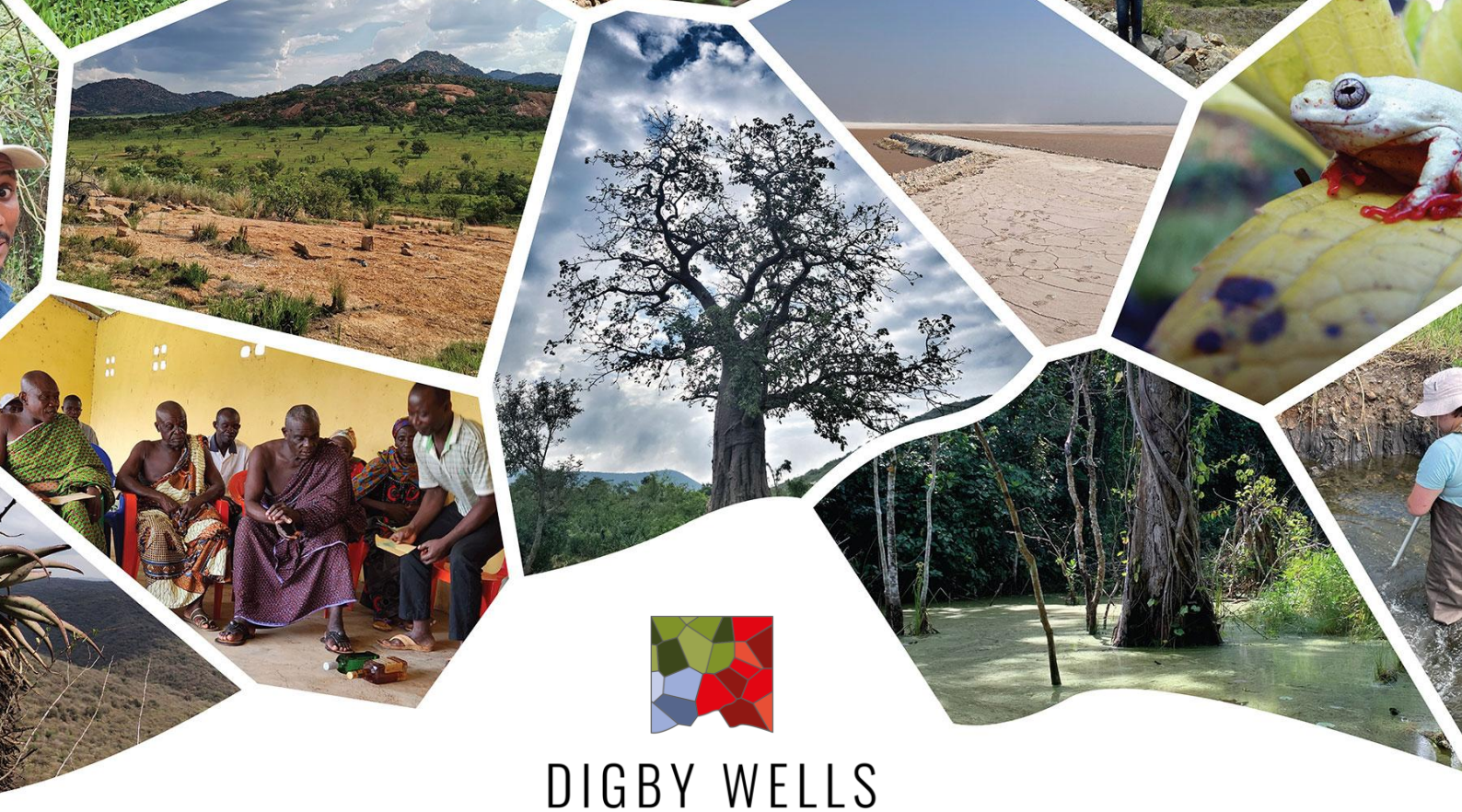


DIGBY WELLS
ENVIRONMENTAL

Proposed Kopanya Solar Photovoltaic 2 Project and Associated Infrastructure at Booysendal South Mine, Mpumalanga Province

Heritage Impact Assessment

Prepared for:
GCS Environment South Africa (Pty) Ltd.

Project Number:
GCS10069

October 2026

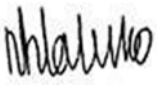
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Report Type:	Heritage Impact Assessment
Project Name:	Proposed Kopanya Solar Photovoltaic 2 Project and Associated Infrastructure at Booysendal South Mine, Mpumalanga Province
Project Code:	GCS10069

Name	Responsibility	Signature	Date
Nhlaluko Mabehle	Site Visit Report Compilation		21 October 2026
Danny Viljoen	Report Compilation		21 October 2026
Jaco van der Walt	Reviewer		21 October 2026

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DETAILS AND DECLARATION OF THE SPECIALIST

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I, Danny Viljoen declare that: –

I act as the independent specialist in this application;

I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;

I declare that there are no circumstances that may compromise my objectivity in performing such work;

I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;

I will comply with the Act, Regulations and all other applicable legislation;

I have no, and will not engage in, conflicting interests in the undertaking of the activity;

I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

All the particulars furnished by me in this form are true and correct; and

I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of Section 24F of the Act.



22/10/2026

Signature of the Specialist *Date*

Findings, recommendations and conclusions provided in this report are based on the best available scientific methods and the author's professional knowledge and information at the time of compilation. Digby Wells employees involved in the compilation of this report, however, accept no liability for any actions, claims, demands, losses, liabilities, costs, damages or expenses arising from or in connection with the services rendered or the use of the information contained in this document.

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EXECUTIVE SUMMARY

GCS Environment South Africa (Pty) Ltd (GCS) has been appointed as the independent Environmental Assessment Practitioner to undertake the Environmental Authorisation process for the proposed Kopanya Solar Photovoltaic 2 Project (proposed Project) at the existing Booysendal South (BS) Mine in the Mpumalanga Province. Digby Wells Environmental was appointed to undertake a Heritage Impact Assessment (HIA) for the proposed Project. The study area was assessed through a desktop review of relevant literature and heritage databases, followed by a non-intrusive pedestrian field survey of the development footprint.

The proposed Project will be developed within the existing BS Mine area and will occupy an approximate development footprint of 49 hectares (ha). The proposed solar PV facility will be located on the Remaining Extent of Portion 15 of Farm No. 53 JT, with associated grid connection infrastructure traversing Portions 8 and 17 of Farm No. 53 JT.

Key findings of the assessment include:

- Several heritage assessments have previously been undertaken within the Booysendal Mining Right area, including Huffman & Schoeman (2001; 2002a; 2002b), van der Walt (2009; 2018), van der Walt & Celliers (2009), Roodt (2003a; 2003b; 2003c), as well as Roodt (2008a; 2008b), van Schalkwyk (2005) and Pistorius (2017), which collectively recorded numerous Iron Age sites, stone-walled settlements, ruins, cemeteries and other cultural features. None of the previously recorded sites are located within the proposed Project footprint;
- The current field survey did not identify any new heritage resources within the proposed Project footprint;
- Local communities stressed the importance of their cultural heritage and requested to be consulted on the management of heritage resources, should any be encountered; and
- Based on the South African Heritage Resources Information System Palaeosensitivity Map, the study area is classified as having low to insignificant palaeontological sensitivity. To adhere to the South African Heritage Resources Agency (SAHRA) minimum standards, a Fossil Find Procedure (FFP) has been included in Appendix C.

Given that no heritage resources were identified within the development footprint, no significant adverse impacts on heritage resources are anticipated.

Recommendations:

- Implementation of the CFP and FFP in consultation with a heritage specialist as outlined in Appendix A and Appendix C;
- Social consultation efforts should be undertaken in consultation with a heritage specialist to identify the locations of the former chief and his wife's graves and other significant artefacts and graves, and on how the community wishes for these

resources to be managed. Should these resources fall within the Project area, community members should be permitted to access these sites, subject to overriding health and safety protocols;

- This report should be made readily available to communities impacted by the Project at the requested places; and
- Induction of contractors and site personnel regarding heritage awareness, implementation of the CFP and reporting obligations in terms of the NHRA.

It is recommended that the Project may be authorised from a heritage perspective, subject to implementation of the recommendations provided in this report and approval by SAHRA.

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ACRONYMS, ABBREVIATIONS AND DEFINITIONS

BS	Booysendal South
CFP	Chance Find Procedure
CHMP	Cultural Heritage Management Plan
FFP	Fossil Find Procedure
GN R	Government Notice Regulation
GPS	Global Positioning System
GSSA	Genealogical Society of South Africa
HIA	Heritage Impact Assessment
HRA	Heritage Resources Authority
HRM	Heritage Resources Management
km	kilometres
kV	kilovolt
LIA	Later Iron Age
LSA	Later Stone Age
m	metres
m²	square metres
MSA	Middle Stone Age
MW	megawatts
MWh	megawatt-hours
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
PSM	Palaeosensitivity Map
PV	Photovoltaic
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SANS	South African National Standard

1. Introduction

Northam Platinum Proprietary Limited (Northam) owns and operates the Booysendal Mine, which comprises the Booysendal North and South mining complexes (hereafter collectively referred to as the Booysendal Mine). The Booysendal Mine includes underground mining operations, mineral processing facilities, and associated surface infrastructure, and is located approximately 35 kilometres (km) west of the town of Mashishing, along the R577 regional road, within the Limpopo and Mpumalanga Provinces.

Booysendal Platinum (Pty) Ltd proposes the development of a 20 megawatt alternating current (MW_{AC}) solar photovoltaic (PV) facility and associated infrastructure, referred to as the Kopanya Solar PV 2 Project (the proposed Project), at the existing Booysendal South (BS) Mine.

The proposed Project forms part of Northam's broader energy resilience and sustainability strategy and supports the Company's strategic objectives to enhance energy security, reduce greenhouse gas emissions, and mitigate escalating electricity costs that exceed inflation. The proposed Project is intended to primarily supply electricity to the BS Mine through self-generation and demand management, thereby reducing reliance on grid electricity amid ongoing load reductions and increasing energy tariffs. Any surplus electricity generated by the facility will be exported to the national electricity grid.

1.1. Terms of Reference

This Heritage Impact Assessment (HIA) is undertaken in terms of Section 38 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) for the proposed Project.

The purpose of the HIA is to:

- Identify and assess heritage resources within the proposed Project footprint;
- Determine the cultural significance of any identified resources;
- Assess the potential impacts of the proposed Project on such resources; and
- Recommend appropriate avoidance, mitigation or management measures in accordance with the NHRA.

The scope of work includes:

1. **Desktop Assessment** – Review of existing heritage studies, archaeological records, South African Heritage Resources Information System (SAHRIS) data and relevant literature to contextualise the cultural landscape and inform the field survey;
2. **Field Survey** – Pedestrian survey of the proposed Project area to identify heritage resources, supported by photographic recording and Global Positioning System (GPS) mapping of sites and survey coverage;
3. **Impact Assessment** – Evaluation of identified resources in terms of heritage significance and assessment of direct and indirect development impacts; and

4. **Reporting and Submission** – Compilation of an HIA report for submission to the South African Heritage Resources Agency (SAHRA) via SAHRIS for statutory review and comment.

2. Project Description

2.1. Project Location and Site Context

The proposed Project will be located on Portion 8, Portion 15 and Portion 17 of the Farm No. 53 JT, approximately 30 km west of Mashishing, within the Thaba Chweu Local Municipality and Ehlanzeni District Municipality. The principal solar PV facility will be located on the Remaining Extent of Portion 15, while associated grid connection infrastructure will extend across Portions 8 and 17. The proposed Project will be accessed via the R577 regional road. The local setting can be seen in Figure 2-1.

