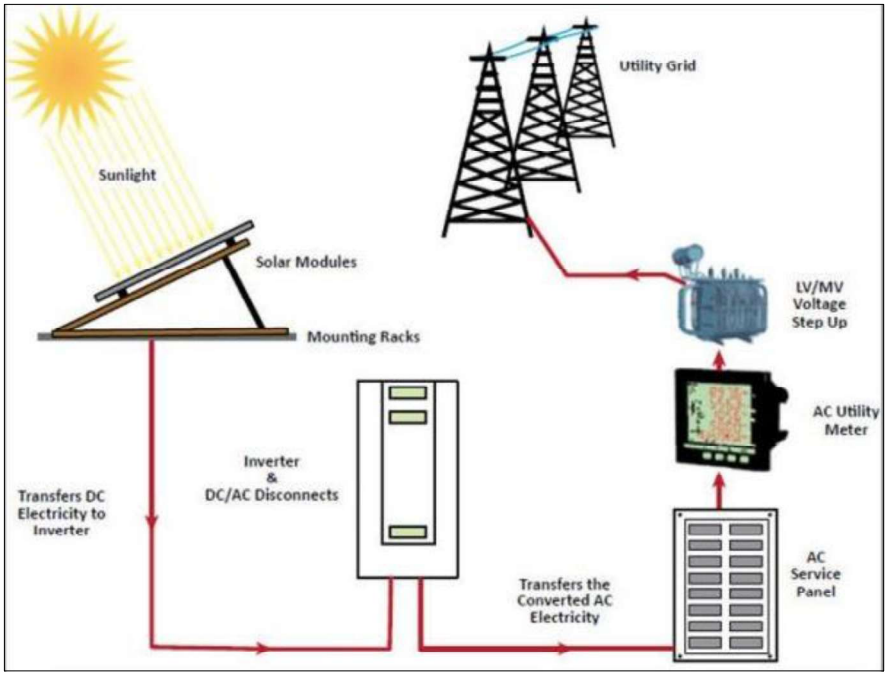

Figure 4: Overview of Solar PV Power Plant (International Finance Corporation, 2015.)

4.4 Project Layout

The proposed layout of the project Solar Plant is shown in **Figure 3**, above. The desirability of the earmarked site for the development of the proposed Solar Plant is due to the following key characteristics:

- Solar Irradiation: The feasibility of a solar facility is dependent on the direct solar irradiation levels.
- Topography: The suitability of the surface area is an important characteristic for the construction and operation of solar facilities. Most of the site has a low gradient slope and is suitable for this development.
- Grid capacity and connection: In terms of the Grid Connection Capacity Assessment (GCCA) 2024, which is a report presents the results of available generation connection capacity of all the transmission substations in all the supply areas in all the provinces of South Africa, the Project is located within the North West Supply Area. Based on the latest GCCA that was released by Eskom in March 2022, the GCCA confirms that the North West Supply Area currently has 4370MW generation connection capacity available. The Project Site is located approximately 14km from the Loop In-Loop Out of the Pluto – Watershed 275kV power line and 2.8km from the Makokskraal Substation.
- Extent of site: The overall extent of the site is sufficient for the installation of the Solar Plant.
- Site access: The site can be accessed via an unnamed gravel road off the N14 and/or the R53

5 STATUS QUO ANALYSIS

5.1 General Existing Condition of Receiving Environment

The Project is located approximately 20 km to the north west of Ventersdorp's CBD. The areas affected by the proposed Project footprint are rural in nature. The Project's PV Site, OHL corridor and MTS site are currently vacant and were used historically for agricultural purposes (both agriculture and grazing). The Project's power line connection to the Eskom grid is located 2 km from the Project area. Grazing is the dominant land use in the Project area. The terrain topography is mostly flat and covered with mixed grassland and other vegetation that varies from relatively short to long and dense. There are several natural outcrops of dolomite, chert, quartz and dolerite and many piles of rocks from field clearing also occur on the site, especially on the PV footprint area.

Note: As the original site footprint has been expanded and two site visits were undertaken, the status quo photographs have been divided into the Original PV footprint area (southern area of current PV footprint), the Expanded PV footprint area (northern area of current PV footprint) and the OHL Corridor and MTS footprint.

5.1.1.1 Original PV footprint (southern area of current PV footprint)



Figure 5: View over the northeast section of the PV footprint area, showing the mainly grassland cover (April 2023)



Figure 6: View showing one of the many stone piles scattered over the PV footprint (April 2023)



Figure 7: View showing dolomite rock outcrop visible in the southeast section of the PV footprint (April 2023)



Figure 8: View of water hole located inside the southern boundary of the PV footprint (April 2023)



Figure 9: View of vlei/wetland around the waterhole in the southern section of the PV footprint (April 2023)



Figure 10: View of the grass cover and several rock piles in the central section of the PV footprint, looking east (April 2023)



Figure 11: View of the long and dense vegetation section around the northeast section of the PV footprint (April 2023)

5.1.1.2 Expanded area of PV footprint (northern area of current PV footprint)



Figure 12: View looking east over northern area of PV footprint (March 2026)



Figure 13: View of northeast area of PV footprint looking southwest (March 2026)



Figure 14: View of southern area of the PV footprint looking northwest (March 2026)



Figure 15: Close-up view of a rock clearing pile with a large pile in the background



Figure 16: View of the tree patch on the western area of the PV footprint with dense vegetation cover.



Figure 17: Closer view of the long and dense vegetation within the tree patch,



Figure 18: View looking southeast to the centre of the PV footprint area showing dolomite outcroppings



Figure 19: Quartzite outcropping on PV footprint area

5.1.1.3 *Overhead Line (OHL) Corridor and Main Transmission Station (MTS) footprint*



Figure 20: View looking south along the OHL corridor area (southern section)



Figure 21: View looking north along the OHL corridor area (southern section)



Figure 22: View of dolerite outcropping along the OHL corridor (southern section)



Figure 23: View of bluegum plantation along northern section of OHL corridor



Figure 24: View of northern OHL corridor, looking northeast (March 2026)



Figure 25: View of MTS area looking southeast, showing long dense grass (April 2023)



Figure 26: View of MTS area looking northeast, showing long dense grass and existing powerlines (April 2023)

5.2 Cultural-Heritage Receiving Environment

5.2.1 National Environmental Screening Tool (DFFE)

The National Environmental Screening Tool identified the Archaeological-Cultural Sensitivity of the proposed Grootvlei PV & BESS and Grid Corridor development footprint as **Low** (**Figure 27** and **Figure 28**). However, the Palaeontological Sensitivity is identified as being **High** (**Figure 29** and **Figure 30**).

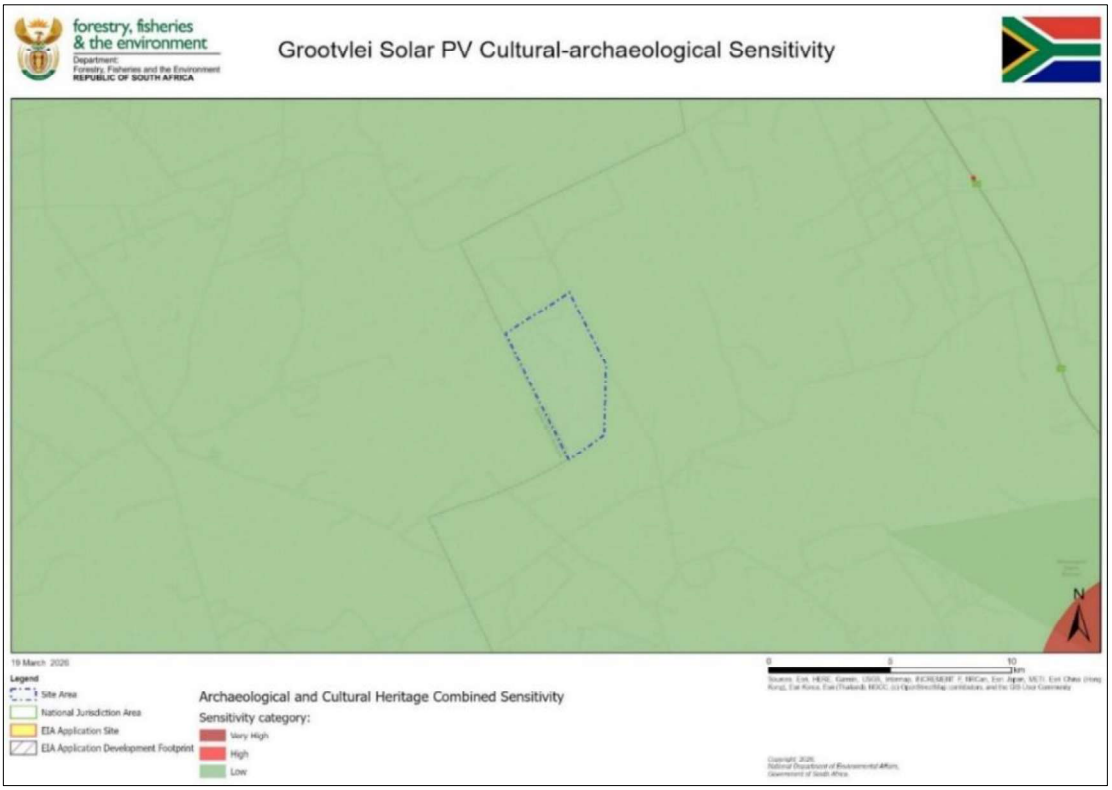

Figure 27: Archaeological Cultural Sensitivity map indicating that the PV footprint of the project is located within a region of low archaeological and cultural heritage sensitivity (DFFE Screening Tool).



Figure 28

Figure 28: Archaeological Cultural Sensitivity map indicating that the OHL & MTS footprint of the project is located within a region of low archaeological and cultural heritage sensitivity (DFFE Screening Tool).

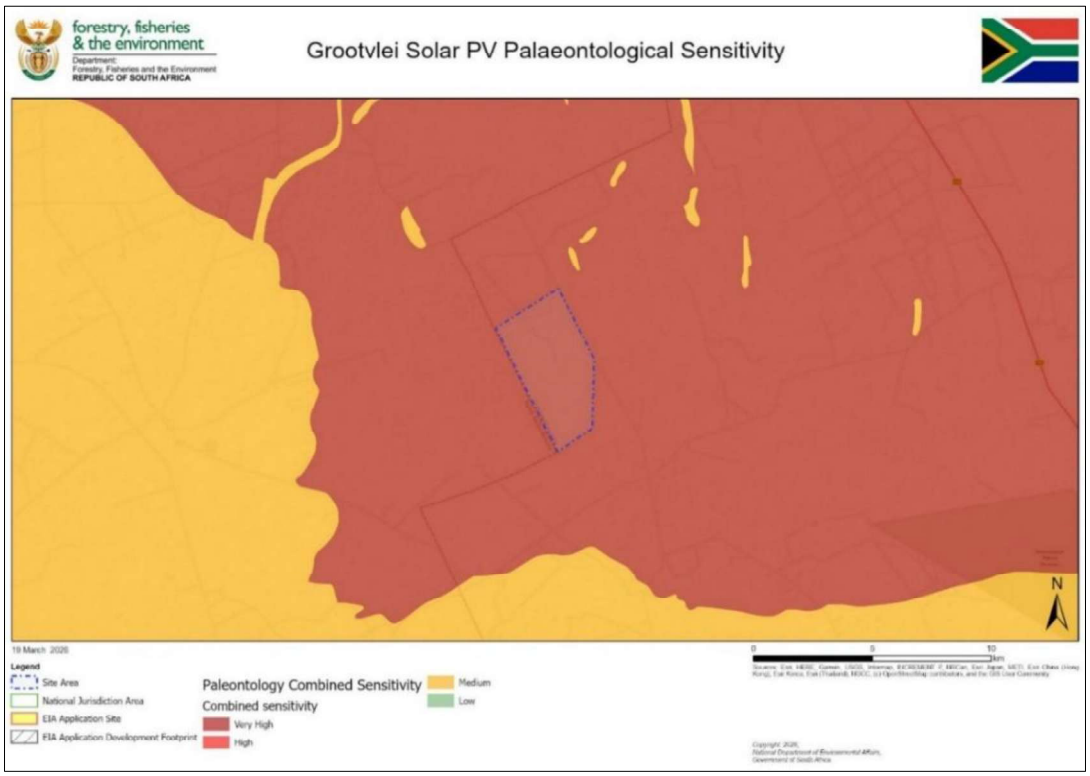

Figure 29: Palaeontological Sensitivity map indicating that the PV footprint of the project is located within a region of high palaeontological sensitivity (DFFE Screening Tool).

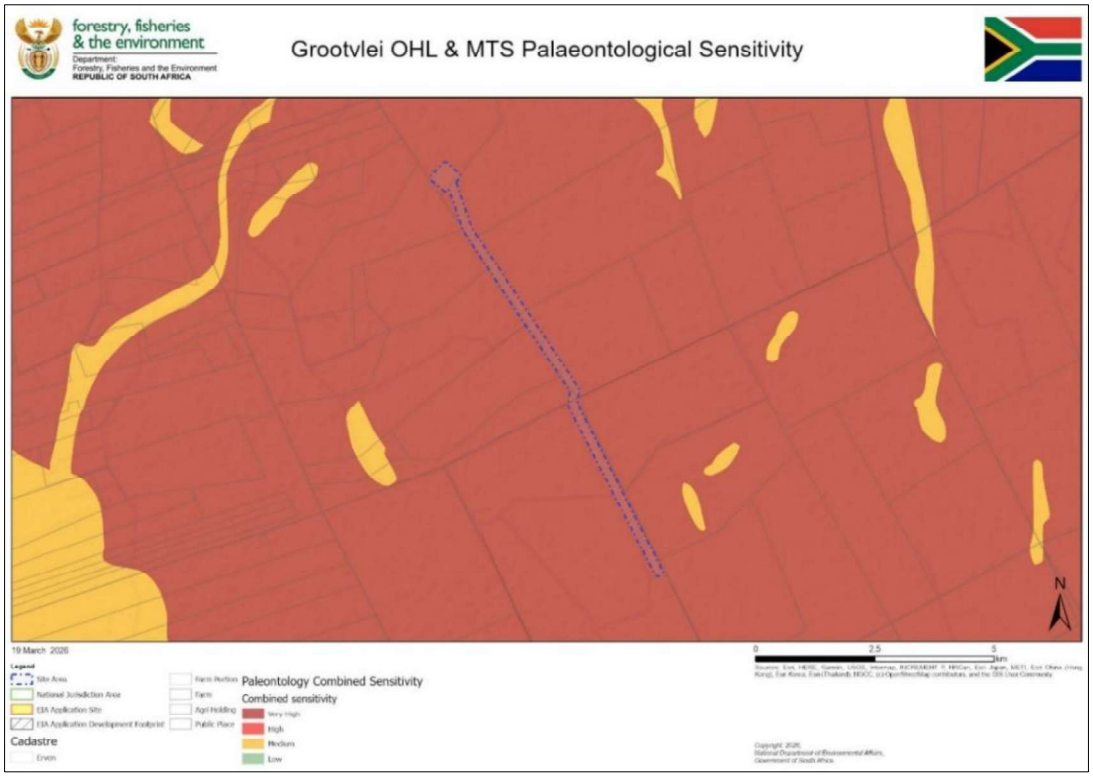

Figure 30: Palaeontological Sensitivity map indicating that the project footprint is located within a region of high palaeontological sensitivity (DFFE Screening Tool).

5.2.2 Historical Background of Surrounding Region (archaeological and historical literature survey)

The archaeological history of the area can broadly be divided into a Stone Age, Iron Age and Historic or Colonial Period. An archaeological and historical overview of the general region is presented below.

The Stone Age

The Earlier Stone Age (ESA) is the oldest period of South Africa's archaeological history and comprises two technological phases. The earliest of these is known as Oldowan and is characterised by simple flakes and hammer stones. It dates to approximately 2 million years ago. The second technological phase is the Acheulian which includes more deliberately formed stone artefacts such as the cleaver and bifacial hand axe. The Acheulian dates to approximately 1.5 million years ago. No significant ESA sites are known from the area.

The Middle Stone Age (MSA) dates from around 250 000 to 40 000 years ago and is associated with flakes, points and blades manufactured by what is called the "prepared core" technique. This period is also associated with modern humans and the development of complex cognition (Wadley, 2013). No significant MSA sites are known in the region.

The Later Stone Age (LSA) is the third archaeological period is characterised by very small flaked stones known as microliths, as well many rock art sites (paintings and engravings). LSA stone artefacts are more specialised, in that specific tools were created for specific purposes (Mitchell 2002) for example, scrapers and segments, and are sometimes made from bone. The LSA is further defined by evidence of ritual practices and complex societies (Deacon & Deacon 1999). This period is associated with hunter-gatherers (San) as well as early pastoralists (Khoekhoe) and lasted until the arrival of Iron Age and European communities (continuing in some areas for quite a long period). No significant sites from the LSA are known in the vicinity, however, two LSA sites have been recorded on the farm north-east of Ventersdorp (Birkholtz, 2008).

Rock engravings are known from the wider vicinity of the study area (Bergh, 1999; Lewis-Williams and Blundell 1998). The closest rock art site in the general area is Bosworth Farm, located north-west of Klerksdorp. This is an extensive rock engraving site with over 400 San and Khoe herder rock engravings. The engravings depict human figures and animals, as well as geometric motifs. The site also contains many stone artefacts dating from over 1 million years ago (https://nasmus.co.za/rock-art/). The site is protected as a declared Provincial Heritage Site (SAHRIS database).

The Iron Age

The Iron Age period (AD 1600 – AD 1840) is associated with pre-colonial farming communities and includes both agricultural and pastoralist farming activities, metal working, cultural customs such as lobola and stone-walled settlements known as the 'Central Cattle Pattern' (Huffman, 2007).

The Early Iron Age (EIA) dates from roughly AD 200 - 900. The only well-known EIA sites in the greater North West province are Kruger Cave near Rustenburg and Broederstroom near Hartebeespoort Dam. Both sites date to approximately 460 AD (Mason 1974). No EIA sites are known within the region closer to the project area.

A Middle Iron Age (MIA) period has been defined by Huffman (2007) as occurring from AD 900 – 1300, however, no MIA sites are known within the region closer to the project area.

The Late Iron Age (LIA) period dates from around 1450 AD – 1850 AD and is distinguished by different ceramic styles (called facies) associated with specific settlement patterns (some characterised by stone walling). These ceramic styles have been defined by Tom Huffman for the regions within South Africa (2007). Four of these ceramic styles are known from the greater region around Ventersdorp/Klerksdorp/Lichtenburg. The Ntsuanatsatsi facies of the Blackburn Branch of the Urewe Ceramic Tradition represents the earliest known Iron Age period within the region (1450 AD – 1650AD). The decoration on these ceramics is defined by a broad band of stamping in the neck, stamped arcades on the shoulder and appliqué motifs (Huffman, 2007). Huffman (2007) suggests that the Ntsuanatsatsi ceramics can be directly linked to the early Bafokeng, who were the first Mbo Nguni group to move from the area of present-day KwaZulu-Natal into the interior.

The second ceramic style from this region is known as the Olifantspoort facies of the Moloko Branch of the Urewe Ceramic Tradition and dates to between AD 1500 and AD 1700 (Huffman, 2007). The decoration defining this style includes multiple bands of fine stamping or narrow incisions separated by colour (Huffman, 2007). The type site for this facies is located on the farm Olifantspoort 328 JQ, which is situated closer to Rustenburg.

The Uitkomst facies of the Blackburn Branch of the Urewe Ceramic Tradition is the third style identified from the general region and dates to between AD 1650 and AD 1820 (Huffman, 2007). The decoration of this style includes stamped arcades, appliqué of parallel incisions, stamping and cord impressions and iseems to combine both Ntsuanatsatsi (Nguni) and Olifantspoort (Sotho) features (Huffman 2007). The type-site is Uitkomst Cave, situated in the Cradle of Humankind.

A fourth style, called the Buispoort facies of the Moloko branch of the Urewe Ceramic Tradition is the latest phase (1700 AD – 1840 AD) occurring within the general region. The key features of decoration include rim notching, broadly incised chevrons and white bands, and the use of red ochre (Huffman, 2007). The Buispoort facies is associated with so-called “mega-sites” such as Buffelshoek, Kaditshwene, Molokwane and Olifantspoort, most of which are located in the greater North-West Province, in the Zeerust-Marico area. These sites record the arrival and development of the early Moloto Sotho-Tswana speakers (Fourie 2016).

A heritage impact study by Küsel (2011) notes that there are no known Iron Age sites in the immediate vicinity of Ventersdorp. However, Iron Age sites are known to occur in the Potchefstroom, Klerksdorp and Hartbeesfontein areas (Küsel 2011).

Historical/Colonial Period

Around 1836 the first Voortrekker parties started crossing the Vaal River and the first farms were established between 1839 – 1840, in the general region. The district of Potchefstroom was established in 1839 (Bergh, 1999) and the project area fell into this district.

The town of Ventersdorp developed from the establishment of a parish of the Dutch Reformed Church on the farm Roodepoort in 1866. The town was established in 1887 and was named after the owner of the farm Roodepoort, Johannes Venter (Erasmus, 2014).

The South African War (1899 – 1902) was a conflict between the Boer Republics of the Transvaal and Free State and Great Britain, however, not only British or Boer citizens were affected. On 11 June 1900, the town of Ventersdorp was occupied by the British Army. Subsequently, lines of blockhouses were built between Ventersdorp and the surrounding towns to restrict the movement of the Boer forces. Although there is evidence that troops of both the British and the Boer forces were present throughout the general region (van den Bergh, 2009), no information on battles or skirmishes from within the study area was found.

In 1924, the new and separate District of Ventersdorp was established (Bergh 1999). Alluvial diamonds had been found on various farms in the Ventersdorp district in the period after c. 1920. In December 1924, a diamond of 3 carats was discovered near Lichtenburg and initial prospecting in 1925 produced a large enough number of diamonds for the area to be proclaimed as a "public diggings" in February 1926. By 1945 a total of 104 diggings were proclaimed on 13 farms in the area (Fourie 2016). Between 1925 and 1945 a large section of the black residents of the Ventersdorp district worked on the diamond mines (Breutz 1954; cited by Birkholtz 2021).

The more recent history of the town of Ventersdorp includes an association with both JB Marks, and Eugene Terreblanche. JB Marks, who was born there in 1903, is associated with the trade union movement, the South African Communist Party (he was chairman in 1962) and the ANC (he was the President of the Transvaal branch in 1950) (Verwey 1995). Terreblanche was the leader of the Afrikaner Weerstandsbeweging (AWB) which was a far-right, white supremacist and paramilitary organisation which opposed the establishment of the first democratic government in South Africa. During a visit by State President FW. de Klerk to Ventersdorp on 9 August 1991, there was a violent confrontation between AWB supporters and police. Three AWB members died and 58 people were injured. This incident resulted in the arrest of Terblanche and nine other AWB members on charges of public violence (https://www.sahistory.org.za/people/eugene-ney-terreblanche).

5.2.3 Cartographic findings

An examination of the information depicted on the earliest edition (and subsequent editions) of the historical topographic map sheets was also undertaken. Overlays of the available 1:50 000 South Africa map sheets with the project footprint were generated using Google Earth. The map sheet consulted was 2626BA Zwartrand. Any heritage structures or features that are 60 years or older would be depicted on the first edition sheet. The map was surveyed in 1972 and drawn in 1974 by the Director-General Surveys of South Africa from aerial photographs taken in 1966.The topographical maps were obtained from the Department of Land Reform and Rural Development (DLRRD) in Pretoria.

The 1966 sheet depicts one heritage feature (Kraal) located within the PV footprint, and one heritage feature adjacent to the PV footprint (structures and kraal), while three heritage features are depicted

adjacent to the powerline corridor (two farmsteads and a ruin). Sporadic cultivation of some areas and disturbance by excavation is depicted on the 1992 and 2006 sheet.

The most recent sheet available (2016), depicts one feature (structure) within the Solar PV footprint and one (structure) outside the PV footprint, while two features (one farmstead and a ruin) are depicted adjacent to the powerline corridor**.** Some sections of the OHL corridor cross areas that have been cultivated previously. See **Figure 31** to **Figure 34** (PV Site) and **Figure 35** to **Figure 38** (OHL Corridor).

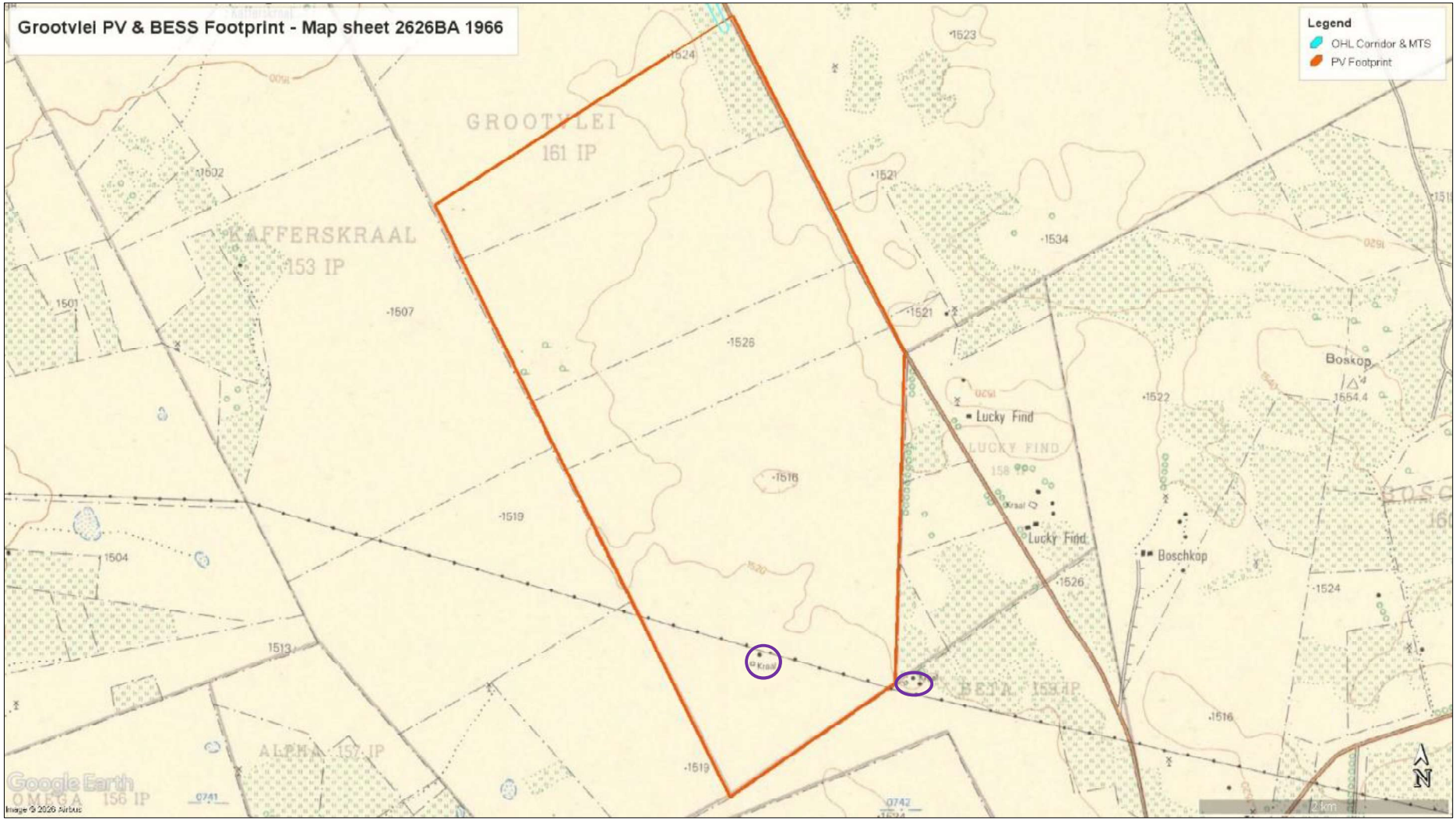

Figure 31: Enlarged view of Edition 1 topographic map sheets 2626BA 1966, depicting one heritage feature (Kraal) within the Solar PV footprint and one located just outside the boundary (kraal and structures) (purple circles).

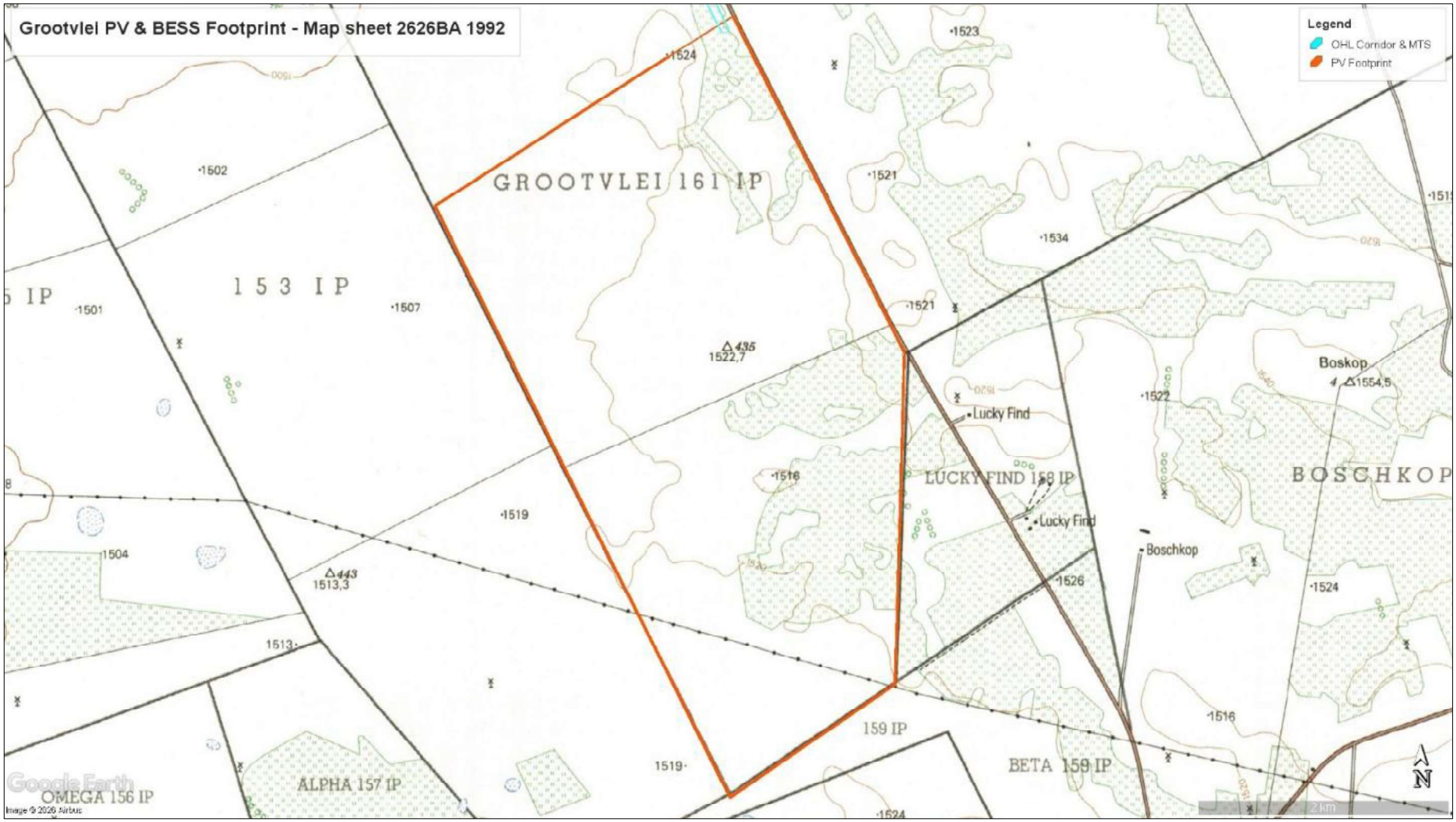

Figure 32: Enlarged view of Edition 2 topographic map sheet 2626BA 1992, depicting no heritage feature within or outside the Solar PV footprint. Some areas of the PV footprint have been cultivated.