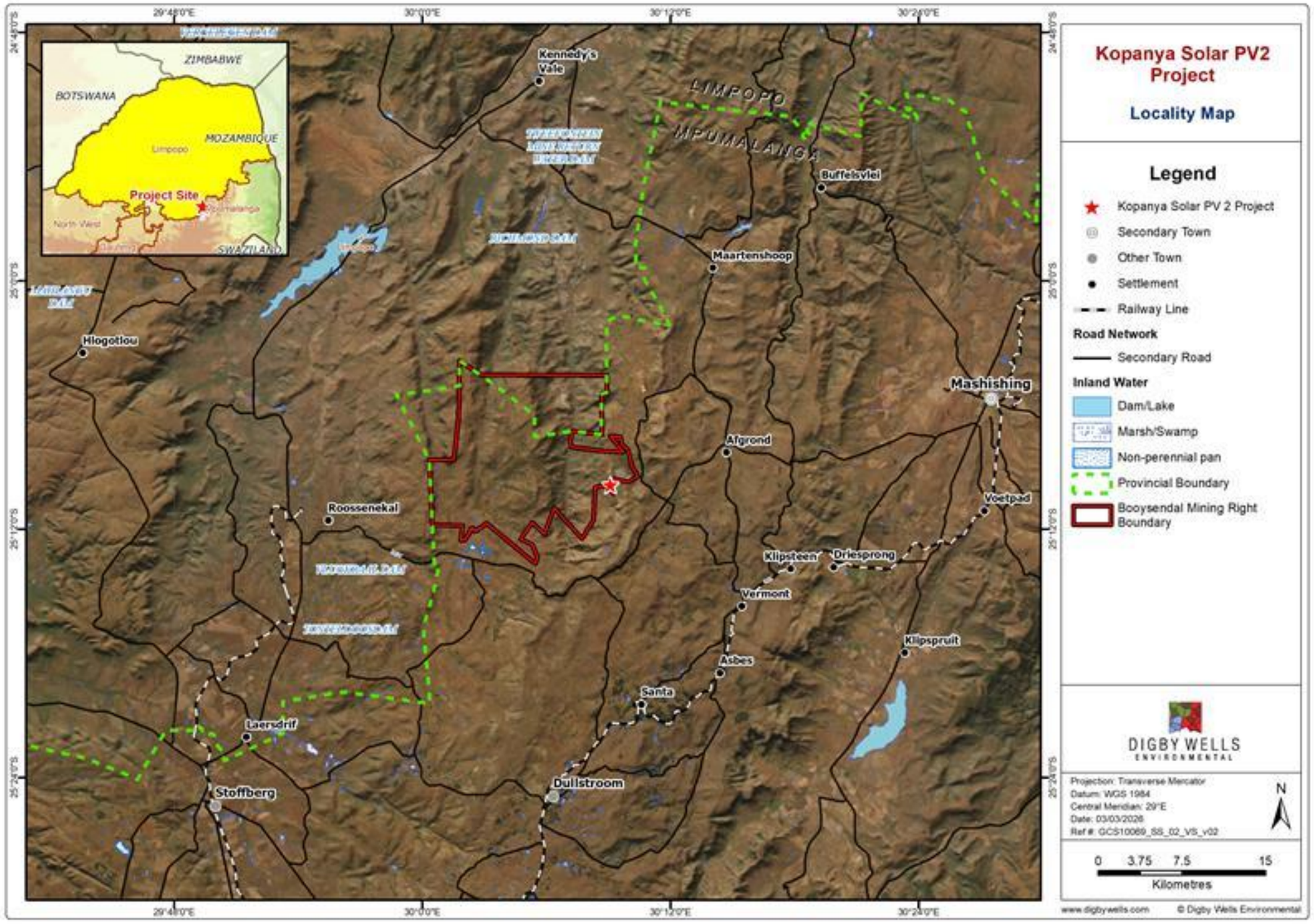


Figure 2-1: Proposed Kopanya Solar Photovoltaic 2 Project Local Setting

2.2. Project Background

South Africa's electricity sector continues to experience structural challenges, including constrained generation capacity, ongoing load reductions, grid instability, and increasing electricity tariffs. These challenges present significant operational and financial risks to electricity-intensive industries such as mining, where continuous and reliable power supply is essential for safe and efficient operations.

In response to these challenges, Northam has adopted a broader energy resilience and sustainability strategy aimed at improving energy security, reducing greenhouse gas emissions, and limiting exposure to escalating grid electricity costs. This strategy includes the development of on-site renewable energy generation and improved demand management to supplement grid supply.

The proposed Project has been identified as a key component of this strategy. By enabling on-site renewable electricity generation, the proposed Project will support the Mine's operational requirements while contributing to national renewable energy objectives and energy transition initiatives.

2.3. Need and Desirability

The need for the proposed Project arises from both national-level energy constraints and site-specific operational requirements at the BS Mine.

At a national level, the proposed Project supports South Africa's renewable energy and climate change mitigation objectives by contributing additional clean generation capacity and reducing reliance on fossil-fuel-based electricity. Solar photovoltaic facilities are widely recognised as a proven and reliable renewable energy technology capable of supporting grid stability and reducing greenhouse gas emissions.

At a site-specific level, the BS Mine requires a secure and reliable electricity supply to support underground mining operations, mineral processing activities, and associated infrastructure. Grid instability, ongoing load reductions, and increasing electricity tariffs pose risks to operational continuity and long-term economic viability.

The proposed Project is intended to primarily supply electricity to the BS Mine through self-generation and demand management, thereby reducing reliance on grid electricity amid ongoing load reductions and increasing energy tariffs. Any surplus electricity generated by the facility will be exported to the national electricity grid within the maximum export capacity. The proposed Project will therefore enhance energy security, improve operational resilience, and contribute to the long-term sustainability of mining operations in the region.

2.4. Description of the Proposed Development

2.4.1. Overview of the Proposed Facility

The proposed Project will comprise a utility-scale solar photovoltaic facility with an installed generation capacity of 20 MWAC. The facility will be developed within the existing BS Mine area and has been designed to integrate with existing mining and electrical infrastructure.

The proposed Project will utilise single-axis tracking bifacial solar photovoltaic panels, enabling increased energy yield through improved solar exposure throughout the day. The development has been purposefully designed to minimise additional land disturbance by locating the facility within an established mining area and using modular, industry-standard infrastructure.

2.4.2. Solar PV Arrays and Tracking System

The proposed solar PV facility will comprise up to 35 000 bifacial solar panels, each with a typical wattage of greater than 600 watts (W). The panels will be mounted on single-axis tracking systems, allowing the panels to follow the sun's movement from east to west and optimise electricity generation.

The racking and tracking systems will be constructed from steel sections supported by driven piles, reducing the need for extensive concrete foundations and limiting ground disturbance. Panel structures will be designed to accommodate site-specific geotechnical conditions, wind loading, and long-term operational requirements.

2.4.3. Electrical Infrastructure and Grid Connection

The proposed Project will include the following electrical and grid connection infrastructure:

- A 33 kV overhead power line connecting the solar PV facility to the grid connection infrastructure;
- An on-site PV substation to collect and regulate electricity generated by the PV arrays;
- A step-down substation located adjacent to the existing Eskom substation; and
- Power transformer stations, inverters and associated electrical infrastructure housed in prefabricated units or electrical houses (e-houses).

Electricity generated by the facility will be used primarily to supply the BS Mine. Any surplus electricity generated will be exported to the national electricity grid, with Eskom remaining the grid operator.

2.4.4. Temporary Construction Infrastructure

Temporary infrastructure required during the construction phase will include:

- A construction yard and laydown areas of approximately 1 ha;

- Site offices, storage areas, and temporary ablution facilities;
- Internal access roads and construction traffic routes; and
- Temporary services required to support construction activities.

Construction of the proposed Project is anticipated to occur over a period of approximately 15 months. At peak construction, an estimated 300 personnel will be employed, comprising skilled and semi-skilled labour associated with civil works, electrical installation, and commissioning activities.

2.4.5. Permanent Operational Infrastructure

Permanent operational infrastructure associated with the proposed Project will include:

- Buildings for operations, maintenance, control, and storage purposes;
- An operations and maintenance warehouse;
- Parking areas for operational staff and service vehicles; and
- Security facilities, including access control points.

The operational lifespan of the proposed Project is anticipated to be approximately 25 years, during which an estimated 20 personnel will be employed for routine operation, maintenance, and security functions.

2.4.6. Supporting Infrastructure and Services

Additional supporting infrastructure will include:

- Water supply and sanitation systems, utilising conservancy tanks;
- Internal and access roads, linking the facility to existing Mine infrastructure;
- Security and access control infrastructure, including perimeter fencing of up to approximately 3 200 metres (m); and
- Telecommunications systems to support monitoring, control, and security operations.

Stormwater runoff from the facility will be managed through underground drainage systems that direct surface flows to designated low-lying areas. No permanent retention ponds or culverts are anticipated as part of the stormwater management design.

2.4.7. Water Requirements and Management

Water will be required primarily during the construction phase of the proposed Project for activities such as dust suppression, concrete works, and general construction purposes. Total construction phase water demand is estimated to be approximately 1 790 cubic metres (m^3) over the construction period.

During the operational phase, water requirements will be limited and associated mainly with routine maintenance activities and domestic use within operational buildings. Operational water demand is estimated at approximately 518 m³ per annum.

Water for both construction and operation will be sourced from existing Mine water supplies and/or boreholes, and no new water abstraction infrastructure is proposed as part of the proposed Project. Water use will be managed in accordance with the Mine's approved water management procedures to ensure efficient utilisation and to prevent wastage.

The proposed Project will not involve any process water use, and no wastewater generation is anticipated during normal operation. Sanitation will be managed through conservancy tanks or septic systems, with effluent removed and disposed of by appropriately licensed service providers, in accordance with applicable legislation and municipal requirements.

2.4.8. Waste Management

Waste will be generated during the construction, operational, and decommissioning phases of the proposed Project. All waste streams will be managed in accordance with the Mine's approved waste management procedures, the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), and recognised industry best practice.

2.4.8.1. Construction Phase

During the construction phase, both non-hazardous and hazardous waste streams will be generated. Waste volumes are anticipated to be temporary and largely associated with civil works, installation activities, and workforce-related activities.

Non-hazardous waste will include:

- General domestic waste generated by construction personnel;
- Packaging materials associated with solar PV components, including wooden pallets, cardboard, plastics, polystyrene, and strapping materials;
- Scrap metal arising from mounting structures, tracker systems, cable trays, and minor steel off-cuts;
- Construction off-cuts, including electrical cabling, conduits, and plastic materials;
- Minor quantities of inert waste, such as concrete residues generated during foundation works; and
- Damaged, defective, or broken solar PV panels arising from transport, handling, or installation activities.

Solar PV panels damaged during delivery or installation will be handled with care to prevent further breakage. Intact but defective panels will, where possible, be returned to the supplier under warranty agreements. Broken panels will be stored in a designated, secure area to prevent glass dispersion and environmental contamination. Panels suitable for recycling will be sent to appropriately authorised recycling facilities.

Hazardous waste generated during construction will be limited in volume and will include:

- Small quantities of fuels, oils, and hydraulic fluids associated with construction vehicles and equipment;
- Oily rags, absorbent materials, used filters, and contaminated materials; and
- Empty containers that previously contained hazardous substances, such as oils, greases, and cleaning agents.

Hazardous waste will be stored in clearly demarcated, bunded areas with impermeable surfaces to prevent soil and groundwater contamination. All hazardous waste will be removed from site by licensed service providers and disposed of at authorised hazardous waste facilities in accordance with applicable legislation.

2.4.8.2. Operational Phase

Waste generation during the operational phase is expected to be minimal and largely associated with routine maintenance and administrative activities.

Non-hazardous waste during operation will primarily include:

- Limited domestic waste generated by operational and maintenance personnel;
- Minor packaging waste associated with spare parts and replacement components; and
- Scrap metal and redundant components arising from maintenance activities.

Hazardous waste during operation may include:

Used oils, lubricants, and cleaning materials associated with maintenance activities;

- Oily rags, absorbent materials, and used filters;
- Damaged or replaced solar PV panels arising from storm events, mechanical failure, vandalism, or routine replacement; and
- Electrical components such as inverters or transformers containing oils or electronic parts.

Although intact PV panels are generally classified as general waste, damaged panels may contain glass, aluminium, silicon, polymers, and trace metals that require appropriate handling and controlled disposal or recycling. Damaged or replaced panels will be temporarily stored in a secure, weather-protected area to prevent environmental release of materials. Where feasible, panels will be recycled through specialised photovoltaic recycling facilities to recover reusable materials and minimise waste to landfill.

All operational waste will be collected, transported and disposed of in accordance with approved waste management procedures.