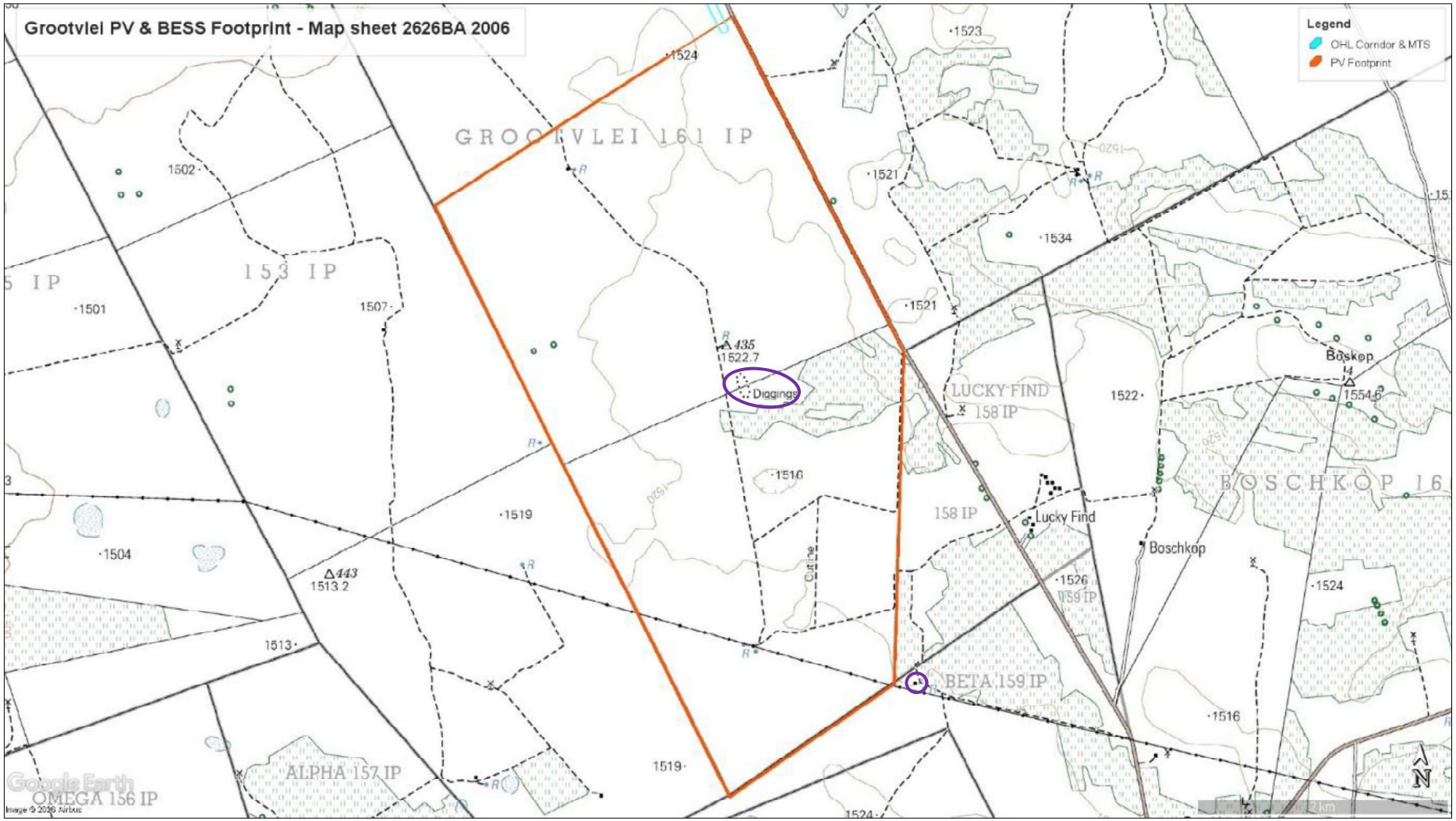

Figure 33: Enlarged view of Edition 3 topographic map sheets 2626BA 2006, depicting no feature except a diggings site within the Solar PV footprint and one structure outside (purple circles). One area of the PV footprint has been cultivated and disturbed by excavation

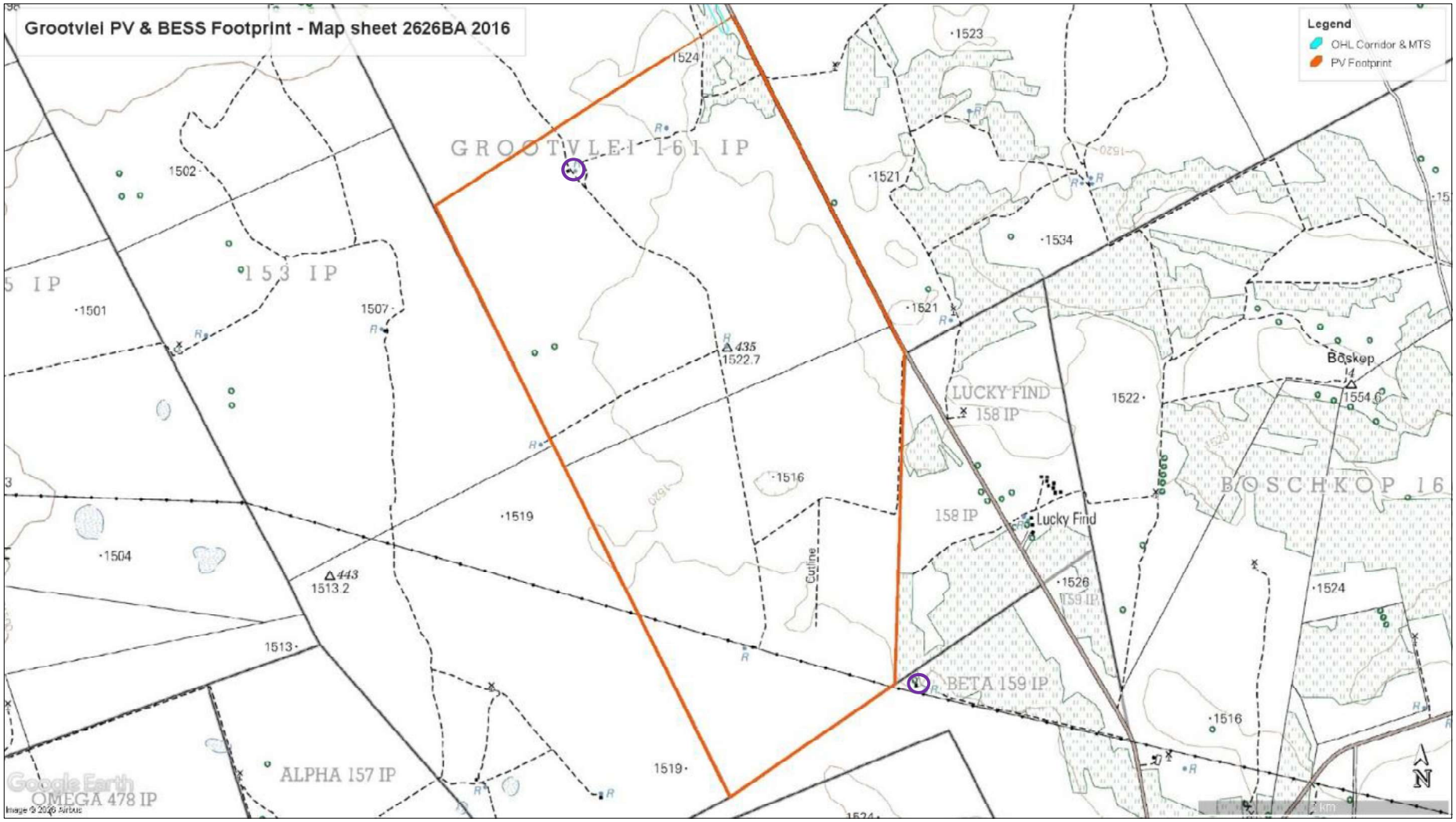

Figure 34: Enlarged view of Edition 4 topographic map sheets 2626BA 2016, depicting one feature (structure) within the Solar PV footprint and one (structure) outside (purple circles).

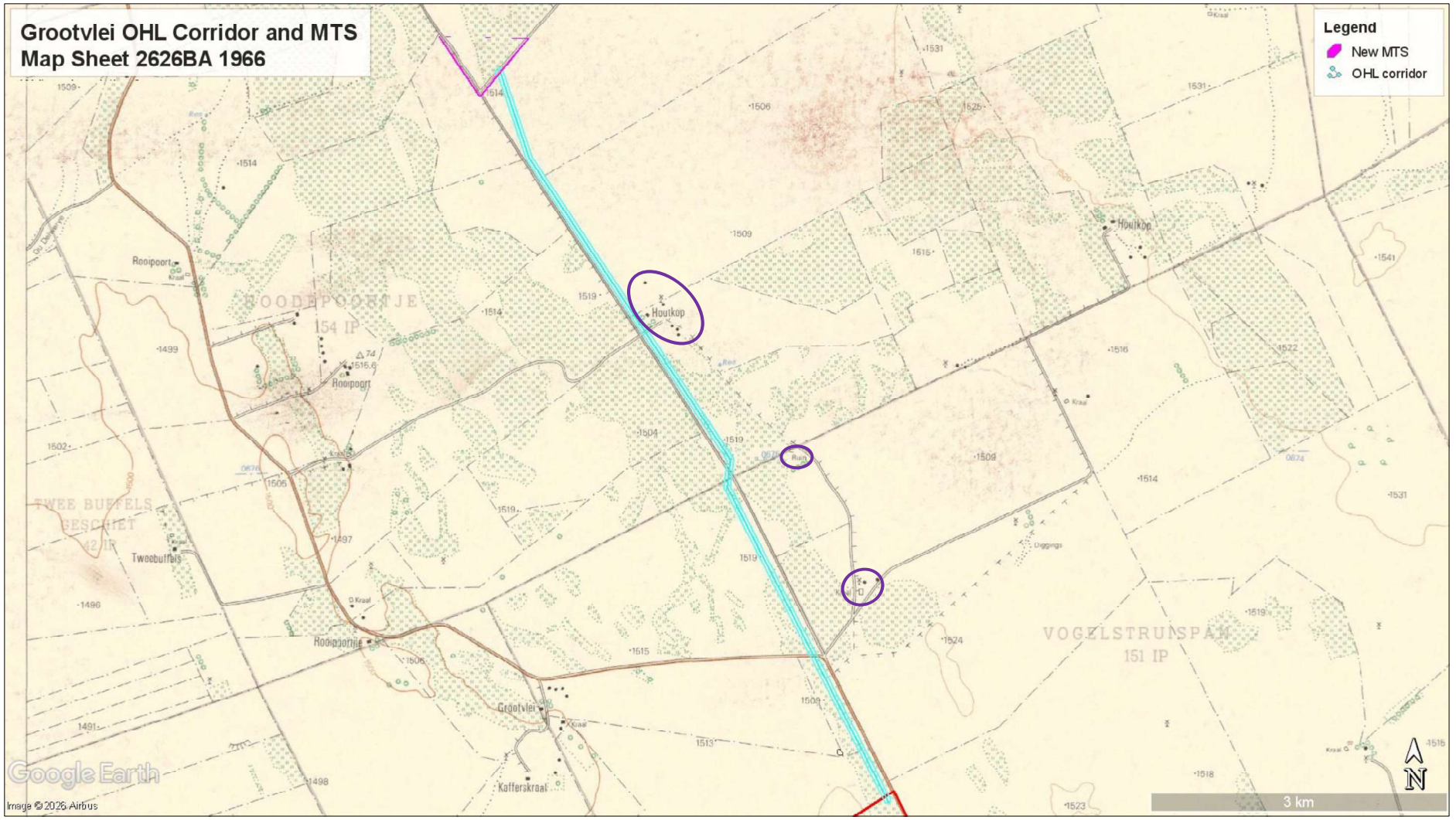

Figure 35: Enlarged view of Edition 1 topographic map sheets 2626BA 1966, depicting one farmstead immediately adjacent to the powerline route and one a short distance away, as well as a ruin (purple circles). The southern section of the OHL corridor crosses agricultural fields

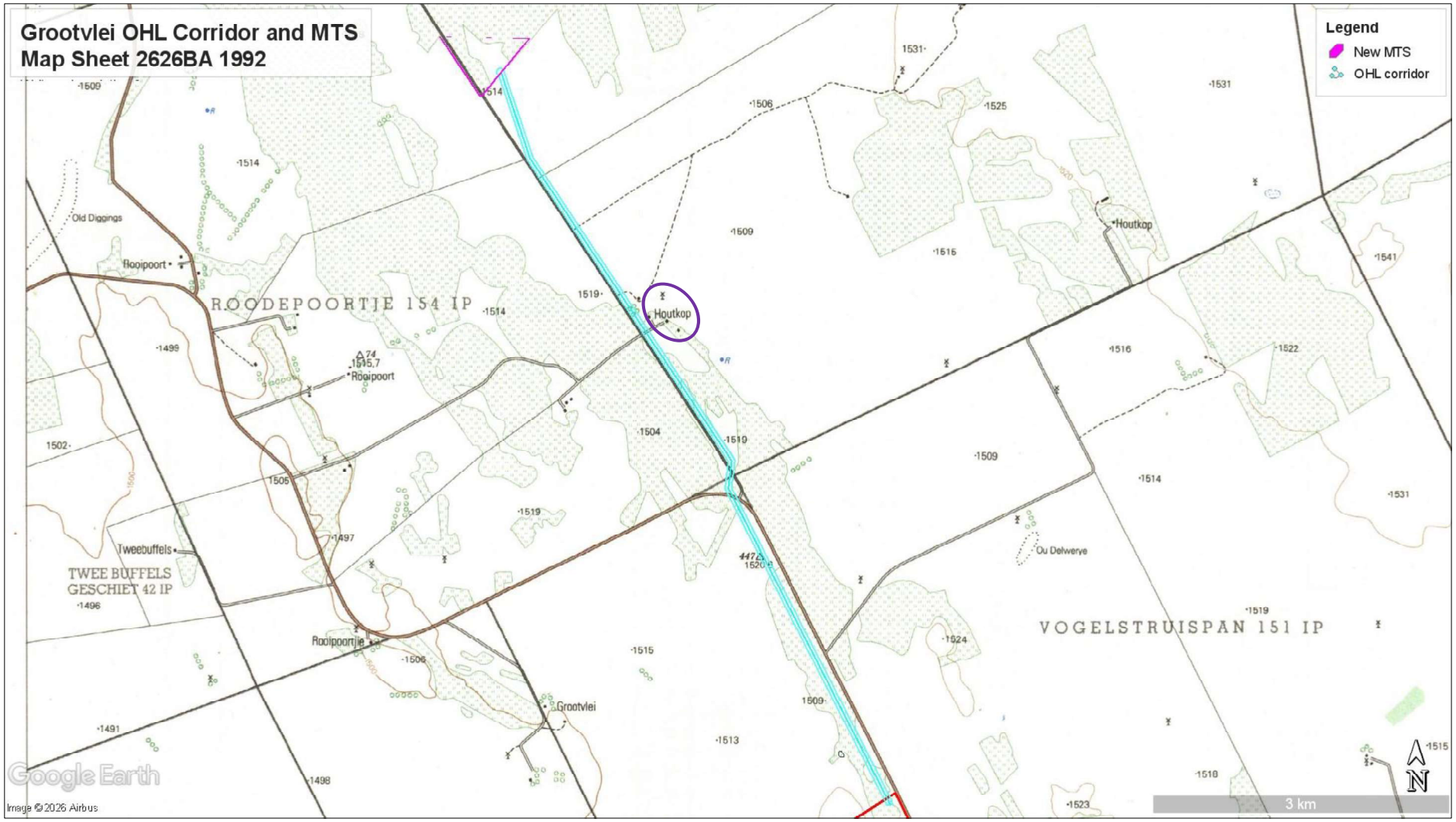

Figure 36: Enlarged view of Edition 2 topographic map sheets 2626BA 1992, depicting one farmstead (purple circle) adjacent to the powerline route. The southern section of the OHL corridor crosses agricultural fields

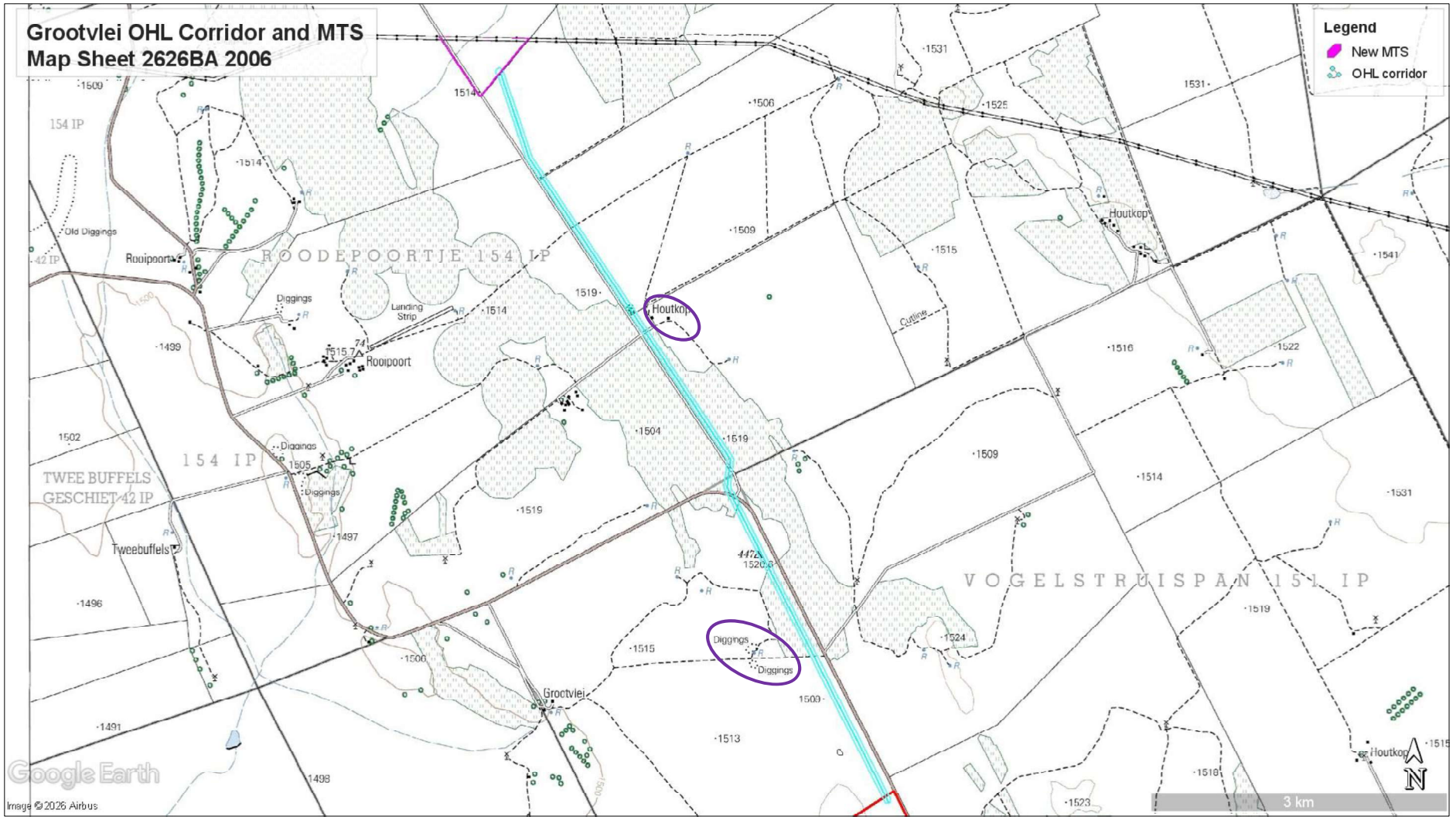

Figure 37: Enlarged view of Edition 3 topographic map sheets 2626BA 2006, depicting one farmstead adjacent to the powerline route and a few 'diggings' areas a short distance away (purple circles). The southern section of the OHL corridor crosses agricultural fields