2.4.8.3. *Decommissioning Phase*

At the end of the proposed Project's operational lifespan, the facility may be decommissioned, repowered, or refurbished. The decommissioning phase will generate both non-hazardous and hazardous waste streams associated with dismantling and removal of infrastructure.

Waste generated during decommissioning will include:

- Non-hazardous waste, such as dismantled equipment, scrap metal, concrete material, fencing, and general waste associated with infrastructure removal;
- Solar PV panels, including damaged, obsolete, or end-of-life panels and associated mounting structures and electrical components; and
- Hazardous waste, including batteries (if applicable), electronic components, oils, and other hazardous materials.

Solar PV panels removed during decommissioning will represent one of the primary waste streams. Where panels remain functional, opportunities for reuse, resale, or repowering will be investigated. Panels that have reached end-of-life will be prioritised for recycling through specialised photovoltaic recycling facilities capable of recovering glass, aluminium frames, and other recyclable materials.

Electrical components, including inverters and transformers, will be assessed for potential refurbishment or recycling. Hazardous materials will be separated and managed in accordance with applicable waste legislation.

All decommissioning waste will be transported by licensed service providers to authorised waste management or recycling facilities. The decommissioning process will aim to maximise material recovery and recycling to support circular economy principles and minimise landfill disposal.

2.4.9. Blasting

Limited, shallow and localised blasting may be required where hard rock is encountered during the excavation of cable trenches and foundations for infrastructure footings. Blasting will only be undertaken where conventional excavation methods are unsuitable and will be subject to appropriate safety and environmental management measures to minimise potential impacts on surrounding areas.

3. Relevant Legislation, Standards and Guidelines

The legislation, regulations, and guidelines considered in this report are tabulated and discussed briefly in Table 3-1.

Table 3-1: Applicable Legislation, Regulations, Guidelines and By-Laws

Legislation, Regulation, and Guideline	Applicability
Section 24 of the Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996) (the Constitution)	The Heritage Resources Management (HRM) process was undertaken to

Legislation, Regulation, and Guideline	Applicability
Section 24 of the Constitution states that everyone has the right to an environment that is not harmful to their health or well-being and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures, that – • Prevent pollution and ecological degradation; • Promote conservation; and • Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.	identify heritage resources and determine heritage impacts associated with the proposed Project. As part of the HRM process, applicable mitigation measures, monitoring plans and/or remediation measures were recommended to ensure that potential impacts are managed to acceptable levels and to support the environmental rights enshrined in the Constitution.
National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) NEMA establishes the overarching framework for environmental management in South Africa and gives effect to the environmental right contained in Section 24 of the Constitution. The environmental management principles contained in Section 2 of NEMA require, among other matters, that development be socially, environmentally and economically sustainable; that disturbance of landscapes and sites constituting the nation's cultural heritage be avoided or, where avoidance is not possible, minimised and remedied; and that environmental impacts be identified, assessed and managed.	The HRM process supports the environmental assessment process undertaken in terms of NEMA by identifying heritage resources that may be affected by the proposed Project and recommending appropriate avoidance, mitigation and management measures. The findings of the heritage assessment must be considered in the broader environmental assessment and decision-making process.
National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) The NHRA is the overarching legislation that protects and regulates the management of heritage resources in South Africa, with specific reference to the following sections: • Section 5 - General principles for heritage resources management. • Section 6 - Principles for the management of heritage resources. • Section 7 - Heritage assessment criteria and grading. • Section 38 - Heritage resources management. The Act requires that heritage resources authorities be notified as early as possible of any developments that may exceed certain minimum thresholds in terms of Section 38(1), or when assessments of impacts on heritage resources are required by other legislation in terms of Section 38(8) of the Act.	This report was compiled with consideration of Sections 5, 6, 7 and 38(4) and (8) of the NHRA. It will be submitted to the relevant heritage resources authority, which in this instance is the South African Heritage Resources Agency (SAHRA).

Legislation, Regulation, and Guideline	Applicability
NHRA Regulations, 2000 Government Notice Regulation (GN R 548)[1] The NHRA Regulations regulate the general provisions and permit application processes in respect of heritage resources included in the national estate. Applications must be made in accordance with these regulations. The following chapters are applicable to this assessment: • II. Permit Applications and General Provisions for Permits; • III: Application for Permit: National Heritage Site, Provincial Heritage Site, Provisionally Protected Place or Structure older than 60 years; • IV: Application for Permit: Archaeological or Palaeontological or Meteorite; • IX: Application for Permit: Burial Grounds and Graves; • X: Procedure for Consultation regarding Protected Area; • XI: Procedure for Consultation regarding Burial Grounds and Graves; and • XII: Discovery of Previously Unknown Graves.	The HRM process was undertaken with cognisance of the applicable regulations. The proposed mitigation strategies and management measures comply with these requirements.
SAHRA Archaeology, Palaeontology and Meteorites Guidelines: Minimum Standards for the Archaeological and Palaeontological Components of Impact Assessment Reports (2007) The guidelines provide the minimum standards that must be adhered to for the compilation of a Heritage Impact Assessment (South African Heritage Resources Agency, 2007). Chapter II Section 7 outlines the minimum requirements for inclusion in the heritage assessment as follows: • Background information on the Project; • Background information on the cultural baseline; • Description of the properties or affected environs; • Description of identified sites or resources; • Recommended field rating of the identified sites to comply with Section 38 of the NHRA; • A statement of cultural significance in terms of Section 3(3) of the NHRA; and	This report was compiled to adhere to the minimum standards defined in Chapter II of the SAHRA Minimum Standards for archaeological and palaeontological components of impact assessment reports.

[1] National Heritage Resources Act, 1999 (Act No. 25 of 1999): Regulations, promulgated under Government Notice R548 of 29 April 2000, Government Gazette No. 21239, as amended by Government Notice 694 of 30 May 2003 and Government Notice 668 of 8 July 2005.

Legislation, Regulation, and Guideline	Applicability
• Recommendations for mitigation or management of identified heritage resources.	

4. Assumptions, Limitations and Exclusions

Digby Wells encountered constraints and limitations during the compilation of this report, which are presented in Table 4-1 below. The consequences of these limitations are also presented, detailing their impact on report compilation.

Table 4-1: Assumptions, Limitations and their Consequences

Description of Limitations	Consequence
Results from previously completed heritage assessments as sourced from the South African Heritage Resources Information System.	It is assumed that these assessments are accurate and reliable. It is further assumed that the condition of the heritage resources has not deteriorated significantly since the previous assessments were completed.
Due to the nature of heritage resources and pedestrian surveys, the possibility exists that some features or artefacts may not have been identified or recorded.	This limitation can be mitigated through the implementation of a Chance Find Procedure and Fossil Find Procedure, together with monitoring of the proposed Project footprint by the Environmental Officer during construction-related activities.
This assessment is limited to the proposed Project footprint and consisted of non-intrusive surface surveys.	Heritage resources may occur within the broader surrounding area; however, resources located outside the proposed Project footprint are not anticipated to be directly affected by the proposed Project.
High vegetation density was encountered in portions of the proposed Project footprint.	Dense vegetation may reduce ground visibility and limit the visual identification of heritage resources during pedestrian surveys.

5. Methodology

The methodology applied in this HIA is consistent with the approach and principles outlined in the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA), including the requirements of Section 38 of the NHRA and applicable SAHRA guidelines. The assessment follows a structured Heritage Resources Management (HRM) process comprising a desktop review, field-based site assessment, impact assessment, and the formulation of appropriate management and mitigation measures. This approach ensures that heritage resources and potential heritage sensitivities are systematically identified, assessed and managed in accordance with applicable statutory and regulatory requirements.

5.1. Defining the Study Area

The study area comprises the proposed Project footprint as well as any adjacent areas that may be directly or indirectly affected by the Project. The affected properties are listed in Table 5-1, and the assessed development footprint is illustrated in Figure 5-1.

Table 5-1: Affected Properties

Affected properties	Portions 8, 15 and 17 of Farm No. 53 JT
Central co-ordinate of the development	25° 9'55.17"S; 30° 9'5.84"E

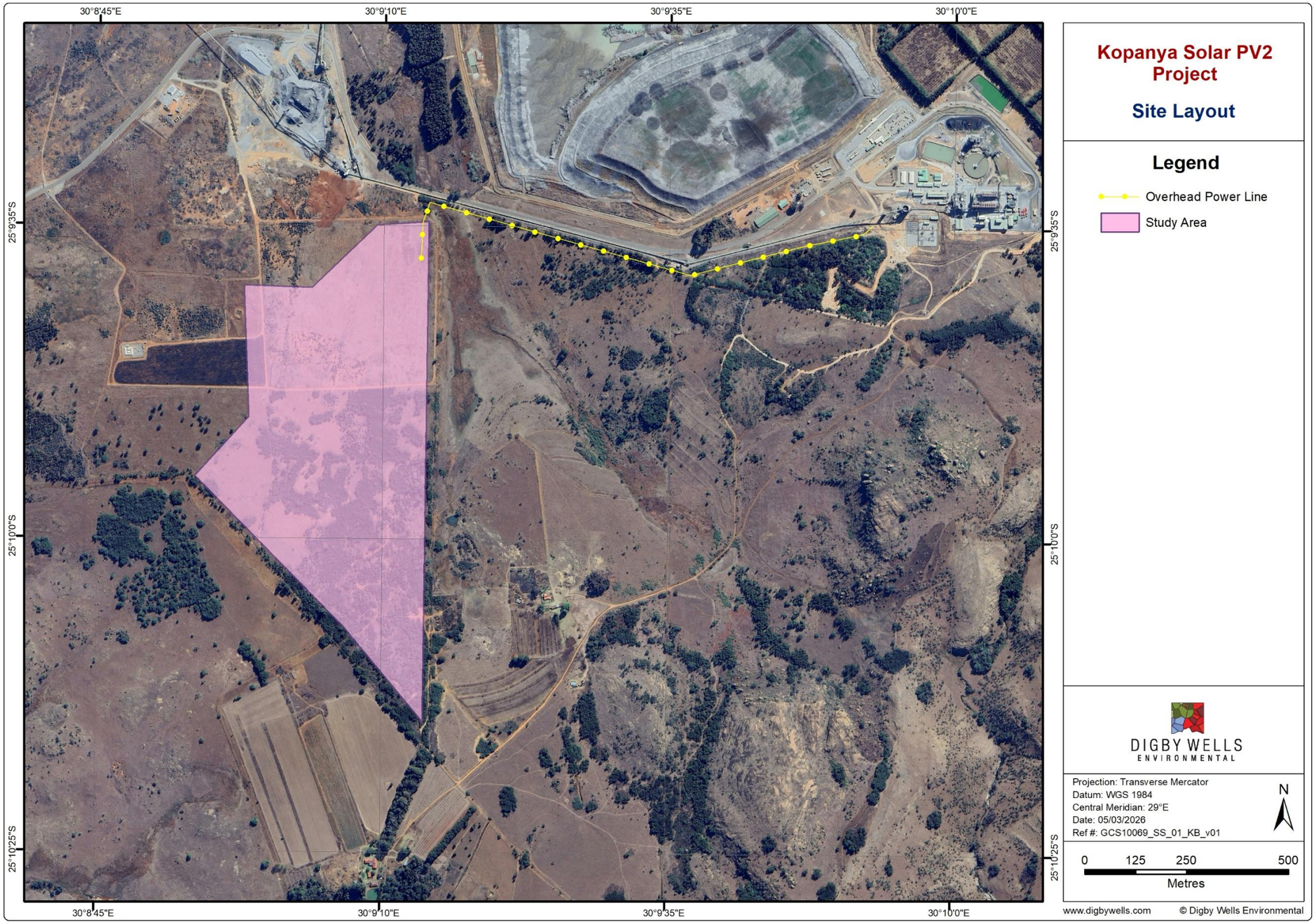


Figure 5-1: Proposed Kopanya Solar Photovoltaic 2 Project Development Footprint

5.2. Secondary Data Collection

Data collection through desktop literature review is essential in developing a baseline heritage profile of the study area. Qualitative data was collected to inform this HIA through secondary information sources. These include academic peer-reviewed articles, books on the archaeology and history of the Limpopo and Mpumalanga Provinces, and previous HIAs conducted in the area available on SAHRIS.

The objectives of the literature review were to:

- Gain an understanding of the cultural landscape within which the proposed Project is located; and
- Identify any potential fatal flaws, sensitive areas, current social complexities and known or potential tangible heritage features.

5.3. Primary Data Collection

Ms. Nhlaluko Mabehle, from Digby Wells, undertook a pre-disturbance survey of the development footprint on 6 February 2026. The survey was undertaken during the summer season, when vegetation was high, limiting visibility in undeveloped areas. A handheld GPS was used to record the track log of the surveyor (Figure 5-2). A digital camera and notebook were used to document the physical conditions of the proposed Project footprint to aid in the assessment and reporting process.

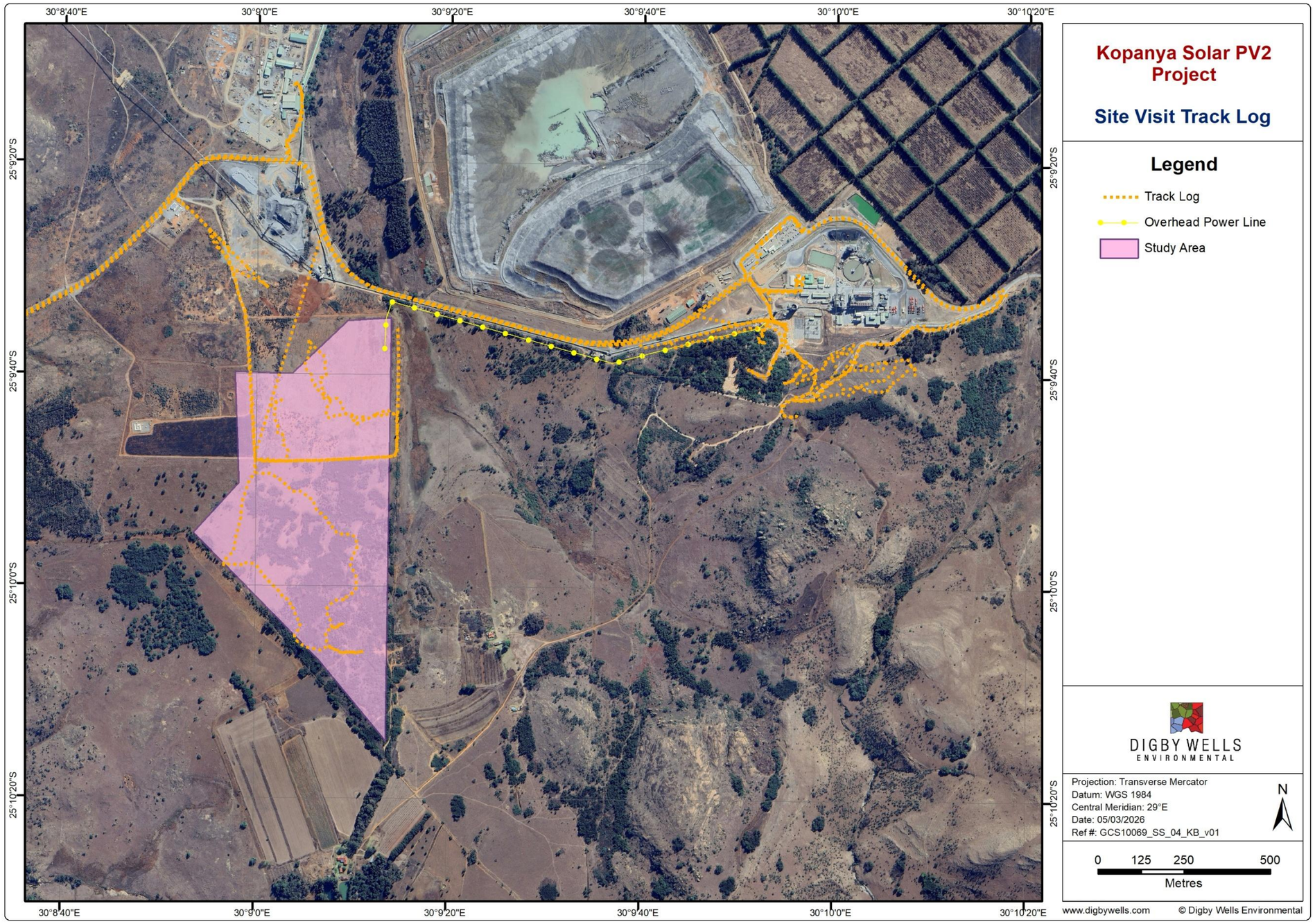


Figure 5-2: Track Record of the Surveyor

5.4. Impact Assessment Methodology

Potential impacts associated with the proposed Project were assessed and rated according to the methodology provided by GCS Environment South Africa (Pty) Ltd (GCS), which was developed to align with the requirements of Appendix 3 of the Environmental Impact Assessment Regulations, 2014, as amended. The assessment process follows a structured approach comprising four key activities:

- Identification and assessment of potential impacts likely to result from the proposed Project activities;
- Prediction of the nature, magnitude, extent, and duration of these impacts, with specific focus on those that may be significant;
- Identification of appropriate mitigation measures to reduce, avoid, or manage the severity or significance of the potential impacts; and
- Evaluation of residual impacts to determine the significance of the impact after implementation of mitigation measures.

The assessment of significance was guided by a set of criteria, including:

- Cumulative impacts in the broader environmental and social context;
- Nature of the impact, i.e., whether it is positive, negative, direct, or indirect;
- Extent of the impact, ranging from localised to regional or national scale;
- Probability of occurrence of the impact;
- Reversibility of the impact, i.e., whether it can be restored to pre-impact conditions;
- Irreplaceability of affected resources, considering whether resources lost can be substituted or recovered; and
- Potential for mitigation, i.e., the extent to which the impact can be avoided, minimised, or offset.

The evaluation of significance followed a consequence–probability approach:

Consequence = (Duration + Extent + Irreplaceability of resource) × Severity

The overall significance of an impact was then determined using the formula:

Significance = Consequence × Probability

A summary of the criteria used to assess the significance of impacts is provided in Table 5-2, with detailed explanations presented in Table 5-3.

Table 5-2: Criteria and Rating Scales to be used in the Assessment of Potential Impacts

Criteria	Rating Scales	Notes
Nature	Positive (+)	An evaluation of the effect of the impact related to the proposed development.
	Negative (-)	
Duration	Temporary (1)	The duration of the activity associated with the impact will last 0 - 6 months.
	Short-term (2)	The duration of the activity associated with the impact will last 6-18 months.
	Medium-term (3)	The duration of the activity associated with the impact will last 18 months - 5 years.
	Long-term (4)	The duration of the activity associated with the impact will last more than 5 years.
Extent	Footprint (1)	The impact only affects the area in which the proposed activity will occur.
	Site (2)	The impact will affect only the development area.
	Local (3)	The impact affects the development area and adjacent properties.
	Regional (4)	The effect of the impact extends beyond municipal boundaries.
	National (5)	The effect of the impact extends beyond more than 2 regional or provincial boundaries.
	International (6)	The effect of the impact extends beyond country borders.
Severity	Low (1)	Where the impact affects the environment in such a way that natural, cultural, and social functions and processes are minimally affected.
	Moderate (2)	Where the affected environment is altered but natural, cultural, and social functions and processes continue albeit, in a modified way, and valued, important, sensitive, or vulnerable systems or communities are negatively affected.
	High (3)	Where natural, cultural, or social functions and processes are altered to the extent that the natural process will temporarily or permanently cease, and valued, important, sensitive, or vulnerable systems or communities are substantially affected.
	No (0)	No irreplaceable resources will be impacted.

Potential for impact on irreplaceable resources	Yes (1)	Irreplaceable resources will be impacted.
Consequence	Extremely detrimental (-25 to -33)	A combination of extent, duration, intensity, and the potential for impact on irreplaceable resources.
	Highly detrimental (-19 to -24)	
	Moderately detrimental (-13 to -18)	
	Slightly detrimental (-7 to -12)	
	Negligible (-6 to 0)	
	Slightly beneficial (0 to 6)	
	Moderately beneficial (13 to 18)	
	Highly beneficial (19 to 24)	
	Extremely beneficial (25 to 33)	
Probability (the likelihood of the impact occurring)	Improbable (0)	It is highly unlikely or less than 50% likely that an impact will occur.
	Probable (1)	It is between 50 and 70% certain that the impact will occur.
	Definite (2)	It is more than 75% certain that the impact will occur or the impact will occur.
Significance	Very high – negative (-49 to -66)	A function of Consequence and Probability.
	High – negative (-37 to -48)	
	Moderate – negative (-25 to -36)	
	Low – negative (-13 to -24)	
	Neutral - Very low (0 to -12)	
	Low positive (0 to 12)	

	Moderate–positive (13 to 24)	
	High–positive (37 to 48)	
	Very high – positive (49 to 66)	

Table 5-3: Explanation of Assessment Criteria

Criteria	Explanation
Nature	This is an evaluation of the type of effect the construction, operation, and management of the proposed development would have on the affected environment. Will the impact of change on the environment be positive, negative, or neutral?
Extent or Scale	This refers to the spatial scale at which the impact will occur. The extent of the impact is described as footprint (affecting only the footprint of the development), site (limited to the site), and regional (limited to the immediate surroundings and closest towns to the site). The extent of scale refers to the actual physical footprint of the impact, not to the spatial significance. It is acknowledged that some impacts, even though they may be of a small extent, are of very high importance, e.g., impacts on species of very restricted range. To avoid “double counting,” specialists have been requested to indicate spatial significance under “intensity” or “impact on irreplaceable resources” but not under “extent” as well.
Duration	The lifespan of the impact is indicated as temporary, short, medium, and long term.
Severity	This is a relative evaluation within the context of all the activities and the other impacts within the framework of the Project. Does the activity destroy the impacted environment, alter its functioning, or render it slightly altered?
Impact on irreplaceable resources	This refers to the potential for an environmental resource to be replaced should it be impacted. A resource could be replaced by natural processes (e.g., by natural colonisation from surrounding areas), through artificial means (e.g., by reseeding disturbed areas or replanting rescued species) or by providing a substitute resource, in certain cases. In natural systems, providing substitute resources is usually not possible, but in social systems, substitutes are often possible (e.g., by constructing new social facilities for those who are lost). Should it not be possible to replace a resource, the resource is

	essentially irreplaceable, e.g., red data species that are restricted to a particular site or habitat to a very limited extent.
Consequence	The consequence of the potential impacts is a summation of the above criteria, namely the extent, duration, intensity, and impact on irreplaceable resources.
Probability of occurrence	The probability of the impact occurring is based on the professional experience of the specialist with environments of a similar nature to the site and/or with similar projects. It is important to distinguish between the probability of the impact occurring and the probability that the activity causing a potential impact will occur. Probability is defined as the probability of the impact occurring, not as the probability of the activities that may result in the impact.
Significance	Impact significance is defined to be a combination of the consequence (as described below) and the probability of the impact occurring. The relationship between consequence and probability highlights that the impact (or impact significance) must be evaluated in terms of the seriousness (consequence) of the impact, weighted by the probability of the impact occurring. In simple terms, if the consequence and probability of an impact are high, then the impact will have a high significance. The significance defines the level to which the impact will influence the proposed development and/or environment. It determines whether mitigation measures need to be identified and implemented and whether the impact is important for decision-making.
Degree of confidence in predictions	Specialists and the environmental team were required to indicate the degree of confidence (low, medium, or high) that there is in the predictions made for each impact based on the available information and their level of knowledge and expertise. The degree of confidence is not considered in the determination of consequence or probability.
Mitigation measures	Mitigation measures are designed to reduce the consequence or probability of an impact or to reduce both consequence and probability. The significance of impacts has been assessed both with mitigation and without mitigation.

5.4.1. Cumulative Assessment Methodology

“Cumulative impact, in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant

when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities."

The cumulative impact assessment was undertaken using a structured, qualitative methodology, supported by quantitative indicators where feasible. The assessment evaluated the contribution of the proposed Project in combination with existing developments and reasonably foreseeable future activities occurring within the surrounding landscape.