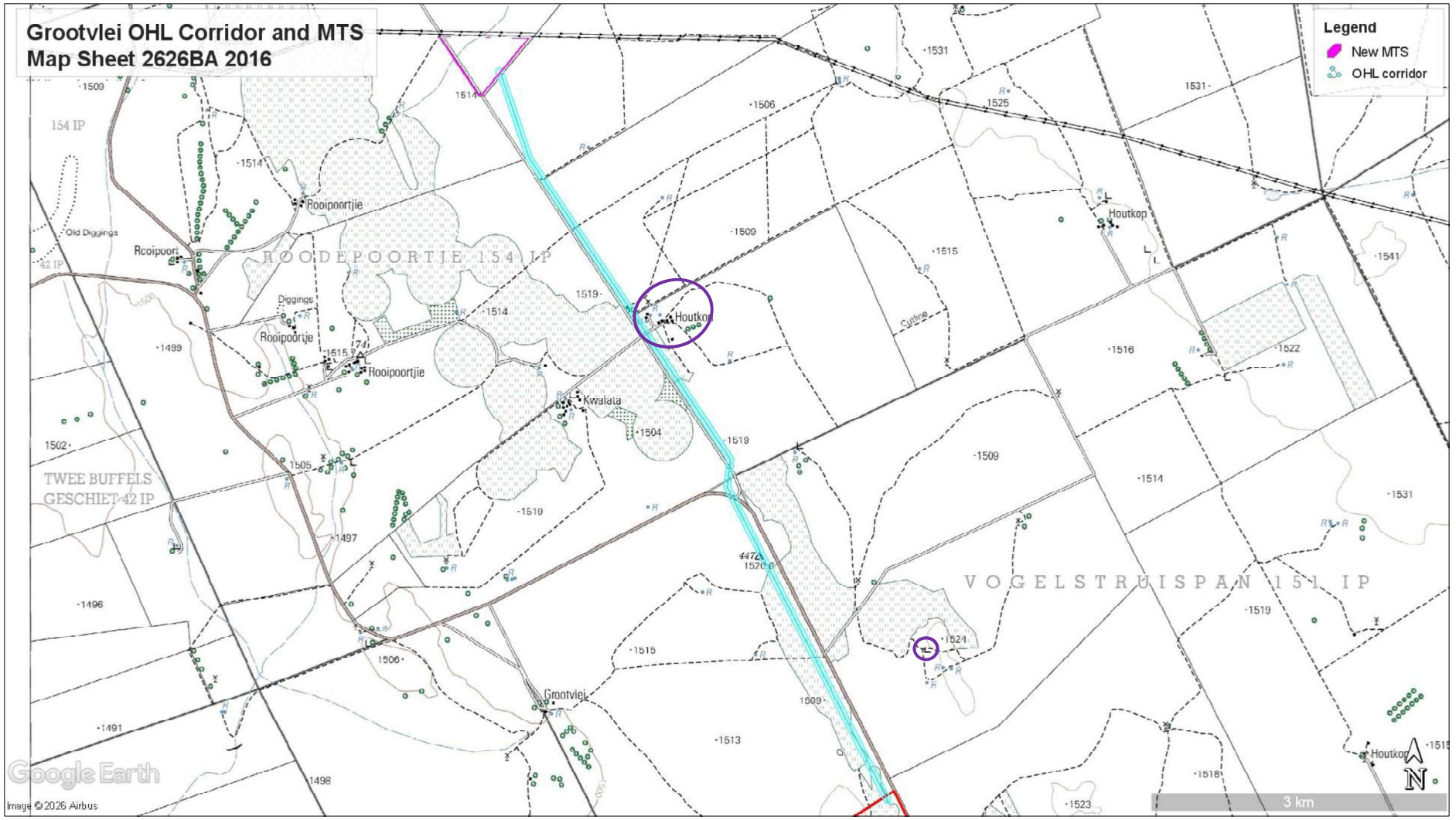

Figure 38: Enlarged view of Edition 4 topographic map sheets 2626BA 2016, depicting one farmstead adjacent to the powerline route and one ruin where the other farmstead was located (purple circles). The southern section of the OHL corridor crosses agricultural fields.

5.3 Previous HIA reports in the area

A search on the South African Heritage Resources Information System (SAHRIS) has identified several Heritage Impact Assessments conducted in and around the study area. The project area of one of these reports covered the farms Houtkop and Kwaggaslaagte, which are located immediately north of the current project area (Mlilo 2017). Several remains of historical house foundations were recorded, including one traditional grave and a formal village cemetery. The project area for another of these reports covered several farms located immediately south of the current project area (Coetzee 2020).

Mlilo T. 2017. Phase 1 Archaeological Impact Assessment for the proposed Section 102 EMP Amendment for Mivami Agri- Mining Pty Ltd to include the Remaining Extent of Kwaggaslaagte 121 IP into the Prospecting Right for Dunbar 119 IP, and portion 9 of Houtkop 152 IP, in Ditsobotla Local Municipality of Ngaka Modiri Molema District Municipality, North West Province. The proposed development consists of prospecting for diamonds and manganese and is located on the farm Kwaggaslaagte121 IP (Ga Motlatla Village). Twenty six (26) remains of historical house foundations were recorded adjacent to the prospecting area including one traditional grave. A formal village cemetery (with historical graves) was also recorded.

Coetzee T. 2020. Phase 1 Archaeological Impact Assessment & Desktop Study for Rivanet Mining & Exploration on Several Portions of the Farms Wolvenfontein 74 IQ, Syferfontein 81 IQ, Modderfontein 187 IP, Roodepoort 191 IP, Oatlands 79 IQ, Uitkyk 184 IP, Palmietfontein 189 IP, Koppieskraal 500 IP, Makokskraal 203 IP, Sweethome 197 IP and Doornpan 193 IP near Ventersdorp, North. The farms Palmietfontein 189 IP, Koppieskraal 500 IP, Makokskraal 203 IP, Sweethome 197 IP and Doornpan 193 IP are located a short distance south to southeast of the current project area. However, only Palmietfontein 189 IP was subject to a field survey, while the other farms were assessed at a desktop level. Therefore, the only confirmed heritage resources were noted on Palmietfontein 189IP and included: 29 historical structure sites, which varied in terms of preservation; 4 cemeteries (containing between 25 to 45 graves each) and six modern buildings and structures.

Coetzee F. 2022. Cultural Heritage Impact Assessment: Phase 1 Investigation for the Proposed Construction of Several Layer, Rearing Houses and Broilers with Associated Activities and Supporting Infrastructure on Portion 2 of the Farm Rietfontein 210 IP, Portion 1 of the Farm Oatlands 79 IP and Portion 1 of the Farm Ventersdraai 183 IP, JB Marks Local Municipality, Dr Kenneth Kaunda District Municipality, North West Province. Isolated finds comprising debitage and some broken formal Middle Stone Age tools were recorded, as well as two extant historical structures and two historical structure (foundation) remains.

Birkholtz PD. 2008. Phase 1 Heritage Impact Assessment Proposed Etruscan Diamonds (Pty) Ltd Development Situated on the Remaining Extent of the Farm Nooitgedacht 131 IP, Zwartrand 145 IP and Hartbeeslaagte 146 IP, Magisterial District of Ventersdorp, North West Province. A study for the proposed development of the Etruscan Diamonds mining extension on the remaining extent of the farms Nooitgedacht 131 IP, Swartrand 145 IP and Hartbeeslaagte 146 IP. Eight sites were located, including two historic farm dwellings, four cemetery sites and two Later Stone Age sites.

5.4 Palaeontological sensitivity

Note that this section was compiled by the author and not by a palaeontological specialist. A basic palaeontological sensitivity was determined using the SAHRIS database South African Fossil Sensitivity Map (http://www.sahra.org.za/sahris/map/palaeo). This map indicates that the project footprint falls within an area where the underlying geology has Very High fossil sensitivity (red) (see **Figure 39** below). Therefore, a separate palaeontological study is being undertaken by a professional palaeontologist.



Figure 39: SAHRIS Palaeo sensitivity map overlain on the Grootvlei 600MW Solar PV project footprint (black polygon). The underlying geology is shown as of Very High fossil sensitivity (red).

Table 2: SAHRIS Fossil Map Palaeontological Sensitivity Ratings and Required Actions

Colour	Sensitivity	Required Action
RED	VERY HIGH	Field assessment and protocol for finds is required.
ORANGE/ YELLOW	HIGH	Desktop study is required and based on the outcome of the desktop study, a field assessment is likely to be requested.
GREEN	MODERATE	Desktop study is required.
BLUE	LOW	No palaeontological studies are required however a protocol for finds is required.
GREY	INSIGNIFICANT /ZERO	No palaeontological studies are required.
WHITE/CLEAR	UNKNOWN	These areas will require a minimum of a desktop study. As more information becomes known, SAHRA will continue to populate the map.

5.5 Findings of the Historical Desktop Study

The general overview from the historical desktop study has shown that various archaeological and historical resources can be expected to occur in the project area. Furthermore, the examination of the earliest edition (1966) of the 1:50 000 topographical map, produced by overlying the map with satellite Imagery (Google Earth) has shown that four heritage features dating to c. 1966 are depicted either within or adjacent to the Solar PV project and powerline footprint.

The Site Survey fieldwork provided confirmation of the occurrence of various heritage resources within and adjacent to the project area footprint.

6 Site Survey/Fieldwork Results

As the current PV site footprint is an expansion of the originally identified footprint, the on-site inspection of the footprint took place over several separate days between 2023 and 2026 (22 March and 24 April 2023; 27 March 2026) by the author (heritage specialist) as part of a specialist team. The landowner accompanied the team on the first visit in 2023.

During both the 2023 and the 2026 site visits the archaeological visibility was very low due to the extremely dense and long grass and other vegetation cover over most of the project footprint. However, the PV site was covered as extensively as possible both by vehicle and on foot and particular attention was paid to soil around burrows and patches of bare ground.

The author used a Global Positioning System (GPS) application to navigate access roads in the study area and for recording the tracklog of the survey and waypoints of the identified heritage resources. A Sony digital camera and a camera application on a Remi A5 smartphone was used for photographic recording of identified heritage resources and general images of the project study area.

The survey aimed to find and identify archaeological and other heritage resources such as burial grounds and graves (BGG), archaeological material or sites, historic built environment and landscape features of cultural heritage significance.

The 2023 survey of the project area (southern section of the PV site) identified four visible heritage resources within or immediately adjacent to the project footprint and the 2026 survey of the additional area (northern section) and the grid corridor identified three heritage resources and one modern structure. These resources include a stone kraal (older than 60 years), a possible informal grave, a modern stock ramp and a few scattered findspots of stone flakes or broken flaked stones. The remains of a stone kraal and historical farmhouse are located adjacent to the PV footprint. Note: only the southern section of the OHL corridor was accessible while the northern section crosses private property and was not accessible on the days of the site visits.. However, the power line alignment is located close to the fence line and was assessed from the adjacent road.

Identified Heritage Sites

Site Name	GVL 01
GPS Coordinates	26°14'13.55"S; 26°36'4.54"E
Site Description	The site comprises three historical structures: a house, outbuilding and a kraal. The Estimated extent (from satellite images) = 1.71ha
Approximate Age	More than 60 years old. Structures and a kraal are depicted at this location on the topographic map of 1966.
NHRA, No. 25	Section 34
Field Grading and Ratings	
Site context and description	The site comprises three historical structures: a house, outbuilding and a kraal. The structures are situated just outside the Solar PV Site Area on the farm Re/Beta 159 and could not be accessed due to a fence with no gate. The site is situated roughly 56 m east of the southeast corner of the project boundary.
Site Density	3 structures
Uniqueness	Low
Heritage Significance	GP.C/IIIC - Low
Mitigation	The structures should be avoided and demarcated with a 30m buffer. If any alteration, damage or destruction is anticipated, a permit would be required from the NW PHRA. This would require Phase 2 mitigation, e.g. by photographic recording.



Figure 40: View of the three historical structures located at GVL-01. It was not possible to obtain a closer view due to a fence with no gate.



Figure 41: Zoomed in view of the historical house and the stone kraal. The kraal is partially collapsed.

Site Name	GVL-02
GPS Coordinates	26°14'24.24"S; 26°35'35.13"E
Site Description	Archaeology.
Approximate Age	Possible Middle or Late Stone Age
NHRA, No. 25	Section 35
Field Grading and Ratings	
Site context and description	A single possible flaked stone (fragment) was found at this location. The flake was found in a dolomite and chert outcrop area which is located just outside the solar panel area in the southern section of the Grootvlei PV Site Area. It is situated roughly 116 m south of the closest solar panel block. Another find spot for flaked stones was identified a short distance away (GVL-03) so these two sites are likely associated.
Site Density	This was an isolated find.
Uniqueness	Low
Heritage Significance	GP.C/ IIIC – Low
Mitigation	No mitigation is required. However, all archaeological material is protected by section 35 and cannot be removed without a permit.



Figure 42: View of the flaked stone fragment at GV- 02 (pencil for scale)

Site Name	GVL-03
GPS Coordinates	26°14'23.64"S; 26°35'39.37"E
Site Description	Archaeology.
Approximate Age	Middle or Late Stone Age
NHRA, No. 25	Section 35
Field Grading and Ratings	
Site context and description	The site comprises a find spot for four flaked stones. Two were definite flakes and two were possible chunks/debitage. The estimated extent is 10 m x 5 m. The flakes were found in a rocky outcrop area which is located just outside the solar panel area in the southern section of the Grootvlei Site Area. It is situated roughly 98m south of the closest solar panel block. A single flaked stone fragment (GVL-02) was identified a short distance away (± 119m) so these two sites may be associated.
Site Density	Very low
Uniqueness	Low
Heritage Significance	GP.C/ IIIC – Low
Mitigation	No mitigation is required. However, all archaeological material is protected by section 35 and cannot be removed without a permit.



Figure 43: GVL-03, View of stone flake ventral surface



Figure 44: View of stone flake, dorsal surface



Figure 45: View of stone flake, ventral surface (pencil for scale)



Figure 46: View of stone flake, dorsal surface showing bulb of percussion (red arrow)

Site Name	GVL-04
GPS Coordinates	26°14'7.99"S; 26°35'17.71"E
Site Description	Historical structures
Approximate Age	More than 60 years old. A kraal is depicted at this location on the topographic map of 1966
NHRA, No. 25	Section 34
Field Grading and Ratings	
Site context and description	The site comprises an historical kraal constructed of stone and cement with an associated long trough. Two heaps of demolished building material (including historical bricks) were also noted to the south of the kraal. The site is located within the southern section of the Solar PV Area and is situated roughly 65 m east of the nearest solar PV panel. The estimated extent of the area (from satellite images) = 0.51ha
Site Density	2 historical structures and associated building rubble.
Uniqueness	Low
Heritage Significance	GP.B/ IIIB – Medium
Mitigation	The structures should be avoided and demarcated with a 30 m buffer (from the centre of the kraal). If any impact resulting in alteration, damage or destruction is anticipated, a permit would be required from the NW PHRA. This could require Phase 2 mitigation, e.g. by photographic recording.