Cumulative impacts were clearly defined and, where practicable, quantified, including but not limited to:

- Progressive loss or disturbance of archaeological and palaeontological resources;
- Incremental alteration of cultural landscape and sense of place;
- Fragmentation or degradation of heritage contexts due to repeated development;
- Increased pressure on known or unknown heritage resources arising from expanding infrastructure and access;
- Cumulative visual intrusion affecting the setting and significance of heritage resources; and
- Repeated ground disturbance increasing the risk to subsurface heritage resources.

The identified cumulative impacts were assessed and rated using the same significance rating methodology applied to proposed Project-specific impacts.

5.4.2. Cumulative Spatial Context

A transparent and traceable cumulative assessment process was followed. The assessment considered the spatial distribution of existing developments and reasonably foreseeable future activities within the surrounding area that may contribute to cumulative heritage impacts:

- How surrounding developments and land uses were identified and spatially contextualised;
- How potential cumulative interaction pathways affecting heritage resources were evaluated;
- How existing levels of disturbance, baseline degradation, and development pressure were taken into account;
- How findings, mitigation measures, and outcomes from similar developments in the area informed the assessment; and
- How proposed mitigation measures for the proposed Project contribute to limiting or reducing cumulative heritage effects.

This process and its findings are clearly documented within the report and supported, where relevant, by mapping, desktop review, and site-based observations.

5.4.3. Use of Cumulative Impact Findings

A clear cumulative impact environmental statement was then provided, indicating whether the proposed Project should proceed in the context of existing and reasonably foreseeable developments within the surrounding area.

5.5. Cultural Significance Methodology

The presence and distribution of heritage resources define a 'heritage landscape'. In this landscape, every site is relevant. Since heritage resources are non-renewable, heritage surveys need to investigate an entire Project area, or a representative sample, depending on the nature of the project. In the case of the proposed Project, the local extent of its impact necessitates a representative sample and only the footprint of the area demarcated for development was surveyed. In the site investigations, the specialist surveyor is responsible only for the identification of resources visible on the surface. This Section describes the evaluation criteria utilised to determine the cultural significance field ratings of archaeological and heritage observations. The following criteria were used to establish site significance with cognisance of Section 3 of the NHRA:

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

In addition to these criteria, field ratings are assigned to heritage resources in accordance with the SAHRA Minimum Standards for Heritage Specialist Studies in terms of Section 38 of the NHRA. The field rating of a resource is determined by its cultural significance and integrity. Cultural significance is assessed against the criteria in Section 3 of the NHRA, while integrity is considered in terms of preservation, weathering, erosion and related factors.

Field Ratings for the resources are presented in Table 5-4.

Table 5-4: Field Ratings and Minimum Mitigations

Field Rating	Minimum Mitigation Measures
Field Rating I: National Resource	A protected buffer zone must be proposed or noted (if not already in place). These resources must be maintained in situ, and a Cultural Heritage Management Plan (CHMP) must be recommended for their in situ conservation.
Field Rating II	A protected buffer zone must be considered; these resources must be maintained *in situ* and a CHMP must be recommended for the *in situ* conservation of the resource.
Field Rating IIIA: Local Resource	The resource must be retained as part of the heritage register (high significance); therefore, mitigation through the development process is not advised. A protected buffer zone must be considered, the resource must be maintained in situ, and a CHMP must be recommended for its conservation. If preservation is not possible, mitigation may be considered subject to the applicable formal permitting processes.
Field Rating IIIB: Local Resource	This resource may be mitigated and partly retained as part of the heritage register (high/medium significance). Mitigation must be subject to a formal permit application lodged with the relevant heritage resources authority.
Field Rating IIIC: Local Resource	These are resources that have been assigned a Low-Medium/Low field rating which, once adequately described, may be granted authorisation for destruction outside of the formal permitting process at the discretion of the relevant heritage authority, with regard to Section 38(8) cases.

5.6. Public Consultation

GCS has informed stakeholders and Interested and Affected Parties (I&APs) of the proposed Project as part of the public participation process undertaken in terms of NEMA. All heritage-related concerns raised during the consultation process were considered as part of the environmental assessment process and were incorporated into or addressed in Section 11 of this report.

6. Description of the Physical Environment

The proposed Project footprint is situated 1 km to the south-west of the BS Mine offices. The development footprint is divided into two distinct halves separated by a dirt road and fencing. The southern half is characterised by dense clusters of invasive tree species such as black wattle (*Acacia sp.*), bluegum trees (*Eucalyptus sp.*) and pine trees (*Pinus sp.*), intersected by a number of disused gravel roads. Several farmsteads occur along the eastern boundary of the southern half, and evidence of anthropogenic disturbance is visible throughout the footprint. The northern half of the development footprint is characterised by dense grassland with evidence of historic ploughing and soil disturbance.

The physical environment is directly relevant to the heritage assessment. Vegetation density affects survey visibility and the likelihood of identifying heritage resources. While previously unidentified cultural heritage resources are unlikely to occur in the northern half of the development footprint, such resources may occur in the southern half, particularly given the association of bluegum trees with Historical Period settlements. An understanding of the environmental context is therefore essential in evaluating both the probability of heritage occurrence and the potential impact of the proposed development. The physical environment is illustrated in Figure 6-1.





Grassland with clusters of invasive trees in the northern half of the proposed Project development footprint



Dense clusters of invasive black wattle trees dominate the southern half of the proposed Project development footprint

Figure 6-1: Physical Environment of the Proposed Kopanya Solar Photovoltaic 2 Project

7. Contextualising the Study Area

This Section presents the literature review and secondary data collection undertaken for the study area. It contextualises the proposed Project within its broader palaeontological, archaeological and historical setting, and draws on previous heritage studies and available records to inform an understanding of the cultural landscape and heritage potential of the area.

7.1. Archaeological and Historical Background

The archaeological record of the broader study area reflects occupation during both the Stone Age and Iron Age, which are summarised below to provide context.

7.1.1. Stone Age

The Stone Age can be divided into three main phases:

- Later Stone Age (LSA): associated with Khoi and San societies and their immediate predecessors, approximately 30 thousand years ago to the recent past;
- Middle Stone Age (MSA): associated with Homo sapiens and archaic modern humans, approximately 300 thousand years ago; and
- Earlier Stone Age (ESA): associated with early Homo groups such as Homo habilis and Homo erectus, approximately 2 million to 400 thousand years ago.

These phases reflect technological and behavioural developments over an extended period, from the earliest hominin activity through to the emergence of more recent hunter-gatherer societies.

Within the greater study area, Stone Age material is typically represented by isolated MSA artefacts scattered across the landscape. These generally include radial cores, triangular points and flakes. Such occurrences are usually low in density and widely dispersed, and are therefore considered to reflect ephemeral occupation rather than formally structured sites (van der Walt, 2018). No concentrated or stratified MSA deposits have been identified within the proposed Project area.

The LSA is typically characterised by microlithic stone tool assemblages and is widely associated with rock art in the form of paintings and engravings. Regionally, Bushman Rock Shelter, located approximately 40 km east of the study area, contains a substantial LSA deposit dating to approximately 12,000 years ago. This sequence spans the transition into the Holocene and reflects changing climatic conditions during that period (Esterhuysen & Smith, 2007).

While this demonstrates early hominin activity within the broader region, there is currently no evidence to suggest comparable Stone Age material within the proposed development footprint.

7.1.2. Iron Age

The Iron Age as a whole represents the spread of Bantu-speaking people and includes both prehistoric and historical periods. It can be divided into three distinct periods:

- The Earlier Iron Age: Most of the first millennium AD;
- The Middle Iron Age: 10th to 13th centuries AD; and
- The Later Iron Age: 14th century to colonial period.

The Iron Age in the region is associated with the introduction of agro-pastoralism, settled village life and the working of iron for tools and implements, which enabled communities to establish more stable and productive settlements. In the broader study area, most decorated pottery recorded to date is attributed to the Eiland facies (c. AD 1550–1750), associated with Sotho-Tswana-speaking communities (Huffman, 2007). Settlements of this period are generally situated near cultivable soils and are not typically characterised by extensive stone walling.

From approximately the mid-seventeenth century onwards, Marateng pottery (c. AD 1650–1840) appears in the wider region and is associated with Later Iron Age stone-walled settlement traditions. This period corresponds with the rise of Sotho-Tswana polities, including the early Maroteng lineage of the Bapedi, who settled in Sekhukhuneland during the second half of the seventeenth century (Schoeman, 1997; Huffman, 2007, pp. 186-189). By the late eighteenth and early nineteenth centuries, the Maroteng had consolidated political authority in the region, particularly between the Olifants and Steelpoort Rivers.

Contemporaneously, Bokoni communities occupied large portions of the Mpumalanga Escarpment from approximately AD 1650. Their distinctive stone-walled homesteads, cattle enclosures and extensive terracing systems reflect a highly organised agro-pastoral economy adapted to the escarpment environment. Terracing served to manage surface water runoff and reduce soil erosion, enabling sustainable cultivation on sloped terrain (Delius, 2014). These settlements are widely distributed along major river systems and attest to a complex and densely settled landscape during the Late Iron Age.

The nineteenth century was characterised by political upheaval and shifting settlement patterns. The expansion of the Bapedi polity under Thulare (c. 1790–1820), followed by conflict associated with Mzilikazi's Khumalo-Ndebele incursions in the early 1820s, significantly reshaped regional power dynamics (Bergh, 1999). Despite these disruptions, Pedi authority was re-established under Sekwati from 1828 onwards.

7.1.3. Historical Period

Settlement of people of European ancestry in the wider region commenced in 1845 with the establishment of Ohrigstad, followed shortly thereafter by Lydenburg. Early Voortrekker interests centred on ivory trade, but access to land and labour for agricultural expansion soon became a primary driver of settlement. This expansion led to sustained tensions with local African polities, including the Pedi. In 1852, an attack on the Pedi capital failed to dismantle

Pedi authority, and a negotiated settlement with Sekwati followed, involving the exchange of cattle for land. Boer farmers subsequently established agricultural holdings in the region, including Mareesburg, settled by G.S. Maree in 1871. Renewed conflict culminated in a further attack by the Zuid-Afrikaansche Republiek in 1876, which again did not decisively suppress Pedi resistance (Huffman & van der Walt, 2012).

7.2. Burial Grounds and Graves

The Genealogical Society of South Africa (GSSA) maintains a national database of recorded cemeteries as part of its broader mandate to document and preserve family history information. This database was consulted as part of the secondary data review to identify any formally recorded cemeteries in proximity to the development footprint.

The cemeteries identified through the GSSA database are listed in Table 7-1. Distances between these cemeteries and the proposed Project footprint were measured in order to assess the potential for direct or indirect Project-related impacts. Based on this spatial analysis, none of the recorded cemeteries is located close to the Project footprint or associated buffer area, and no impacts on these resources are anticipated.

Table 7-1: Cemeteries Near the Development Footprint

Name of Cemetery	Location	Cemetery ID	Distance from Development Footprint	Impact
Uysedoorns	Tonteldoos	1483	7.8km	None
Schaapkraal	Lydenburg	1963	6.3km	None

7.3. Previous Heritage Assessments

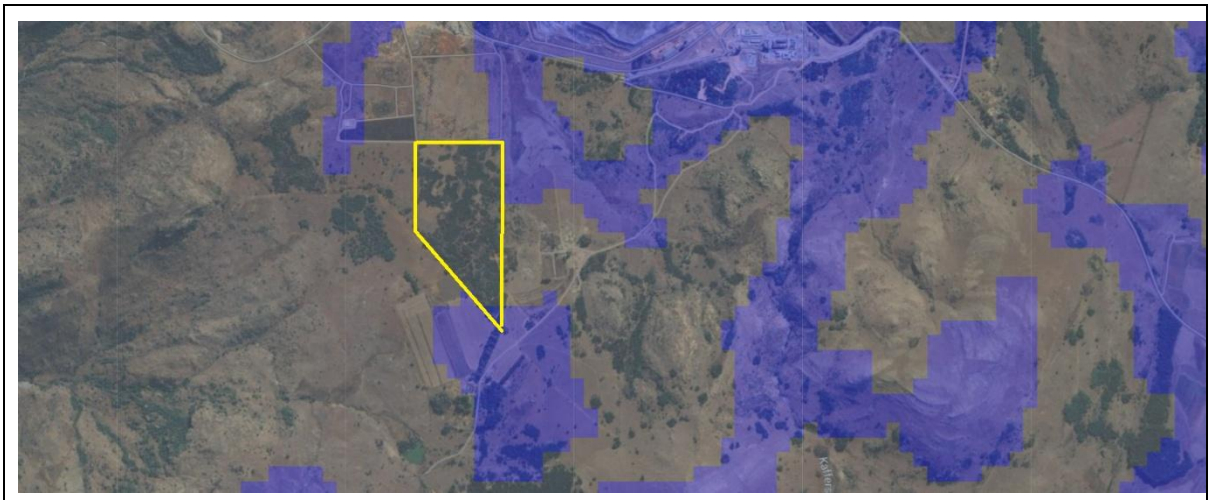
In anticipation of other mining activities in the greater study area, archaeologists have completed numerous heritage surveys including Huffman & Schoeman (2001; 2002a; 2002b), van Schalkwyk (2005), van der Walt & Fourie (2006), van der Walt & Celliers (2009), van der Walt (2009; 2018), Roodt (2003a; 2003b; 2003c), as well as Roodt (2008a; 2008b) and Pistorius (2017) for various Environmental Impact Assessment Reports and Environmental Management Programmes. These studies provide a good understanding of the archaeology of the area and use of the wider landscape. Since 2001, heritage surveys have recorded more than 240 sites in the greater study area, ranging from the MSA to the Iron Age and to recent households of farm labourers and tenants.