Figure 47: GVL-04, view of historical stone kraal, showing entrance



Figure 48: View of historical stone kraal, showing cattle race at one corner



Figure 49: Closer view of the existing cattle race



Figure 50: View of the of the long trough associated with the kraal



Figure 51: Close-up view of interior of the trough showing plaster and paint

Site Name	GVL-05
GPS Coordinates	-26.215055° , 26.583997°
Site Description	Structure
Approximate Age	Modern/recent
NHRA, No. 25	N/A
Field Grading and Ratings	
Site context and description	Modern stock ramp, constructed of stone and cement. Associated with a modern wood and fenced kraal/enclosure. The stock ramp is situated in the central portion of the PV array site.
Site Density	N/A
Uniqueness	Low
Heritage Significance	NCW – Not Conservation Worthy
Mitigation	No mitigation is required.



Figure 52: GVL-05, modern stock ramp (1 m scale)



Figure 53: View of the stock ramp



Figure 54: View of the stock ramp with associated stock enclosure (red arrow)

Site Name	GVL-06
GPS Coordinates	-26.196109° , 26.576953°
Site Description	Archaeology
Approximate Age	MSA/LSA
NHRA, No. 25	Section 35
Field Grading and Ratings	
Site context and description	The site comprises a find spot for three flaked stones. They are possible Middle or Late Stone Age chunks/debitage. The tools were found in an area with chert outcrops which is located just inside the northern property boundary and solar PV array of the additional area. It is situated more than 150 m west of the closest solar panel block.
Site Density	Very low
Uniqueness	Low
Heritage Significance	GP.C/ IIIC – Low
Mitigation	No mitigation is required. However, all archaeological material is protected by section 35 and cannot be removed without a permit.



Figure 55: GVL-06, View of the flaked stones, dorsal surfaces



Figure 56: View of the flaked stones, ventral surfaces



Figure 57: View of the area where the flaked stones were recorded

Site Name	GVL-07
GPS Coordinates	-26.177143° , 26.578886°
Site Description	Potential grave
Approximate Age	Unknown
NHRA, No. 25	Section 36
Field Grading and Ratings	
Site context and description	The site is a stone cairn located close to a small stand of trees. The cairn consists of quartzite rocks. It could be a field clearance pile or a potential grave. It has a different appearance from the many field clearance piles that occur on the property. The site is located on the eastern boundary of the powerline corridor.
Site Density	N/A
Uniqueness	Low
Heritage Significance	Low - GP.C/ IIIC (if field clearance pile) High – GP.A/IIIA (if potential grave)
Mitigation	The site must be avoided with a 30 m buffer as a “no go” area. If there will be an impact, a test excavation must be conducted by an archaeologist accredited for grave exhumations. A “rescue” exhumation permit may be required if a grave is confirmed.



Figure 58: GVL-07, View of the stone cairn/potential grave (scale =1m)

Site Name	GVL-08
GPS Coordinates	-26.167866° , 26.573410°
Site Description	Archaeology
Approximate Age	MSA/LSA
NHRA, No. 25	Section 35
Field Grading and Ratings	
Site context and description	Findspot of a single, dolerite possible flaked stone fragment (MSA/LSA), in an area of dolerite outcropping. Located within the southern section of the powerline corridor.
Site Density	NA
Uniqueness	Low
Heritage Significance	GP.C/ IIIC – Low
Mitigation	No mitigation is required. However, all archaeological material is protected by section 35 and cannot be removed without a permit.



Figure 59: Possible flaked stone fragment, view of the ventral surface



Figure 60: View of the dorsal surface



Figure 61: View of the dolerite outcrop area

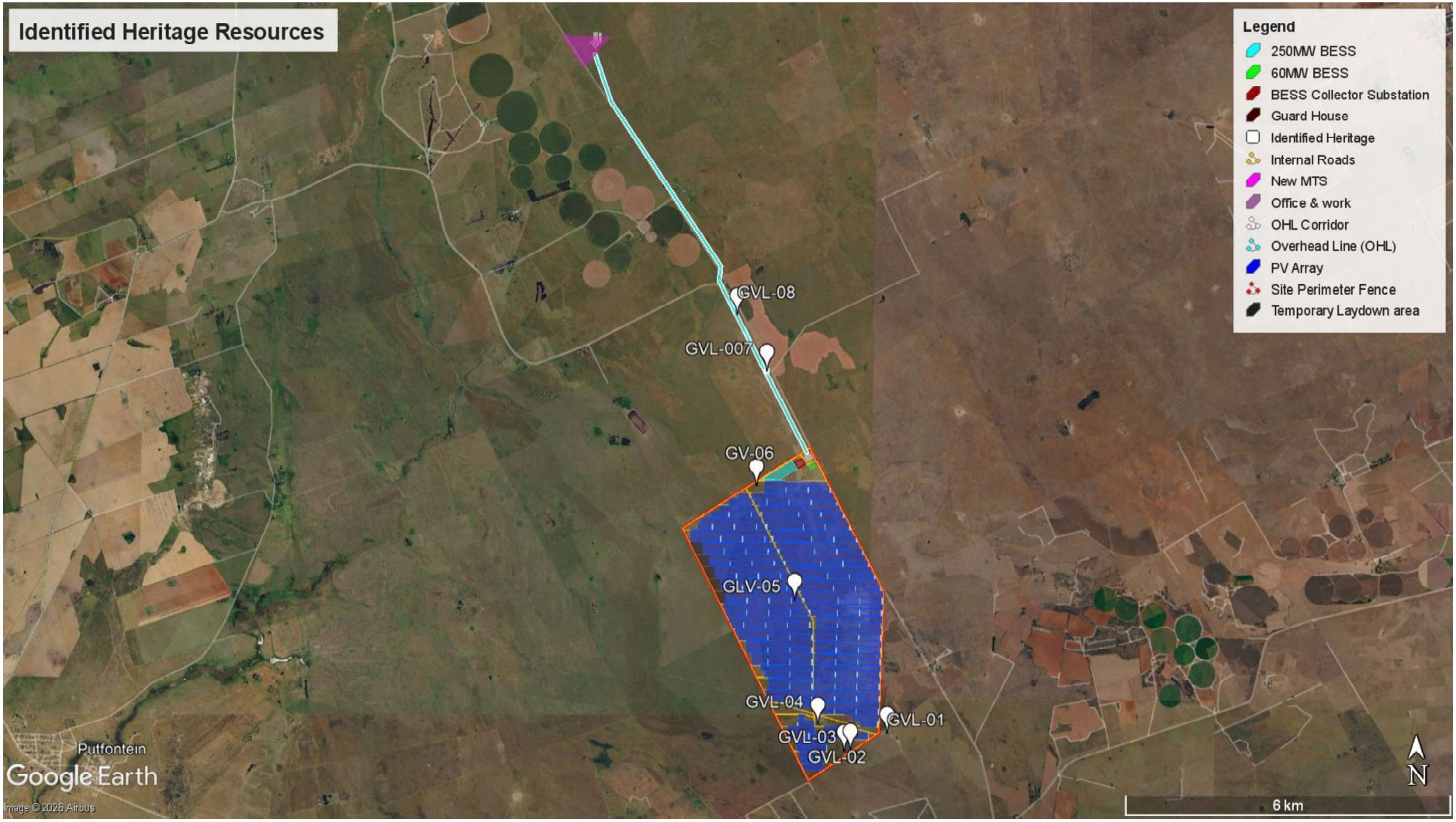

Figure 62: Grootvlei total footprint, showing identified heritage resources locations

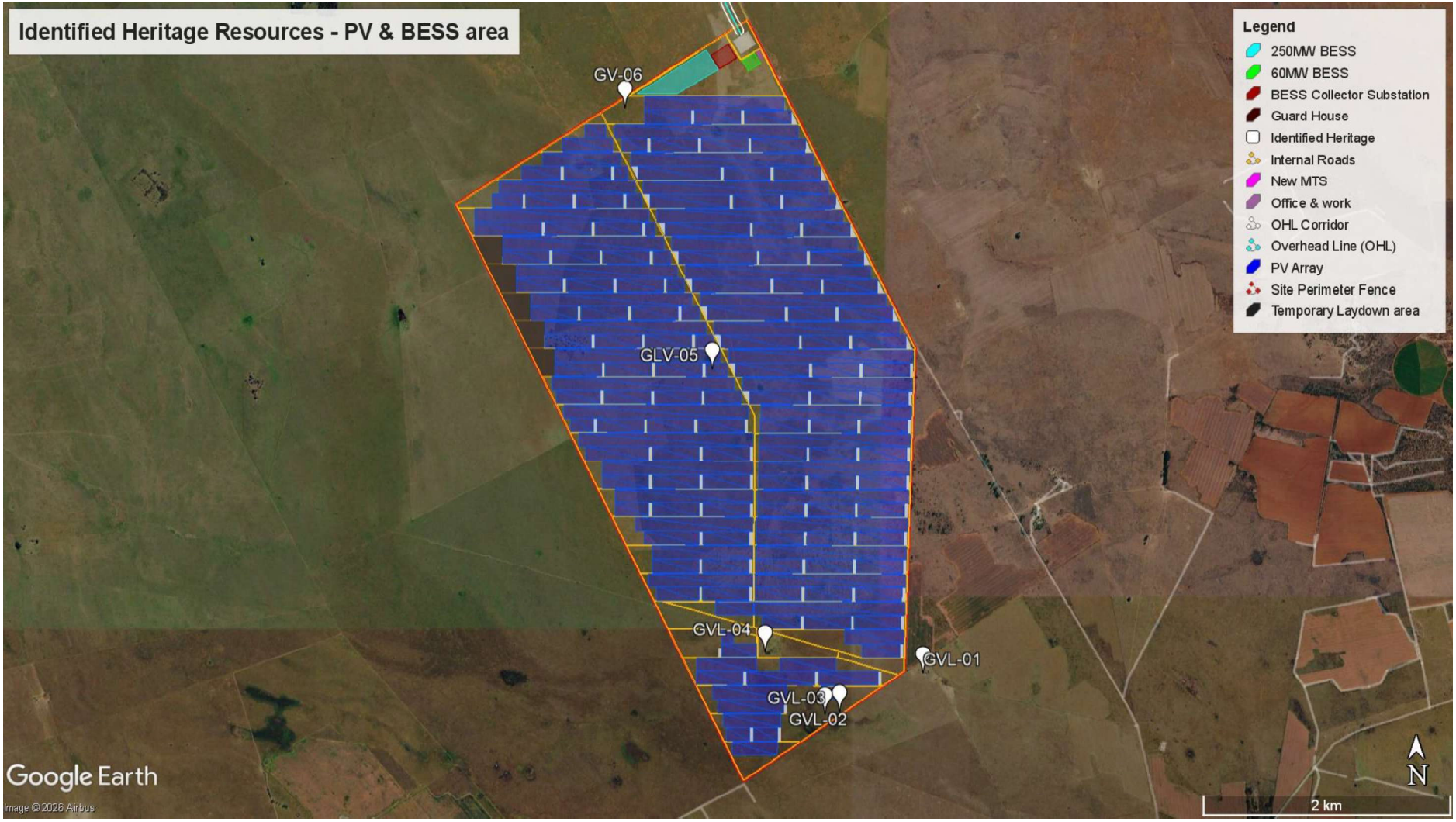

Figure 63: Enlarged view of Grootvlei PV and BESS Site Area, showing identified heritage resources locations



Figure 64: Grootvlei Powerline Corridor showing identified heritage resources locations

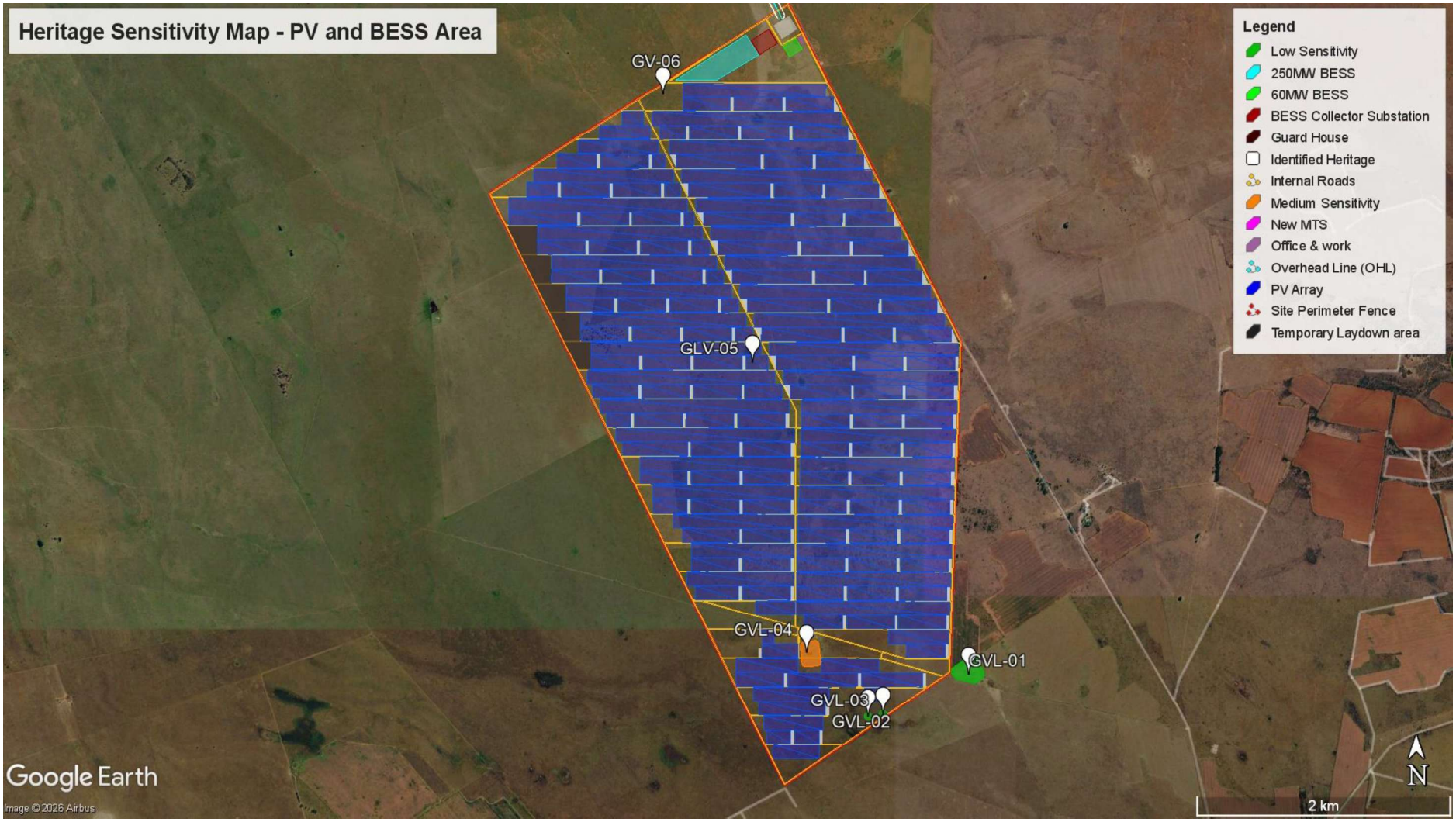

Figure 65: Grootvlei PV and BESS Area, heritage sensitivity

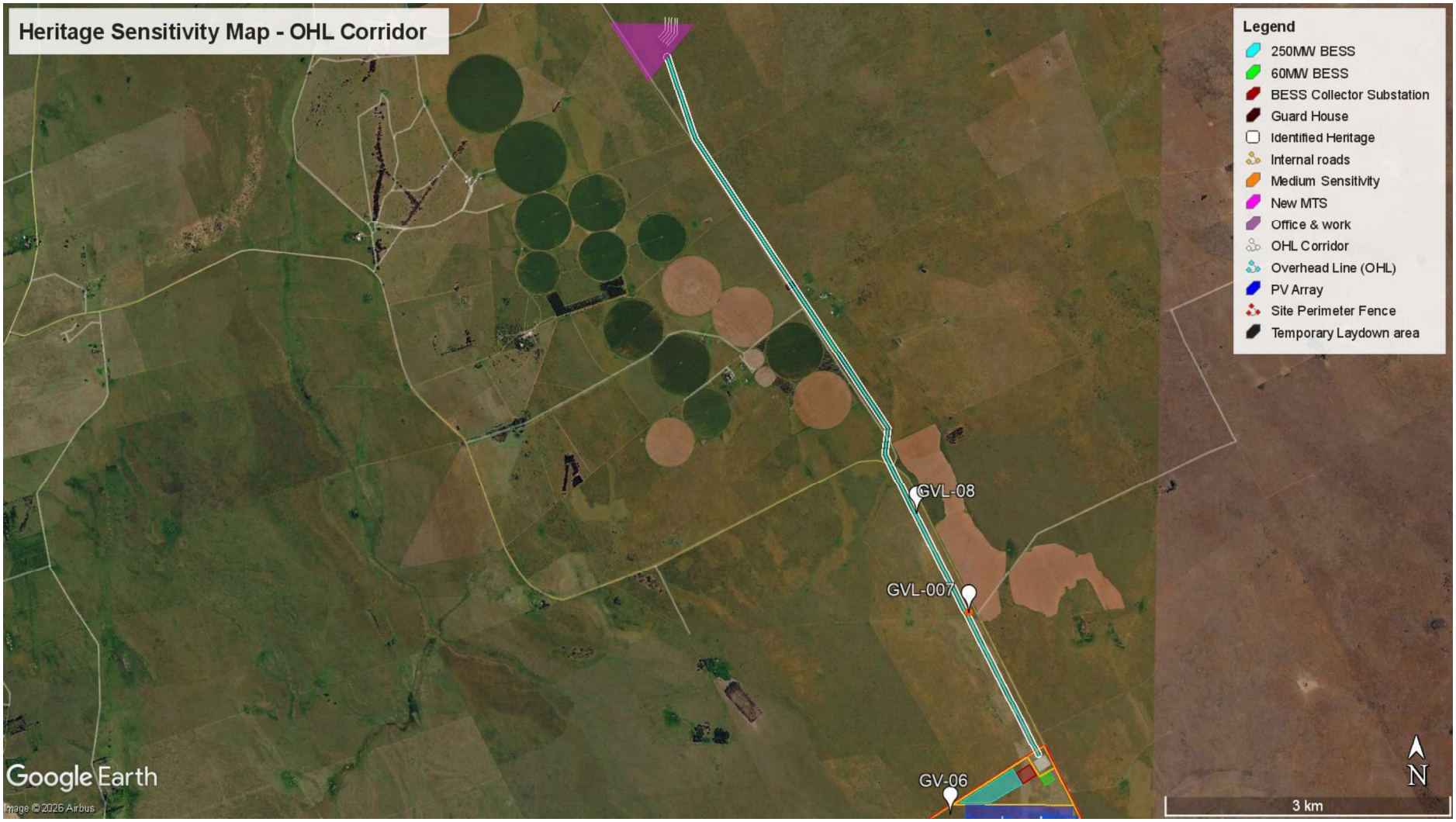

Figure 66: Site Grootvlei OHL Corridor, heritage sensitivity.