The assessment comprised a comprehensive desktop review, consultation of relevant heritage databases (including SAHRIS and previous specialist studies), and a systematic pedestrian survey of the defined development footprint and associated infrastructure corridors. No heritage resources as defined in Section 3 of the NHRA were identified during previous HIAs within the proposed Project footprint. The spatial relationship between the Project area

and previously recorded heritage resources in the wider landscape is illustrated in Figure 7-2. The findings are presented below in accordance with the heritage resource categories recognised under the NHRA.

7.3.1. Palaeontological Resources (Section 35)

The SAHRIS Palaeosensitivity Map (Figure 7-1) classifies the underlying geology of the Project area as having low to insignificant palaeontological sensitivity. No previous palaeontological studies have been conducted in the Project area.



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
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 comes to light, SAHRA will continue to populate the ma

Figure 7-1: Palaeontological Sensitivity of the Proposed Project Area (SAHRIS PSM)

7.3.2. Archaeological Resources

The various studies conducted within and around the BS and North mining areas (Huffman & Schoeman, 2002a; Pistorius, 2017; van der Walt, 2018; Van der Walt & Celliers, 2009) recorded a total of 68 heritage features. These studies provide a good understanding of the cultural layering of the area and use of the wider landscape. Stone-walled sites which date from the Later Iron Age have been noted in the region. These settlements are mostly characterised by stone walls, the presence of mostly undiagnostic potsherds and lower grinding stones. In some instances, stone walls are ephemeral and difficult to identify, and some ephemeral walls demarcate terraces.

7.3.3. Historical Period and Built Environment

Within the broader Booysendal mining area, ephemeral stone walling likely hailing from the Historical Period has previously been recorded (van der Walt, 2018). These features are generally inconspicuous, often constructed on or adjacent to rocky outcrops, and in some instances are obscured by grass and vegetation. They are not clearly associated with a specific occupational phase. In addition, several ruinous structures characterised by rectangular and linear wall remnants occur in the wider study area and likely relate to historical to recent occupation. No heritage sites attributable to this period were identified within the defined Project footprint during the site assessment. Stone and mud brick ruins, which date from the Historical Period into the recent past, have also been recorded in the region. These vernacular buildings are characterised by elongated or square ground plans and indicate a Historical Period or modern origin.

7.3.4. Burial Grounds and Graves (Section 36)

A number of cemeteries have been recorded in the broader area through previous heritage assessments undertaken by various specialists, including Huffman & Schoeman (2002a), van der Walt (2018) and van der Walt & Celliers (2009). These recorded burial grounds are not located in proximity to the defined Project footprint, and no direct or indirect impacts are anticipated. Table 7-2 summarises the cemeteries identified in earlier studies and provides their respective locations.

Table 7-2: Cemeteries Identified During Previous HIAs

Author	Cemetery ID	Predicted impact	Coordinates
Huffman & Schoeman 2001, 2002a & b, Pistorius 2007 & 2017, van der Walt & Celliers 2016, van der Walt 2018	BD001	None	30° 06' 43.1208" E 25° 04' 38.8848" S
	BD002	None	30° 06' 43.1676" E 25° 04' 39.8317" S
	BD004	None	30° 06' 18.9647" E 25° 05' 30.3936" S
Case ID 685 Author: Dr Julius CC Pistorius Year: 2011	BGG01 The graveyard holds three graves, one of which is fitted with a cement slab and headstone but with no inscriptions. The other two graves are demarcated with stones.	None	25° 09.517' S 30° 07.124' E

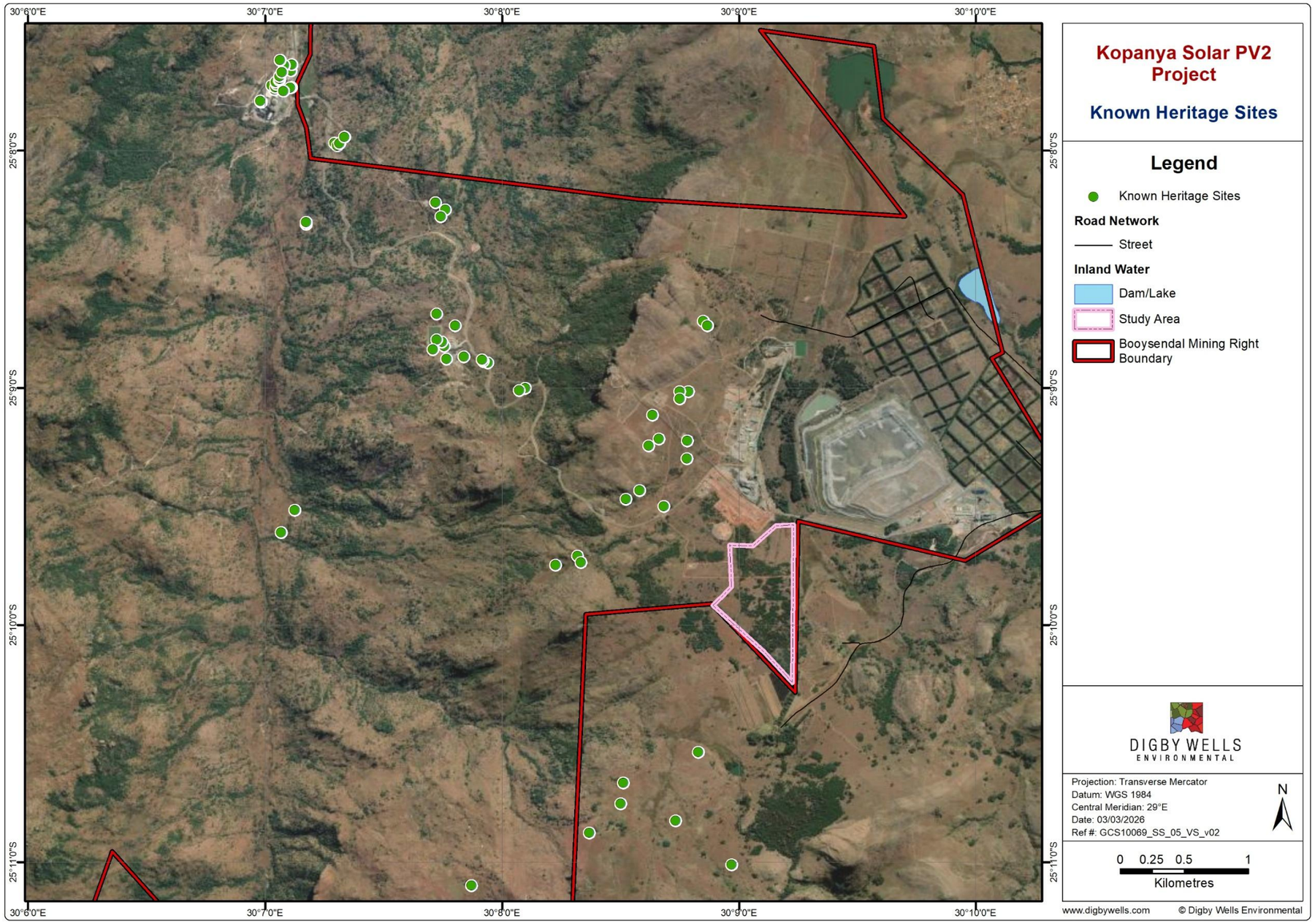


Figure 7-2: Known Heritage Resources in the Wider Area

7.4. Cultural Landscape

The Dwarsrivier Valley represents a complex and multi-layered cultural landscape reflecting successive phases of human occupation and land use from the Stone Age and Iron Age through to the contemporary industrial mining era. Numerous Cultural Resource Management assessments undertaken in the valley have enabled the reconstruction of settlement patterns, land use strategies and socio-political organisation across time, illustrating the long-term interaction between communities and this mountainous environment.

The broader area has historically been utilised for agricultural cultivation (see Figure 7-4 and Figure 7-3), as evidenced by historic aerial imagery, which reflects patterns of ploughing and land transformation prior to large-scale mining expansion. These activities would have altered surface contexts and, in places, potentially affected the integrity and visibility of earlier heritage resources. In more recent decades, the landscape has undergone substantial modification as a result of mining-related development, including bulk earthworks, processing infrastructure, power supply networks and formalised access routes.

The present-day cultural landscape of the proposed Project area is therefore characterised by a historic heritage layer that is largely mantled by extensive mining infrastructure and associated electrical and access networks. The proposed Project will be situated within this established industrial setting and does not represent a new landscape typology but rather an incremental addition to an already transformed mining environment. From a heritage perspective, the integrity of the broader cultural landscape is defined predominantly by its industrial character in the immediate vicinity of the proposed Project footprint.



Figure 7-3: Historical Imagery of the Project Area (1938)

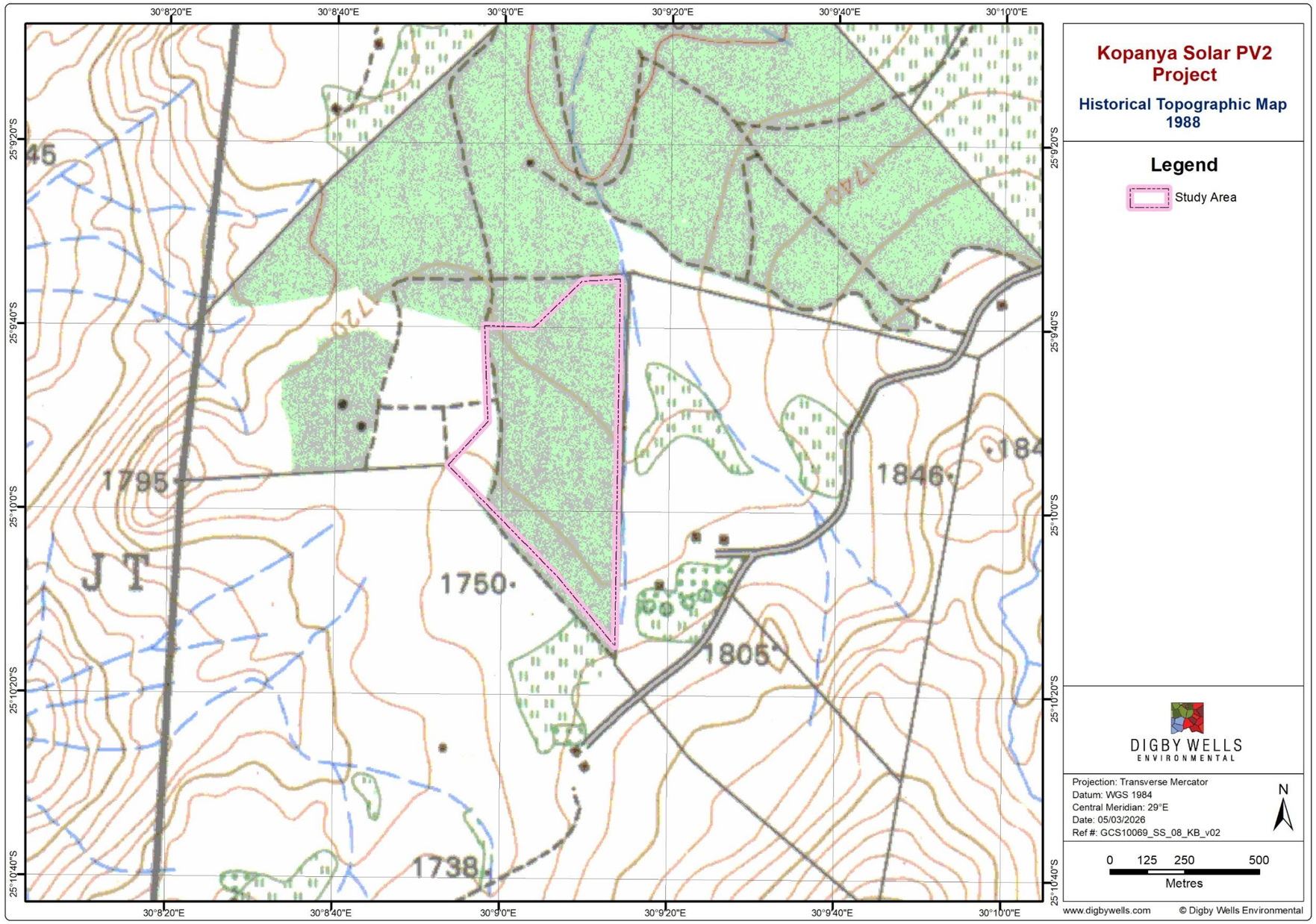


Figure 7-4: Historical Topographic Map Showing Limited Development Around the Project Footprint