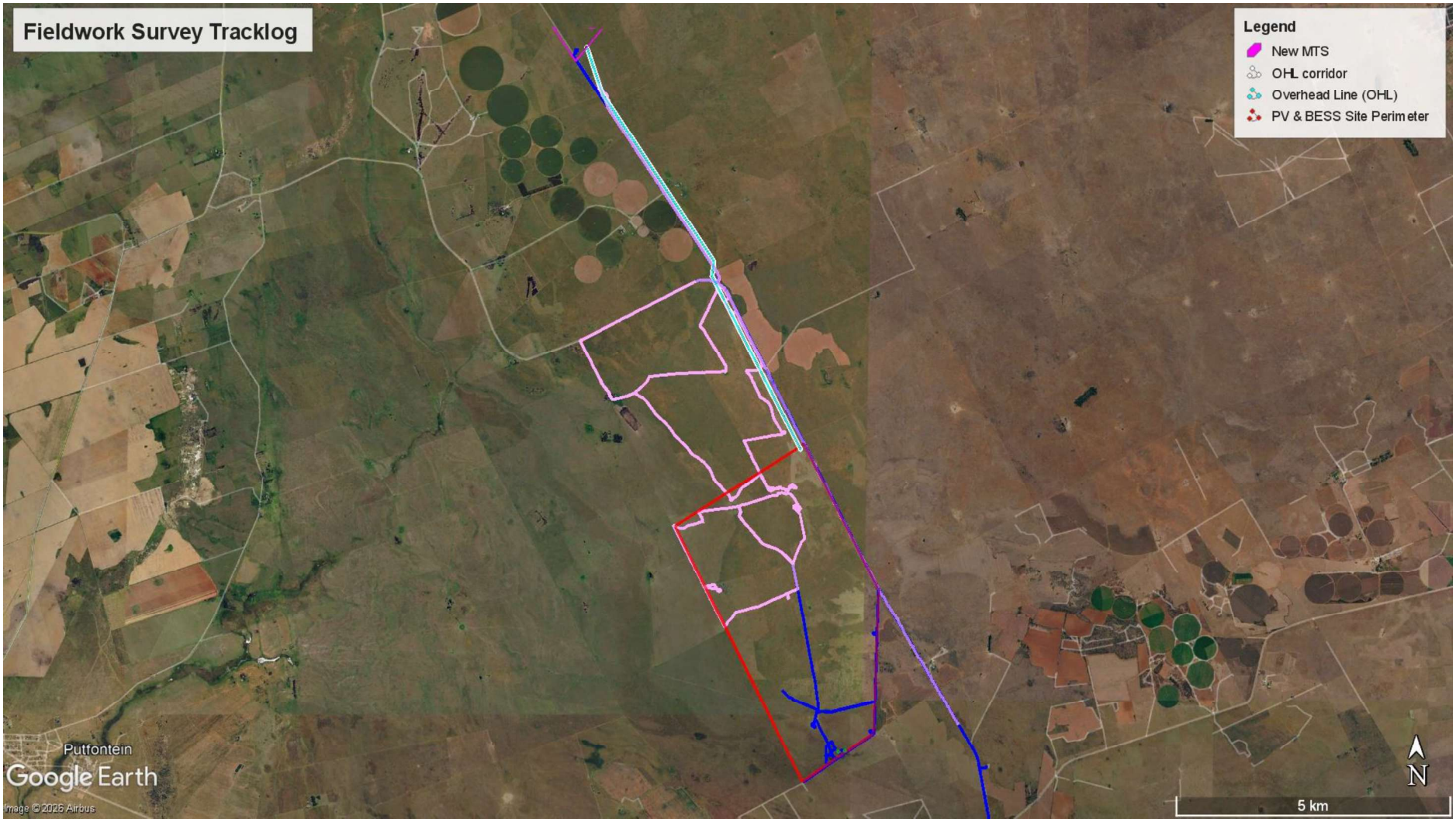

Figure 67: Site Survey Tracklog overlaid on the Grootvlei PV, BESS and OHL Corridor (blue=site visits 2023, pink = site visits 2026)

7 SITE SENSITIVITY VERIFICATION

The general overview from the historical desktop study has shown that various archaeological and historical resources could be expected to occur in the project area. The examination of the earliest edition (1966) of the 1:50 000 topographical map, produced by overlying the map with satellite Imagery (Google Earth) depicted four heritage features dating to c.1966 either within or adjacent to the Solar PV Site footprint and powerline corridor.

The fieldwork surveys undertaken in 2023 and 2026 identified eight heritage resources in total within or close to the project PV and corridor footprints. These included two sites comprising historical structures, one possible informal grave and four archaeological find spots comprising isolated or very low density scatters of flaked stones. A modern stock ramp was also identified.

Considering the above information, the heritage sensitivity of the project footprint can be confirmed as generally Low but with two sites of Medium significance (the stone kraal and the possible grave).

The palaeontological sensitivity verification is discussed in the separate palaeontological report.

8 METHODOLOGY AND SIGNIFICANCE ASSESSMENT

8.1 Methodology

The HIA process consists of the following three steps: undertaking a Desktop Study, undertaking a Site Visit/Field Survey and compiling the HIA Report. A separate Site Sensitivity Report was also produced at an earlier stage (Kitto 2026).

8.1.1 Desktop Study

The desktop study provided information on the Heritage Background of the general region and project area. This included a literature review of published sources as well as past HIA studies conducted for the project area and surrounding region. An examination of historical 1:50 000 topographical maps and/or archival maps (if available) was also undertaken. The relevant early editions of the 2727CD topographical map sheets were obtained from the Department of Rural Development & Land Reform, Pretoria. An examination of satellite images of the project area (Google Earth) was also conducted.

Literature resources accessed are listed in Table 3, below.

Table 3: Literature sources accessed

Source	Information
Draft Scoping Report – Nemai	Project location and description details

Published sources and Past HIAs	Historical and archaeological background on Carletonville and surrounding region
Directorate: National Geo-spatial Information of the Department of Rural Development & Land Reform, Cape Town	Historical topographic maps, 1:50 000 2626BA Zwartrand Edition 1 1966 to Edition 4 (2016)

8.1.2 Field Survey

As the current PV site footprint is an expansion of the originally identified footprint, the on-site inspection of the footprint took place over several separate days between 2023 and 2026 (22 March and 24 April 2023; 27 March 2026) by the author (heritage specialist) as part of a specialist team. The landowner accompanied the team on the first visit in 2023. The PV site and grid corridor were covered as extensively as possible both by vehicle and on foot, and particular attention was paid to soil around burrows and patches of bare ground. The survey focused on identifying and documenting heritage resources situated within and immediately adjacent to the proposed project area footprint, such as graves, historical structures or remains and archaeological sites or material. A Global Positioning System (GPS) handheld unit (Garmin) recording the tracklog of the survey and waypoints of the identified heritage resources. A Sony digital camera and a camera application on a Remi A5 smartphone was used for photographic recording of identified heritage resources and general images of the project study area.

8.1.3 HIA Report

The final step involved the recording and documentation of the identified heritage resources, the assessment of such resources in terms of heritage significance and impact assessment criteria, producing a heritage sensitivity map and compiling the heritage impact assessment report with constructive recommendations for mitigation, if required.

8.2 Assessing Heritage Site Significance

The cultural-heritage significance of these sites will be evaluated as follows:

Site Significance

The site significance classification standards used are based on the heritage classification of section 3 in the NHRA, and have been developed for implementation based on the grading system approved by SAHRA initially for archaeological impact assessments (**Table 6**). An expanded classification and rating system was developed subsequently by Heritage Western Cape (2016 and 2021) which included the built environment. This expanded classification system has been implemented in this report (**Table 4** and **Table 5**).

Table 4: Rating system for archaeological resources

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
I	Heritage resources with qualities so exceptional that they are of special national significance. Current examples: Langebaanweg (West Coast Fossil Park), Cradle of Humankind	May be declared as a National Heritage Site managed by SAHRA. Specific mitigation and scientific investigation can be permitted in certain circumstances with sufficient motivation.	Highest Significance
II	Heritage resources with special qualities which make them significant, but do not fulfil the criteria for Grade I status. Current examples: Blombos, Paternoster Midden.	May be declared as a Provincial Heritage Site managed by Provincial Heritage Authority. Specific mitigation and scientific investigation can be permitted in certain circumstances with sufficient motivation.	Exceptionally High Significance
III	Heritage resources that contribute to the environmental quality or cultural significance of a larger area and fulfils one of the criteria set out in section 3(3) of the Act but that does not fulfil the criteria for Grade II status. Grade III sites may be formally protected by placement on the Heritage Register.		
IIIA	Such a resource must be an excellent example of its kind or must be sufficiently rare. Current examples: Varschedrift; Peers Cave; Brobartia Road Midden at Bettys Bay	Resource must be retained. Specific mitigation and scientific investigation can be permitted in certain circumstances with sufficient motivation.	High Significance
IIIB	Such a resource might have similar significances to those of a Grade III A resource, but to a lesser degree.	Resource must be retained where possible where not possible it must be fully investigated and/or mitigated.	Medium Significance
IIIC	Such a resource is of contributing significance.	Resource must be satisfactorily studied before impact. If the recording already done (such as in an HIA or permit application) is not sufficient, further recording or even mitigation may be required.	Low Significance
NCW	A resource that, after appropriate investigation, has been determined to not have enough heritage significance to be retained as part of the National Estate.	No further actions under the NHRA are required. This must be motivated by the applicant or the consultant and approved by the authority.	No research potential or other cultural significance

Table 5: Rating system for built environment resources

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
I	Heritage resources with qualities so exceptional that they are of special national significance. Current examples: Robben Island	May be declared as a National Heritage Site managed by SAHRA.	Highest Significance
II	Heritage resources with special qualities which make them significant in the context of a province or region, but do not fulfil the criteria for Grade I status. Current examples: St George's Cathedral, Community House	May be declared as a Provincial Heritage Site managed by Provincial Heritage Authority.	Exceptionally High Significance
II	Such a resource contributes to the environmental quality or cultural significance of a larger area and fulfils one of the criteria set out in section 3(3) of the Act but that does not fulfil the criteria for Grade II status. Grade III sites may be formally protected by placement on the Heritage Register.		
IIIA	Such a resource must be an excellent example of its kind or must be sufficiently rare. These are heritage resources which are significant in the context of an area.	This grading is applied to buildings and sites that have sufficient intrinsic significance to be regarded as local heritage resources; and are significant enough to warrant that any alteration, both internal and external, is regulated. Such buildings and sites may be representative, being excellent examples of their kind, or may be rare. In either case, they should receive maximum protection at local level.	High Significance
IIIB	Such a resource might have similar significances to those of a Grade III A resource, but to a lesser degree. These are heritage resources which are significant in the context of a townscape, neighbourhood, settlement or community.	Like Grade IIIA buildings and sites, such buildings and sites may be representative, being excellent examples of their kind, or may be rare, but less so than Grade IIIA examples. They would receive less stringent protection than Grade IIIA buildings and sites at local level.	Medium Significance
IIIC	Such a resource is of contributing significance to the environs These are heritage resources which are significant in the context of a streetscape or direct neighbourhood.	This grading is applied to buildings and/or sites whose significance is contextual, i.e., in large part due to its contribution to the character or significance of the environs. These buildings and sites should, as a consequence, only be regulated if the significance of the environs is sufficient to warrant protective measures, regardless of whether the	Low Significance

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
		site falls within a Conservation or Heritage Area. Internal alterations should not necessarily be regulated.	
NCW	A resource that, after appropriate investigation, has been determined to not have enough heritage significance to be retained as part of the National Estate.	No further actions under the NHRA are required. This must be motivated by the applicant and approved by the authority. Section 34 can even be lifted by the PHRA for structures in this category if they are older than 60 years.	Not Conservation worthy – no research potential or other cultural significance

Table 6: Site significance classification standards as prescribed by SAHRA.

FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION
National Significance (NS)	Grade 1	Very High - of National Significance	Conservation; National Site nomination
Provincial Significance (PS)	Grade 2	Very High – of Provincial Significance	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

9 IDENTIFICATION OF IMPACTS

9.1 Impacts and Mitigation Framework

All impacts are analysed in the section to follow with regard to their nature, extent, magnitude, duration, probability and significance.

ISO 14001-2004 defines impacts as “any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization’s environmental aspects”.

When considering an assessment of the impacts and their mitigation, the following definitions as per Table 7 apply.

Table 7: Impact and Mitigation Quantification Framework

Nature	The project could have a positive, negative or neutral impact on the environment.
Extent	**Local** – extend to the site and its immediate surroundings. **Regional** – impact on the region but within the province. **National** – impact on an interprovincial scale. **International** – impact outside of South Africa.
Magnitude	Degree to which impact may cause irreplaceable loss of resources: **Low** – natural and socio-economic functions and processes are not affected or minimally affected. **Medium** – affected environment is notably altered; natural and socio-economic functions and processes continue albeit in a modified way. **High** – natural or socio-economic functions or processes could be substantially affected or altered to the extent that they could temporarily or permanently cease.
Duration	**Short term** – 0-5 years. **Medium term** – 5-11 years. **Long term** – impact ceases after the operational life cycle of the activity either because of natural processes or by human intervention. **Permanent** – mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient.
Probability	**Almost certain** – the event is expected to occur in most circumstances. **Likely** – the event will probably occur in most circumstances. **Moderate** – the event should occur at some time. **Unlikely** – the event could occur at some time. **Rare/Remote** – the event may occur only in exceptional circumstances.
Significance	Provides an overall impression of an impact's importance, and the degree to which it can be mitigated. The range for significance ratings is as follows- **0** – Impact will not affect the environment. No mitigation necessary. **1** – No impact after mitigation. **2** – Residual impact after mitigation. **3** – Impact cannot be mitigated.
Mitigation	Information on the impacts together with literature from socio-economic science journals, case studies and field work will be used to provide mitigation recommendations to ensure that any negative impacts are decreased and positive benefits are enhanced.
Monitoring	Monitoring usually involves developing and implementing a monitoring programme to identify deviations from the proposed action and to manage any negative impacts. The recommended mitigation measures will also include monitoring measures.

Table 8: Impact Methodology Table

Nature				
Negative		Neutral		Positive
-1		0		+1
Extent				
Local	Regional		National	International
1	2		3	4
Magnitude				
Low		Medium		High
1		2		3
Duration				
Short Term (0-5yrs)	Medium Term (5-11yrs)		Long Term	Permanent
1	2		3	4
Probability				
Rare/Remote	Unlikely	Moderate	Likely	Almost Certain
1	2	3	4	5
Significance				
No Impact/None	No Impact After Mitigation/Low		Residual Impact After Mitigation/Medium	Impact Cannot be Mitigated/High
0	1		2	3

9.2 Identification of Activities and Aspects

An "Activity" is defined as a distinct process or risk undertaken by an organisation for which a responsibility can be assigned. Activities also include facilities or pieces of infrastructure that are possessed by an organisation (International Organization for Standardization, 2011).