8. Results of the Site Visit

The results of the field assessment are presented below in accordance with the heritage resources categories recognised under the NHRA. The systematic pedestrian survey did not identify any heritage resources, as defined in Section 3 of the NHRA, within the proposed Project footprint. On this basis, no direct or indirect impacts on heritage resources are anticipated. The spatial relationship between the proposed Project footprint and previously recorded heritage resources in the wider landscape is illustrated in Figure 7-2.

8.1. Palaeontological Resources

The SAHRIS Paleosensitivity Map (PSM) classifies the underlying geology of the proposed Project footprint as having low to insignificant palaeontological sensitivity. No fossil material or palaeontological indicators were observed during the field assessment. In accordance with best-practice and statutory requirements, a Fossil Find Procedure (FFP) was prepared by Professor Marion Bamford for the proposed Project and is included in Appendix C. The FFP should be implemented during the construction, operational and decommissioning phases to manage any unexpected fossil discoveries.

8.2. Archaeological Resources

No archaeological resources were identified within the proposed Project footprint.

8.3. Historical Period and Built Environment

No buildings, structures or built environment features older than 60 years were identified within the proposed Project footprint. The desktop review confirmed that known historical structures in the wider area are situated outside the development impact area and will not be affected by the proposed Project.

8.4. Burial Grounds and Graves

No formal cemeteries, informal graves or burial features were identified within the proposed Project footprint during the field assessment. Review of the GSSA database and previous heritage assessments confirmed that recorded cemeteries in the broader area are located outside the defined impact zone. No impacts on burial grounds or graves are anticipated as a result of the proposed Project.

9. Impact Assessment

This Section rates the significance of the potential impacts pre- and post-mitigation. The methodology outlined in Section 5.4 was applied in rating the implications of the different phases of the proposed Project on heritage resources. The impacts assessed below result from the interaction between the receiving environment and the proposed Project activities.

9.1. Construction Phase

Table 9-1 below presents the activities that are proposed for the construction phase and their anticipated impacts.

Table 9-1: Interactions and Impacts of Construction Activities

Interaction	Impact
• A construction yard and laydown areas of approximately 1 ha; • Site offices, storage areas, and temporary ablution facilities; • Internal access roads and construction traffic routes; and • Temporary services required to support construction activities.	• Exposure of unknown/unidentified subsurface heritage resources.

9.1.1. Impact Description

As no archaeological or heritage resources were identified in the proposed Project footprint, there will be no impact on surface heritage resources during the construction phase of the proposed Project. However, the above-mentioned Project activities may result in the accidental exposure of, or impacts to, subsurface heritage resources and potential palaeontological material, particularly if construction activities extend beyond the surveyed proposed Project footprint.

9.1.1.1. Management Objectives

The objective of the management measures is to ensure that impacts associated with construction of the proposed Project result in minimal or no adverse effects on subsurface heritage resources and potential palaeontological material.

9.1.1.2. Management Actions

Subsurface heritage resources may occur, and potential impacts should be managed through implementation of the Chance Find Procedure (CFP) in Appendix A. Additionally, contractors and site personnel should receive induction training regarding heritage awareness and implementation of the CFP in Appendix A.

9.1.1.3. Impact Ratings

Table 9-2 below presents the impact ratings for the Construction Phase of the Project.

Table 9-2: Construction Phase Impacts on Unknown Heritage Resources

Component Being Impacted On	Activity Which May Cause the Impact	Activity	Pre- Mitigation							Recommended Mitigation Measures	Post-Mitigation							Confidence
			Duration	Extent	Potential for impact on irreplaceable resources	Severity	Consequence	Probability	Significance		Duration	Extent	Severity	Potential for impact on irreplaceable resources	Consequence	Probability	Significance	
Unidentified Heritage Resources	Construction of a yard, laydown area, site offices, storage areas, temporary ablution facilities, internal access roads, traffic roads and other temporary services required to support construction activities.		4	3	1	3	24	-2	-48	Implement the Chance Find Procedure (CFP) and Fossil Find Procedure (FFP).	3	2	1	1	6	1	6	Low likelihood of encountering heritage resources

9.2. Operational Phase

Table 9-3 presents the interactions and impacts of operational-phase activities.

Table 9-3: Interactions and Impacts of Operational Phase Activities

Interaction	Impact
• Permanent operational infrastructure associated with the proposed Project will include: • Buildings for operations, maintenance, control, and storage purposes; • An operations and maintenance warehouse; • Parking areas for operational staff and service vehicles; and • Security facilities, including access control points.	No impacts are anticipated; however, excavations associated with maintenance and care may result in exposure of subsurface heritage materials.

9.2.1. Impact Description

No impacts on known surface archaeological, heritage or palaeontological resources are anticipated during the operational phase. However, maintenance-related excavations may expose previously unidentified subsurface heritage or palaeontological resources.

9.2.1.1. Management Objectives

The objective of the management measures is to ensure that impacts associated with maintenance of the proposed Project result in minimal or no adverse effects on subsurface heritage resources and potential palaeontological material.

9.2.1.2. Management Actions

No surface indicators of heritage or palaeontological resources were identified. However, subsurface heritage or palaeontological resources may still occur, and potential impacts should be managed through implementation of the CFP in Appendix A and the FFP in Appendix C.

9.2.1.3. Impact Ratings

Table 9-4 below presents the impact ratings for the Operational Phase of the Project.

Table 9-4: Operational Phase Impacts on Unknown Heritage Resources

Component Being Impacted On	Activity Which May Cause the Impact	Activity	Pre- Mitigation							Recommended Mitigation Measures	Post-Mitigation							Confidence
			Duration	Extent	Potential for impact on irreplaceable resources	Severity	Consequence	Probability	Significance		Duration	Extent	Severity	Potential for impact on irreplaceable resources	Consequence	Probability	Significance	
Unidentified Heritage Resources			4	3	1	3	24	-2	-48	Implement the Chance Find Procedure (CFP) and Fossil Find Procedure (FFP).	3	2	1	1	6	1	6	Low likelihood of encountering heritage resources

9.3. Decommissioning Phase

Table 9-5 presents the interactions and impacts of decommissioning activities.

Table 9-5: Interactions and Impacts of Decommissioning Activities

Interaction	Impact
Facility may be decommissioned, repowered, or refurbished	No impacts are anticipated, however, exposure of subsurface heritage resources and/or archaeological resources by excavations associated with infrastructure decommissioning is possible

As no heritage or palaeontological resources were identified in the proposed Project footprint there will be no impact on surface heritage resources during the decommissioning phase of the proposed Project.

9.3.1. Impact Description

There will be no impact on surface archaeological and heritage resources or palaeontological resources during the decommissioning phase of the proposed Project as the operations remain above surface. Exposure of subsurface heritage resources and/or archaeological resources by excavations associated with infrastructure decommissioning is possible.

9.3.1.1. Management Objectives

The objective of the management measures is to ensure that impacts associated with decommissioning of infrastructure result in minimal or no adverse effects on subsurface heritage resources and potential palaeontological material.

9.3.1.2. Management Actions

As subsurface heritage and palaeontological resources may occur, potential impacts should be managed through implementation of the CFP in Appendix A and the FFP in Appendix C.

9.3.1.3. Impact Ratings

The table below presents the impact ratings for the decommissioning phase of the proposed Project.

Table 9-6: Decommissioning Phase Impacts on Heritage Resources

Component Being Impacted On	Activity Which May Cause the Impact	Activity	Pre- Mitigation							Recommended Mitigation Measures	Post-Mitigation							Confidence
			Duration	Extent	Potential for impact on irreplaceable resources	Severity	Consequence	Probability	Significance		Duration	Extent	Severity	Potential for impact on irreplaceable resources	Consequence	Probability	Significance	
Unidentified Heritage Resources	tbu		4	3	1	3	24	-2	-48	Implement a Chance Find Procedure (CFP) and a Fossil Find Procedure (FFP).	3	2	1	1	6	1	6	Low likelihood of encountering heritage resources

9.4. Cumulative Impacts

Cumulative impacts result from the combined effects of multiple impacts on heritage resources, which may lead to incremental effects over time. The importance of identifying and assessing cumulative impacts is that the whole is often greater than the sum of its parts. This implies that the total effect of multiple stressors or change processes acting simultaneously on a system may be greater than the sum of their effects when acting in isolation. Construction of the proposed Project is not anticipated to have a significant cumulative effect on the cultural heritage resources of the area. Given the limited construction footprint, no significant cumulative impact on the region's cultural heritage resources is anticipated. The introduction of the Project is not anticipated to materially affect the cultural landscape of the wider area.

Industrial and renewable energy developments in the area are increasingly transforming the landscape and can have adverse impacts on previously unidentified, non-renewable heritage resources. These can be minimised through implementation of the recommended mitigation measures. Table 9-7 presents the impact ratings of the cumulative impacts.

Table 9-7: Cumulative Impact Rating

Component Being Impacted On	Activity Which May Cause the Impact	Activity	Pre- Mitigation							Recommended Mitigation Measures	Post-Mitigation						
			Duration	Extent	Potential for impact on irreplaceable resources	Severity	Consequence	Probability	Significance		Duration	Extent	Severity	Potential for impact on irreplaceable resources	Consequence	Probability	Significance
Cultural landscape and unknown heritage resources	Construction of the proposed Kopanya Solar PV 2 Project		1	1	1	2	6	-1	-6	Implement a Chance Find Procedure (CFP) and a Fossil Find Procedure (FFP).	3	1	0	1	0	0	0

9.5. Unplanned and Low-Risk Events

Given the presence of graves in the wider region, previously unidentified graves may be encountered during Project activities. Unplanned risks and associated mitigation measures are presented in Table 9-8.

Table 9-8: Unplanned Events and Associated Mitigation Measures

Unplanned Risk	Mitigation Measures
Destruction of subsurface or unknown cultural heritage resources, including palaeontological resources and graves.	Implement a Chance Find Procedure (CFP) and a Fossil Find Procedure (FFP).

10. Environmental Management Plan

Table 10-1 presents the proposed environmental management plan that will control the disturbance of any unidentified or subsurface sites.