An aspect is defined as elements of an organisation's activities or products or services that can interact with the environment.

In order to capture the impacts associated with the proposed infrastructure, an activity – aspect – impact table was created (refer to **Table 9** below).

Table 9: Activity, Aspects and Impacts of the Project

Activity	Aspect	Potential Impact – Positive	Potential Impact – Negative
Site clearance/ construction camp	Heritage	N/A	Damage to existing historical structures or potential unidentified graves
Construction	Heritage	Positive - if historical structures are reused	Damage to existing historical structures or potential unidentified graves
Operation	Heritage	Positive – if historical structures are reused	Damage to existing historical structures

9.3 Impact and Mitigation Assessment

The project area that will be impacted by the proposed Grootvlei Solar PV project contains some areas that are currently disturbed by grazing activities as well as past agricultural activity, including extensive field clearance.

The impact significance of the project on **graves and cemeteries is medium,** as one potential informal grave was identified.

The impact significance of the proposed project on **protected historical structures is low-medium,** as two sites comprising historical structures were identified: an historical stone kraal with associated large trough situated within the PV site footprint (GVL-04) and a small historical farmstead (GVL-01) situated just outside the PV site footprint. Since both of these sites are depicted on the 1966 topographic map, it is very likely that these structures are older than 60 years of age and therefore the sites are protected by section 34 of the NHRA.

The impact significance of the project on **archaeological sites or material is low,** as four sites containing flaked stones or fragments were identified (GVL-02, GVL-03, GVL-06, GVL-08), but these are extremely low density scatters or isolated finds and of low significance.

9.4 Impacts During the Planning, Construction and Operation Phases

As a result of the analysis above, the following impact/mitigation tables have been generated.

Table 10: Heritage Resources – Historical Structure Remains Mitigation Table

Environmental Feature		Heritage resources – historical structure remains (GVL-01, GVL-04)				
Project life-cycle		Planning, Construction and Operation				
Potential Impact		Proposed Management Objectives / Mitigation Measures				
Possible damage to or destruction of identified historical structure remains		• GVL-04 historical kraal: A buffer of at least 30 m must be implemented to ensure that during construction there is no direct impact which could damage any structures • GVL-01 historical farmstead: A buffer of at least 30m must be implemented to ensure that during construction there is no indirect impact which could damage any structures • The materials demarcating the buffer must be highly visible and made of durable material • If any impact is anticipated, then a permit will be required for the alteration or destruction of any of the structures (from NW PHRA or SAHRA)				
Possible damage to or destruction of unidentified historical structure remains		• If any changes are made to the final design footprint prior to construction, monitoring of the site clearance activities must be undertaken by a heritage specialist to identify any additional historical structure remains				
	Nature	Extent	Magnitude	Duration	Probability	Significance
Before Mitigation	Negative	Local	Medium	Permanent	Moderate	2

After Mitigation	Positive	Local	Low	Long- term	Unlikely	1
Significance of Impact and Preferred Alternatives	The location of GVL-04 is within the PV area of the project footprint. GVL-01 is located just outside the southeast boundary. The structures at both sites are protected under section 34 of the NHRA.					

Table 11: Heritage Resources – Archaeological Material Mitigation Table

Environmental Feature		Heritage resources – archaeological material (GVL- 02, GVL-03, GVL-06, GVL-08)				
Project life-cycle		Planning, Construction and Operation				
Potential Impact		Proposed Management Objectives / Mitigation Measures				
Possible damage to or destruction of archaeological material		• No mitigation is required. However, all archaeological material is protected by section 35 and cannot be removed without a permit (from SAHRA)				
Possible damage to or destruction of unidentified archaeological material		• The Heritage Chance Finds procedure must be implemented.				
	Nature	Extent	Magnitude	Duration	Probability	Significance
Before Mitigation	Negative	Local	Medium	Permanent	Moderate	2
After Mitigation	Negative	Local	Low	Long- term	Unlikely	1
Significance of Impact and Preferred Alternatives	The sites comprise isolated to very low density find spots. The material is protected under Section 35 of the NHRA.					

Table 12: Heritage Resources – Potential Informal Grave Mitigation Table

Environmental Feature		Heritage resources – historical structure remains (GVL-07)				
Project life-cycle		Planning, Construction and Operation				
Potential Impact		Proposed Management Objectives / Mitigation Measures				
Possible damage to or destruction of potential grave		• GVL-07 potential grave: A buffer of at least 30 m must be implemented to ensure that during construction there is no direct impact • The materials demarcating the buffer must be highly visible and made of durable material • If there will be an impact. a test excavation must be conducted by an archaeologist accredited for grave exhumations. A “rescue” exhumation permit from SAHRA may be required if a grave is confirmed.				
Possible damage to or destruction of unidentified graves or burials		• The Heritage Chance Finds procedure must be implemented.				
	Nature	Extent	Magnitude	Duration	Probability	Significance
Before Mitigation	Negative	Local	Medium	Permanent	Moderate	2

After Mitigation	Positive	Local	Low	Long- term	Unlikely	1
Significance of Impact and Preferred Alternatives	The location of GVL-07 is underneath the OHL corridor, southern section. All graves are protected under section 36 of the NHRA.					

9.5 Cumulative impacts

The project area and surrounding region has been affected by impacts of activities occurring in the past, current activities and proposed future developments. These will be discussed below.

Past impacts: The past HIA reports recovered from the SAHRIS database indicated that the Grootvlei Solar PV project footprint and surrounding region has been affected by several development and other activities that would have disturbed the heritage resources which occur in the area. These include: agricultural activities within the project area including a proposed poultry farm and several prospecting or mining rights application for various farms situated immediately north and west of the project area.

Current impacts: the immediate area of the Grootvlei Solar PV footprint is affected by cattle and game farming activities.

The baseline impacts for the project area are considered low to moderate for Heritage resources, and additional project impacts (if no mitigation measures are implemented) will not increase the significance of the existing baseline impacts, where the cumulative unmitigated impact will probably be of a low-moderate significance. The impact is going to happen and will be long-term in nature, therefore the impact risk class will be Low to Moderate. However, with the implementation of the recommended management and mitigation measures this risk class can be minimized to a Low rating.

Table 13: Cumulative Impact - Heritage Resources

Environmental Feature	Heritage resources					
Project life cycle	Construction and Operation					
Potential Impact	The extent that the addition of this project will have on the overall impact of developments in the region on heritage resources					
Possible damage to or destruction of identified heritage resources	Eight heritage resources were identified on the project site. These resources include a stone kraal (older than 60 years), a possible informal grave, and a few scattered findspots of flaked stones or fragments. The remains of a stone kraal and historical farmhouse are located adjacent to the Grootvlei PV footprint					
Possible damage to or destruction of unidentified heritage resources	There is a low possibility that sub-surface heritage resources could exist (graves, archaeological material) and therefore a Chance Find procedure should be included in the EMPr.					
	Nature	Extent	Magnitude	Duration	Probability	Significance

Before Mitigation	Negative	Regional	Low-Medium	Permanent	Moderate	1
After Mitigation	Positive	Regional	Low	Long-term	Unlikely	0
Significance of Impact	The impact is going to happen and will be long-term in nature, therefore the impact risk class will be Low to Moderate. However, with the implementation of the recommended management and mitigation measures this risk class can be minimized to a Low rating					

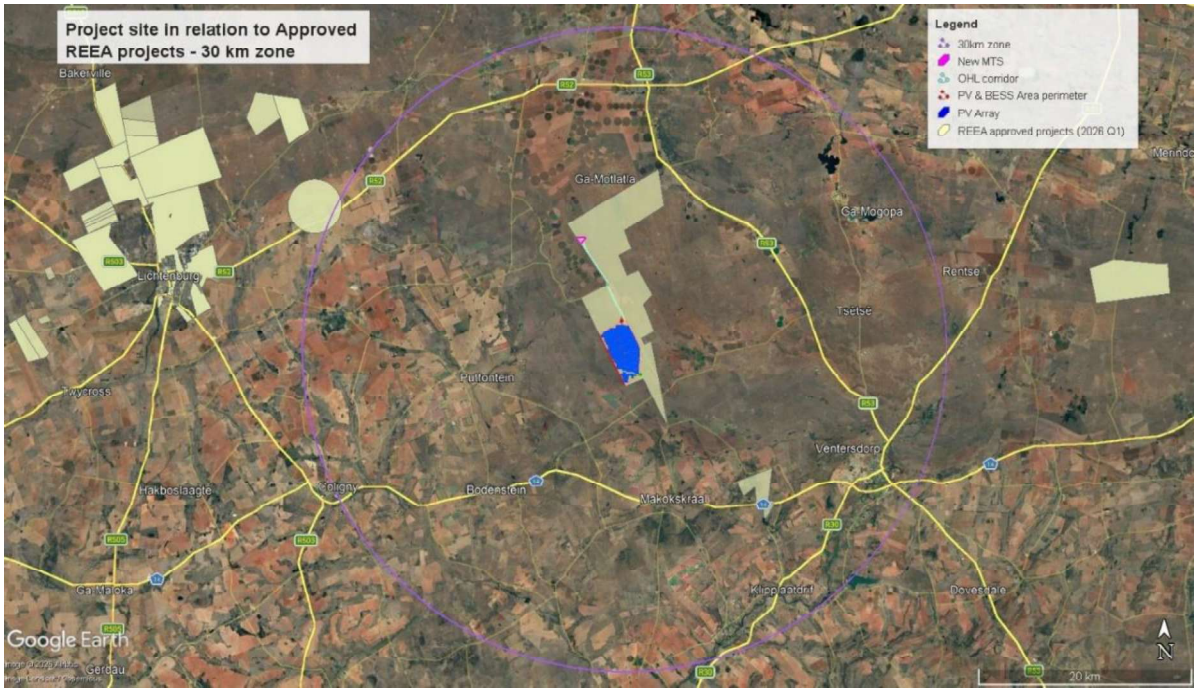

Figure 68: Map showing Approved Renewable Energy developments within 30 km of the proposed Grootvlei PV and BESS project (REEA 2026, Q1)

10 ALTERNATIVES

10.1 Introduction

Alternatives are the different ways in which the Project can be executed to ultimately achieve its objectives. Examples could include carrying out a different type of action, choosing an alternative location or adopting a different technology or design for a project.

10.2 Site Alternatives

No site alternatives are proposed for this Project. Favourable location factors for the PV Site include suitable solar irradiation levels, short distance to grid connection point, flat topography, suitable site access and availability of land.

10.3 Layout / Design Alternatives

An initial layout for the Solar PV Facility was previously developed, and EA was granted in December 2023. However, based on specialist delineations, it was determined that the extent of the authorised Solar PV site was insufficient to both avoid identified wetland areas and accommodate the required number of PV modules for the planned Project capacity. As a result, the existing EA was allowed to lapse (refer to Section 3, above for further details), and the extent of the Solar PV site was subsequently expanded.

To inform the revised layout, specialists conducted additional site visits to delineate sensitive environmental features prior to finalising. This approach ensured that environmentally sensitive areas were identified and avoided during the design process. As such, no alternative site layouts are presented, as the final layout was developed iteratively based on specialist input to avoid sensitive features on the site.

10.4 Technology Alternatives

10.4.1 Solar PV Technology

Solar PV technology consists of monofacial or bifacial solar panels mounted on fixed or tracking systems.

10.4.2 BESS Technology

The BESS can be broken into solid-state and flow battery systems. Refer to **the draft EIA Report (Nemai 2026)** for the advantages and disadvantages associated with the types of BESS. A single battery technology, or a combination of two or more technology alternatives, may be implemented for the Project.

10.5 No-Go Option

As standard practice and to satisfy regulatory requirements, the option of not proceeding with the Project is included in the evaluation of the alternatives.

The no-go alternative can be regarded as the baseline scenario against which the impacts of the Project are evaluated. This implies that the current status and conditions associated with the proposed Project footprint will be used as the benchmark against which to assess the possible changes (impacts) associated with the Project.

In contrast, should the proposed Project not proceed, any potentially significant environmental issues would be irrelevant, and the status quo of the local receiving environment would not be affected by Project-related activities.

Since the project area contains evidence of previous disturbance and the identified heritage resources do not constitute fatal flaws, there is no reason to support the no-go alternative from a heritage perspective.

11 STATEMENT OF IMPACT SIGNIFICANCE

The project area that will be impacted by the proposed Grootvlei Solar PV BESS and Grid corridor project contains some areas that are currently disturbed by grazing activities as well as past agricultural activities, including extensive field clearance.

The impact significance of the project on **graves and cemeteries is medium,** as one potential informal grave (GVL-07) was identified.

The impact significance of the proposed project on **protected historical structures is low-medium,** as two sites comprising historical structures were identified: an historical stone kraal with an associated large trough situated within the PV site footprint (GVL-04) and a small historical farmstead (GVL-01) situated just outside the PV site footprint. Since both of these sites are depicted on the 1966 topographic map, it is very likely that these structures are older than 60 years of age and therefore the sites are protected by section 34 of the NHRA.

The impact significance of the project on **archaeological sites or material is low,** as four sites containing stone flakes were identified (GVL-02, GVL-03, GVL-06, GVL-08), but these are extremely low density scatters or isolated finds and of low significance.

12 HERITAGE CHANCE FINDS PROCEDURE

12.1 Heritage Chance Finds Procedure

The following Heritage Chance Finds Procedure must be implemented during site clearance and construction activities:

1. It is advisable that an information section on cultural resources be included in the Safety, Health, Environmental and Quality (SHEQ) training given to contractors involved in surface earthmoving activities. These sections must include basic information on:
    a. Heritage;
    b. Graves;
    c. Archaeological finds; and
    d. Historical Structures.
2. This module must be tailor made to include all possible finds that could be expected in the area of construction. Possible finds include:
    a. Open air flaked stone scatters, disturbed during vegetation clearing;
    b. Unidentified informal graves;
    c. Palaeontological deposits.
3. In the event that a possible find is discovered during construction, all activities must be halted in the area of the discovery and a qualified archaeologist contacted.

4. The archaeologist needs to evaluate the finds on site and make recommendations towards possible mitigation measures.
5. If mitigation is necessary, an application for a collection or excavation permit must be lodged with SAHRA.
6. After mitigation, an application must be lodged with SAHRA for a destruction permit. This application must be supported by the mitigation report generated during the collection or excavation. Only after the permit is issued may such a site be destroyed.
7. In the event that human skeletal material is uncovered, or previously unknown graves are discovered, a qualified archaeologist and the local SAPS must be contacted and an evaluation of the finds made.
8. If the skeletal material or grave/s are to be exhumed and relocated, the relocation procedures as accepted by SAHRA need to be followed. This includes an extensive social consultation process and applications for an exhumation and relocation permit/s.

13 Recommendations and Conclusion

The proposed Grootvlei Solar PV and associated grid project will have a negative impact on heritage resources as eight heritage resources or find spots were identified within or adjacent to the project footprint area: two historical structure sites (GVL-01, GVL-04), one potential informal grave (GVL-07) and four archaeological findspots (GVL-02, GVL-03, GVL-06, GVL-08). One modern stock ramp was also identified (GVL-05).

The recommendations below are provided to mitigate the potential impact of the proposed PV project on the identified heritage resources:

Historical Structures (GVL-01, GVL-04)

- GVL-04 (stone kraal): A buffer of at least 30m must be implemented to ensure that there is no direct or indirect impact during construction related activities. Any proposed alteration for reuse or demolition will require a permit from the North-West Heritage Resource Authority (NW PHRA).
- GVL-01 (historical farm structures): A buffer of at least 30m must be implemented to ensure that there is no indirect impact during construction related activities. Any proposed destruction will require a permit from the NW PHRA.
- The materials demarcating the buffers must be highly visible and made of durable material.

Archaeological material (GVL-02, GVL-03, GVL-06, GVL-08)

- No mitigation is required. However, all archaeological material is protected by section 35 and cannot be removed without a permit (from SAHRA)
- The Heritage Chance Finds procedure must be implemented.

Palaeontological heritage

- A separate palaeontological study is being undertaken by a professional palaeontologist as the project area falls into an area where the underlying geology is mainly of Very High fossil sensitivity.

No fatal flaws were identified during this study, therefore, it is the considered opinion of the heritage specialist that the construction of the proposed Grootvlei Solar PV, BESS and Grid Corridor project within the footprint can proceed. There are no objections from a heritage perspective, provided the recommendations and mitigation measures contained in this report and in the separate desktop palaeontological assessment are implemented.

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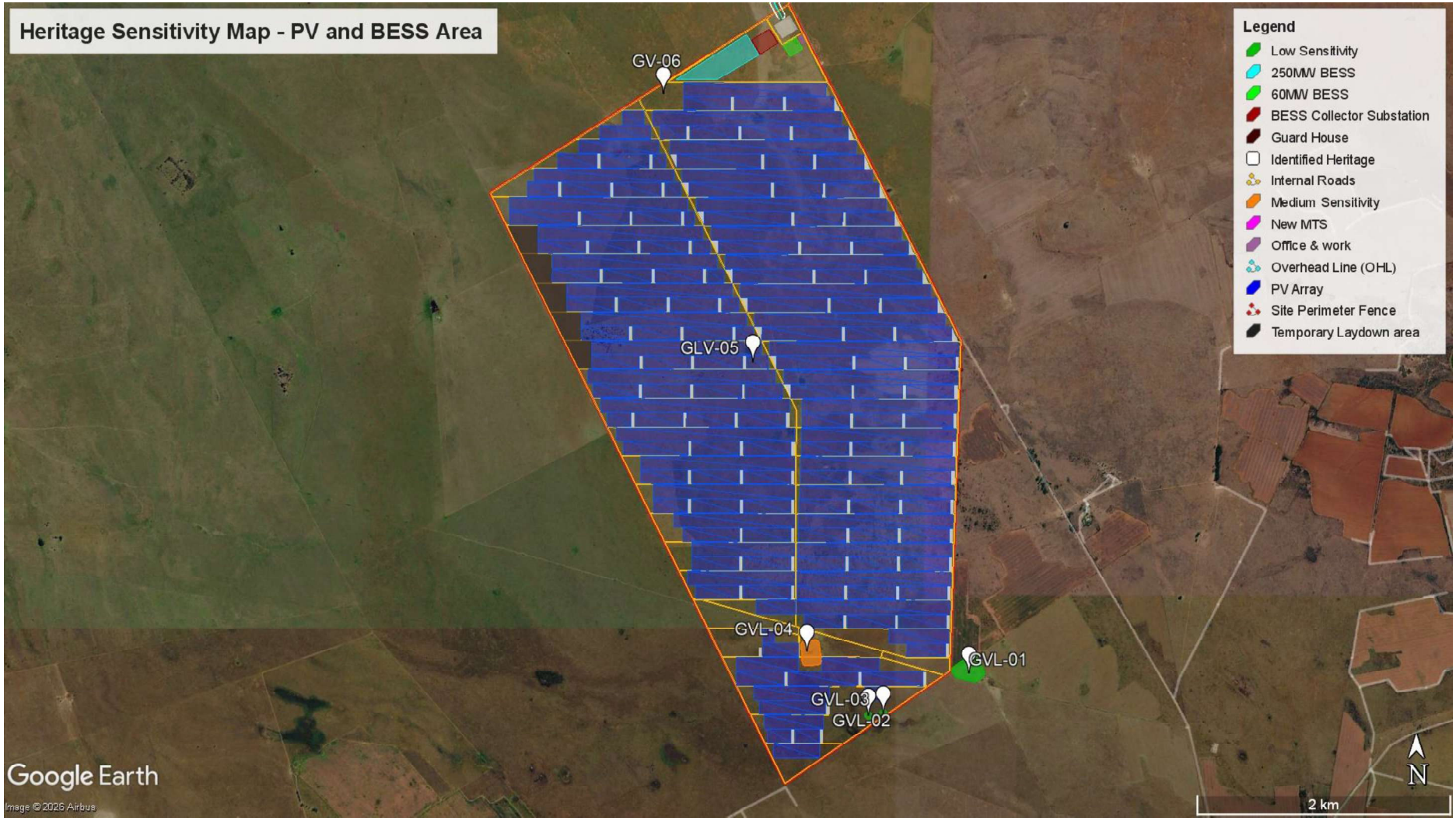
https://www.sahistory.org.za/people/eugene-ney-terreblanche

APPENDIX 1: HERITAGE SENSITIVITY MAP/S

1. Heritage Sensitivity Maps based on the Site Inspection / Field survey




Heritage Sensitivity Map - OHL Corridor
Legend
250MW BESS
60MW BESS
BESS Collector Substation
Guard House
Identified Heritage
Internal roads
Medium Sensitivity
New MTS
Office & work
OHL Corridor
Overhead Line (OHL)
PV Array
Site Perimeter Fence
Temporary Laydown area
GVL-08
GVL-007
GV-06
Google Earth
Image © 2026 Airbus
N
3 km

APPENDIX 2: CURRICULUM VITAE OF HERITAGE SPECIALIST

1 Personal Particulars

Profession:	Heritage Specialist
Date of Birth:	11 September 1966
Name of Firm:	Nitai Consulting
Name of Staff:	Jennifer Kitto
Nationality:	RSA
Membership of Professional Societies	Association of Southern African Professional Archaeologists (444); Association of Professional Heritage Practitioners (APHP) - PHP0156 International Association for Impact Assessment South Africa (7151)

2 Education:

BA Hons Social Anthropology, WITS, South Africa, 1994

BA. Archaeology and Social Anthropology, WITS, South Africa, 1993

Higher National Diploma, Practical Archaeology, Dorset Institute for Higher Education (now Bournemouth University), UK, 1989

3 Employment Record:

2022 – Present Heritage Specialist, Nitai Consulting

Conduct Heritage Impact Assessments;

2012 – 2021 Heritage Specialist, PGS Heritage (Pty) Ltd

Conduct Heritage Impact Assessments

Compile Desktop Historical Research

Compile Heritage Audit and Management Plans

Compile and submit permit applications to National and Provincial Heritage Authorities for Section 34 building alterations and demolitions (under National Heritage Resources Act, 25 of 1999)

Compile and submit permit applications to Provincial and Municipal Health Authorities for Section 36 relocations of graves and burial grounds (under National Heritage Resources Act, 25 of 1999 and National Health Act, No 61 of 2003)

2008 – 2011 Cultural Heritage Officer (National), Burial Grounds and Graves Unit: South African Heritage Resources Agency (SAHRA)

Review and assessing permit applications for relocation of historical graves and burial grounds

1998 – 2008 Cultural Heritage Officer (Provincial), Provincial Office – Gauteng: SAHRA

Review and comment on heritage and archaeological impact reports
Research for the nomination and grading process for related to the declaration of specific heritage resources as National Heritage Sites
Monitoring of certain archaeological and built environment National Heritage Sites (e.g. The Cradle of Humankind World Heritage Site)

4 Selected Consultancies

4.1 Eskom Minor electrification project: Proposed Construction of Overhead Powerline in Macekane, City of Umhlathuze Local Municipality, King Cetshwayo District Municipality, KwaZulu Natal

2025, Undertake Heritage Impact Assessment of all heritage resources situated within or adjacent to the proposed powerline route.

4.2 Eskom Minor electrification project: Proposed Overhead Powerline for AQ Sibiya, City Of Umhlathuze Local Municipality, King Cetshwayo District Municipality, KwaZulu Natal

2025, Undertake Heritage Impact Assessment of all heritage resources situated within or adjacent to the proposed powerline route**.**

4.3 Eskom Minor electrification project: Proposed Inkunzi NB38 Hare Line Upgrade Electrification Project on Portion of Umngeni Local Municipality, Umgungundlovu District Municipality, KwaZulu Natal

2025, Undertake Heritage Impact Assessment of all heritage resources situated within or adjacent to the proposed powerline route.

4.4 Karoo Geophysical Research Project: Seismic Surveys Within the Central Karoo District, Eastern Cape Province

2025, Undertake Heritage Impact Assessment of all heritage resources situated within or adjacent to the road reserves of the proposed survey routes

4.5 Karoo Geophysical Research Project: Seismic Surveys Within the Central Karoo District, Western Cape Province

2025, Undertake Heritage Impact Assessment of all heritage resources situated within or adjacent to the road reserves of the proposed survey routes

4.6 Rietspruit Pipeline Deviation, Emfuleni, Gauteng

2025, Undertake Heritage Impact Assessment of all heritage resources associated with the footprint of the proposed pipeline deviation.

4.7 Postmasburg Hospital, Postmasburg, Northern Cape

2025, Undertake Heritage Impact Assessment of all heritage resources associated with the footprints for the proposed new hospital

4.8 Sulphonation Plant, Wadeville, Ekurhuleni, Gauteng

2025, Undertake Heritage Impact Assessment of all heritage resources associated with the footprints for the proposed new sulphonation plant

4.9 Varsputs and Brakputs Wind Energy Facility projects, Springbok, Northern Cape

2024, Undertake Heritage Impact Assessment of all heritage resources associated with the respective footprints for the two Wind Energy Facility projects and associated grid infrastructure

4.10 Lemenong and Boitekong BESS Projects, Rustenburg, North-West Province

2024, Undertake Heritage Impact Assessment of all heritage resources associated with the respective footprints for the two Battery Energy Storage System projects

4.11 Leratong Reservoirs, Johannesburg, Gauteng

2024, Undertake Heritage Impact Assessment of all heritage resources associated with the project footprints for the construction of two water reservoirs

4.12 Hartebeest Skeur WEF, Damara 1 & 2 SEFs, & associated infrastructure

2023/24 Undertake Heritage Impact Assessment of all heritage resources associated with the respective footprints for the two Wind Energy Facility projects and associated grid infrastructure

4.13 New Vessel Tracking System Tower, Port of Durban, KwaZulu Natal

2023/2024, Heritage Specialist, Undertake Heritage Impact Assessment of all heritage resources within or adjacent to the development footprint

4.14 Pensfontein Residential Development, Postmasburg, Northern Cape

2023/2024, Heritage Specialist, Undertake Heritage Impact Assessment of all heritage resources within or adjacent to the development footprint

4.15 Bhobhoyi Pipeline Upgrade, Port Shepstone, Kwa-Zulu Natal Province.

2023, Heritage Specialist, Pipeline Upgrade associated with proposed Umzimkhulu River Weir and Pumpstation Upgrade, Undertake Heritage Impact Assessment of all heritage resources along the proposed route and submit HIA Report to Amafa Institute.

4.16 Pilanesberg Platinum Mine Community Bulk Water Supply pipeline near Pilanesberg Nature Reserve, North West Province

2023, Heritage Specialist, Proposed development of Bulk Water Supply pipeline for local community; Undertake Heritage Impact Assessment of all heritage resources along the proposed route

4.17 400kV Transmission and 132kV distribution power lines for the Apollo-Lepini-Mesong Project, Gauteng Province, South Africa

2023, Heritage Specialist, Proposed development of a 400kV transmission and 132kV power lines; Undertake Heritage Impact Assessment of all heritage resources along the proposed routes for the two power lines.

4.18 Carbon Capture Utilisation & Storage (CCUS) Pilot Project - 3D Seismic Survey & Drilling, Leandra, Mpumalanga Province, South Africa

2023, Heritage Specialist. Proposed 3D Seismic Survey within the Leandra area, Undertake Heritage Impact Assessment of all heritage resources within the footprint of the survey area.

4.19 Carbon Capture Utilisation & Storage (CCUS) Pilot Project - Injection Site 2023, Leandra, Mpumalanga Province, South Africa

2023, Heritage Specialist. Proposed Injection Site 2023 for the CCUS pilot project within the Leandra area, Undertake Heritage Impact Assessment of all heritage resources within the footprint of the survey area.

4.20 Decommissioning of Komati Power Station, Middelburg, Mpumalanga, South Africa

2023, Heritage Specialist, in association with architectural historian; Proposed Decommissioning of the Komati Power Station, Undertake Heritage Impact Assessment of all heritage structures within the power station

4.21 Paulputs Strengthening Powerline Route, Postmasburg-Paulputs, Northern Cape

2023, Heritage Specialist, Proposed development of a 400kV transmission lines; Undertake Heritage Impact Assessment of all heritage resources along the proposed route

4.22 Mooivlei Solar PV Facilities, near Kroonstad, Free State Province, South Africa

2022/2023 Heritage Specialist, proposed development of three Solar PV facilities west of Kroonstad, Undertake Heritage Impact Assessment of all heritage resources associated with the three Solar PV facilities:

- Mooivlei Solar 1 PV facility, west of Kroonstad
- Mooivlei Solar 2 PV facility, west of Kroonstad
- Mooivlei Solar 2 PV facility, west of Kroonstad

4.23 Kroonstad South Solar PV Facilities near Kroonstad, Free State Province, South Africa

2022/2023 Heritage Specialist, Development of five Solar PV facilities south of Kroonstad, Undertake Heritage Impact Assessment of all heritage resources associated with the five solar PV facilities:

- Oslaagte Solar 1 PV project, south of Kroonstad
- Oslaagte Solar 2 PV project, south of Kroonstad
- Oslaagte Solar 3 480MW PV facility south of Kroonstad
- Leeuwspruit Solar 1 320MW PV facility south of Kroonstad
- Leeuwspruit Solar 2 PV facility south of Kroonstad

4.24 Rustenburg Solar PV Facilities, North West Province, South Africa

2022/2023 *H*eritage Specialist, Development of three Solar PV facilities near Rustenburg, , Undertake Heritage Impact Assessment of all heritage resources associated with the three solar PV facilities.

- Onderstepoort Solar 1 PV facility, near Rustenburg
- Onderstepoort Solar 2 PV facility, near Rustenburg
- Rhino Solar PV facility, near Rustenburg

4.25 Seelo Solar PV Facilities, near Carletonville, North West Province, South Africa,

2022/2023 Heritage Specialist, Development of three Solar PV facilities near Carletonville, Undertake Heritage Impact Assessment of all heritage resources associated with the three solar PV facilities.

- Seelo Alpha 240MW Solar PV & BESS facility, near Carletonville
- Seelo Beta 240MW Solar PV & BESS facility, near Carletonville
- Seelo Charlie Solar PV & BESS facility, near Carletonville

4.26 Ferrum-Upington Powerline Route, Upington-Kathu, Northern Cape

2022/2023 Heritage Specialist, Proposed Deviations to Authorised Route of a 400kV transmission power line between Upington and Kathu, Undertake Heritage Impact Assessment for of all heritage resources along the proposed route.

5 Languages:

English - excellent speaking, reading, and writing
Afrikaans –fair speaking, reading and writing

forestry, fisheries
& the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Private Bag X447, Pretoria, 0001, Environment House, 473 Steve Biko Road, Pretoria, 0002 Tel: +27 12 399 9000, Fax: +27 86 625 1042

SPECIALIST DECLARATION FORM – AUGUST 2023

Specialist Declaration form for assessments undertaken for application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

REPORT TITLE
PROPOSED GROOTVLEI 600MW SOLAR PV PLANT, BATTERY ENERGY STORAGE SYSTEM & GRID CONNECTION PROJECT, NEAR VENTERSDORP, DR KENNETH KAUNDA AND NGAKA MODIRI MOLEMA DISTRICT MUNICIPALITIES, NORTH WEST PROVINCE - HERITAGE IMPACT ASSESSMENT

Kindly note the following:

1. This form must always be used for assessment that are in support of applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting, where this Department is the Competent Authority.
2. This form is current as of August 2023. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at https://www.dffe.gov.za/documents/forms.
3. An electronic copy of the signed declaration form must be appended to all Draft and Final Reports submitted to the department for consideration.
4. The specialist must be aware of and comply with *'the Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the act, when applying for environmental authorisation - GN 320/2020)'*, where applicable.

1. SPECIALIST INFORMATION

Title of Specialist Assessment	Heritage Specialist
Specialist Company Name	Nitai Consulting (Pty) Ltd
Specialist Name	Jennifer Kitto
Specialist Identity Number	[redacted]
Specialist Qualifications:	BA Archaeology and Social Anthropology; BA (Hons) Social Anthropology
Professional affiliation/registration:	Association of Southern African Professional Archaeologists (ASAPA), Association of Professional Heritage Practitioners (APHP), International Association for Impact Assessment (IAIAsa)
Physical address:	147 Bram Fischer Drive, Ferndale, 2194, South Africa
Postal address:	PO Box 1673, Sunninghill,
Postal address	2157, South Africa
Telephone	+27 11 781 1730
Cell phone	[redacted]
E-mail	

2. DECLARATION BY THE SPECIALIST

I, Jennifer Ann Kitto declare that –

- I act as the independent specialist in this application;
- I am aware of the procedures and requirements for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act (NEMA), 1998, as amended, when applying for environmental authorisation which were promulgated in Government Notice No. 320 of 20 March 2020 (i.e. "the Protocols") and in Government Notice No. 1150 of 30 October 2020.
- 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 NEMA Act.



Signature of the Specialist

Nitai Consulting (Pty) Ltd

Name of Company:

02 Nov 2026

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, _ Jennifer Ann Kitto_____, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

Signature of the Specialist

Nitai Consulting (Pty) Ltd

Name of Company

2 November 2026

Date

Signature of the Commissioner of Oaths

Click or tap to enter a date. 2026-11-03

Date

SOUTH AFRICAN POLICE SERVICE
COMMUNITY SERVICE CENTRE
2026 -11- 03
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SUID-AFRIKAANSE POLISIEDIENS