Table 10-1: Environmental Management Plan

Activity/ies	Potential Impacts	Aspects Affected	Phase	Mitigation Measure	Mitigation Type	Time period for implementation
• A construction yard and laydown areas of approximately 1 ha; • Site offices, storage areas, and temporary ablution facilities; • Internal access roads and construction traffic routes; and • Temporary services required to support construction activities.	• Destruction of unidentified/subsurface cultural heritage resources, including palaeontological resources and graves.	• Cultural Heritage	• Construction	• Implement the Chance Find Procedure (CFP) in Appendix A and the Fossil Find Procedure (FFP) in Appendix C.	• ***Control through implementation of the CFP and FFP.***	• Construction Phase
• Permanent operational infrastructure associated with the proposed Project will include: • Buildings for operations, maintenance, control, and storage purposes; • An operations and maintenance warehouse; • Parking areas for operational staff and service vehicles; and • Security facilities, including access control points.			• Operational			• Operational Phase
			• Decommissioning			• Decommissioning Phase

11. Public Participation Inputs Received

During stakeholder consultation efforts conducted by GCS for the proposed Project, a number of concerns were raised by the local community. These concerns were acknowledged by the client and addressed accordingly, and were considered in the recommendations contained within this report. The following inputs relating to heritage were received:

- The community emphasised that their heritage sites are of great importance, as they include critical elements such as the graves of the first chief and his wife, along with other significant artefacts. They noted that these graves and the surrounding area are currently not demarcated. They also highlighted that, during a stakeholder workshop in Lesotho, they learned methods for protecting heritage sites, and they stressed that they do not want these sites to be disturbed or destroyed.
- It was requested that a session be organised between the Mine and royal family, during which they can point out their important heritage sites and collaboratively discuss ways to preserve and protect these areas.
- It was requested that the reports be made available at central, accessible locations for the community, such as the Royal Kraal, so that the royal family and other community members can easily access them.
    - It was also requested that the two nearby clinics, Ngwaabe Clinic and Maseven Clinic, be included in the list of locations where the reports will be made available.
    - It was also requested that the reports be placed at Phasha, Mampuru and Mampodile/Bapodile.
- It was emphasised that while they support and welcome this Project, they hope that this meeting does not become an empty promise. Concerns remain regarding unemployment, access to information, and the protection and respect of heritage sites. It is very important to the community that these culturally and historically significant areas are preserved.
- I am concerned that Booysendal Mine is proceeding with eviction from my home without engaging me on the matter. The community feels that the Mine is disregarding our inheritance and preventing us from practising our cultural traditions. We also feel that the Mine does not recognise us as legitimate interested and affected parties. Furthermore, the Mine's activities are impacting heritage sites. Despite engaging with the Mine, we have been unable to reach a resolution.
- We request the following:
    - Skills Transfer
    - Social Labour Plans
    - Employment Statistics for Local communities

- Consideration of Heritage Sites

- Request that the reports reflect the work that has been done for previous heritage studies.
- How will the heritage resources and sensitive areas be protected during the implementation of these Projects?
- What measures will be in place to protect graves, and what conditions will be applied to ensure that graves are not disturbed during site assessments or mining activities?
- In some of these properties, graves are present, even in vegetation dense areas. What criteria are used to verify that the graves belong to the correct individuals?
- It was requested that elders be actively involved in identifying graves and areas of cultural significance, and that photographs be taken to document these sites as evidence. To prevent copy and paste from previous reports.

12. Reasoned Opinion on Whether the Project Should Proceed

As presented throughout this report, no heritage resources are expected to be impacted by the proposed Project activities. While the likelihood of encountering previously unidentified heritage resources, including palaeontological resources and graves, is considered low, appropriate precautionary measures have been incorporated into the Project.

A CFP is provided in Appendix A to guide the management of any heritage resources that may be encountered unexpectedly during Project activities. Similarly, a FFP is included in Appendix C to ensure that any palaeontological material discovered is appropriately managed.

On this basis, Digby Wells supports the proposed Project from a heritage perspective, subject to implementation of the recommendations provided in Section 13 and completion of any permitting processes that may be required by the relevant heritage authorities.

13. Conclusion and Recommendations

This HIA, undertaken in terms of Section 38 of the NHRA, has determined that no known heritage resources, as defined in Section 3 of the NHRA, occur within the defined footprint of the proposed Kopanya Solar PV 2 Project.

The broader Dwarsrivier Valley constitutes a culturally sensitive landscape with recorded archaeological and historical resources; however, no such resources were identified within the proposed Project study area during the desktop review or field assessment.

The SAHRIS PSM indicates that the underlying geology is of low to insignificant palaeontological sensitivity. To align with SAHRA Minimum Standards, an FFP has been included in Appendix C, which covers palaeontological chance finds.

The proposed development is located in the vicinity of an established and actively mined environment and will not materially alter the integrity or character of the broader cultural

landscape. It is recommended that the Project may proceed from a heritage perspective, subject to approval from SAHRA and implementation of the following recommendations:

- Implementation of the CFP as outlined in Appendix A and FFP in Appendix C;
- Social consultation should be done in consultation with a heritage specialist to identify the locations of the former chief and his wife's graves and other significant artefacts and graves, and on how the community wishes for these resources to be managed. Should these resources fall within the Project area, community members should be permitted to access these sites, subject to overriding health and safety protocols;
- The information included in this report should be made readily available to communities impacted by the Project at the requested places; and
- Induction of contractors and site personnel regarding heritage awareness, implementation of the CFP and reporting obligations in terms of the NHRA.

14. Bibliography

Bergh. (1999). *Geskiedenis Atlas van Suid Afrikam Die Vier Noordelike Provinsies.* Pretoria: van Shaik.

Delius, P. (2014). *Forgotten World: The stonewalled settlement of Mpumalanga Escarpment.* Johannesburg: Wits University Press.

Esterhuysen, A., & Smith, J. (2007). The Archaeology of Mpumalanga. In P. Delius, *Mpumalanga History and Heritage: Recapturing the Past, Defining the Future* (pp. 7-22). KwaZulu-Natal: University of KwaZulu-Natal Press.

Huffman, T. (2007). *Handbook to the Iron Age: The Archaeology of Pre-Colonial Farming Societies in Southern Africa.* Pietermaritzburg: University of KwaZulu-Natal Press.

Huffman, T. N., & van der Walt, J. (2012). *Der Brochen Project and Mototolo Complex.*

Huffman, T., & Schoeman, M. (2001). *Archaeological Assessment of the Proposed Everest South Bulk Sampling Area.*

Huffman, T., & Schoeman, M. (2002a). *Archaeological Reconnaissance of the Everest South Bulk Sample Area and the Former Headquarters of the Phetla Chief.*

Huffman, T., & Schoeman, M. (2002b). *Archaeological Assessment of the Der Brochen Project, Mpumalanga.* Johannesburg: Archaeological Resources Management.

Pistorius, J. (2017). *HIA Study For Booysendal South Expansion Environmental Authorisations.* Phase I Archaeological And Heritage Impact Assessment.

Roodt, F. (2003a). *Der Brochen Tailings Dam Farms Helena and St George Mpumalanga Province.* Pietersburg: R & R Cultural Resource Consultants.

Roodt, F. (2003b). *Der Brochen Project Helena Complex: Trial Mining Phase Mpumalanga Province.* Pietersburg: R & R Cultural Resource Consultants.

Roodt, F. (2003c). *Der Brochen Project Richmond Complex: Trial Mining Phase Mpumalanga Province.* Pietersburg: R & R Cultural Resource Consultants.

Roodt, F. (2008a). *Der Brochen Mine Richmond 370KT Limpopo.* Pietersburg: V.H.H.C. Heritage Consultants.

Roodt, F. (2008b). *Der Brochen Mine Complex Mototolo Road Options Mpumalanga.* Pietersburg: V.H.H.C. Heritage Consultants.

Schoeman, M. (1997). *The Nduzundza archaeology of the Steelpoort River valley.* Johannesburg: University of the Witwatersrand.

South African Heritage Resources Agency. (2007). *Minimum Standards for the Archaeological and Palaeontological Components of Impact Assessment Reports.*

van der Walt, J. (2009). *Archaeological Impact assessment for the Water Pipe Line and Access Route for the .*

van der Walt, J. (2018). *Heritage Impact Assessment Booysendal South Expansion Environmental Authorisations and EMP Amendment.*

Van der Walt, J., & Celliers, J. (2009). *Archaeological impact Assessment for the Booysendal Platinum Mine on the Farms Booysendal 43JT and Der Brochen 7JT, Steelpoort, Mpumalanga Province.* Johannesburg: Wits Enterprise.

van der Walt, J., & Fourie, W. (2006). *Archaeological Impact Assessment for Mining Development on the Farm Mareesburg 8JT, District Steelpoort.* Krugersdorp: Matakoma Heritage Consultants.

van Schalkwyk, J. (2005). *Heritage Impact Scoping Report for the Proposed Richmond Dam, Lydenburg District, Mpumalanga.* Pretoria: National Culture History Museum.

Appendix A: Chance Find Procedure

Procedure

Archaeological and Heritage Resource Management

REFERENCE NUMBER: BSD-SHEQ-ENV-PRO-004

FIRST IMPLEMENTATION DATE : 2015-12-20

VERSION NO : 03

VERSION DATE : 2026-02-11

NEXT REVISION DATE : 2031-02-10

EFFECTIVE DATE : Within 14 calendar days of authorisation signature

	POSITION	NAME	SIGNATURE	DATE
OWNER	Enviromental Coordinator	T Rikhotso		12-Feb-2026
REVIEWED BY	On behalf of Standards Committee	H Wood		13-Feb-2026
CONSULTATION	On behalf of HSE Committee	L Baloyi		25-Feb-2026
CONSULTATION	On behalf of HSE Committee	L Mokoena		12-Feb-2026
CONSULTATION	On behalf of HSE Committee	N Mulaudzi		13-Feb-2026
CONSULTATION	On behalf of Union HSE Representative	N Masha		17-Feb-2026
APPROVED BY	3.1(a) Appointees	B Ngubeni		17-Feb-2026
APPROVED BY	3.1(a) Appointees	S Chiloane		20-Feb-2026
APPROVED BY	3.1(a) Appointees	K Motsumi		12-Feb-2026
APPROVED BY	3.1(a) Appointees	D Smit		16-Feb-2026
AUTHORISED BY	4.1 Appointees	O van Heerden		
AUTHORISED BY	4.1 Appointees	Z Tsotetsi		
Acknowledged by	Safety Coordinator	P Mashabela		12-Feb-2026
Acknowledged by	Safety Coordinator	K Kasselman		21-Feb-2026
Acknowledged by	Safety Coordinator	L Reeder		18-Feb-2026
Acknowledged by	L&D Manager	K Setlhare		16-Feb-2026
Acknowledged by	Risk Coordinator	R Bell		13-Feb-2026

REF NO:	**BSD-SHEQ-ENV-PRO-004**	VERSION DATE:	2026-02-11
VERSION NO:	03	NEXT REVISION DATE:	2031-02-10

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1. Aim

1.1. The purpose of this procedure is to define the management measures applicable to the heritage resources,

1.2. To give instruction and assign responsibility to ensure that the correct procedure is followed when archaeological or heritage sites are identified or disturbed, and

1.3. To ensure compliance with national heritage, environmental legislation, environmental contractual requirements, and other environmental obligations.

2. Scope

2.1. This procedure is applicable to everyone working for or on behalf of Booysendal Platinum Mine and covers the minimum requirements across the construction, operation, and closure of the platinum mine.

3. Definitions

Term	Definition
Procedure	How it must be done
Archaeological find	Remains of past cultures i.e. the presence of artefacts or features like houses, kraal or fences
Incident	Incident is an unexpected event that causes or has the potential to cause harm to human, loss of revenue, property damage and/or any aspect of the environment (Air, Water, Land, plant, animal life, cultural and natural resources). Incidents may vary in severity and can arise during normal, abnormal, and emergencies.

4. Abbreviations

Abbreviation	Explanation
PRC	Procedure
BSD	Booysendal
ENV	Environmental
HODs	Head of Departments
NHRA	National Heritage Resource Act, 1999 (Act 25 of 1999)
PPE	Personal Protective Equipment
SAHRA	South African Heritage Resource Agency

Abbreviation	Explanation
SHEQ	Safety, Health, Environmental, and Quality
m	meter

5. Roles and Responsibility

5.1. Employer

Booysendal Platinum mine has an obligation to ensure that all risks are identified and measure put in place to eliminate and/or reduce the risk exposures. Where risk exposure cannot be eliminated, adequate control measures are put in place.

5.2. Management

Management shall ensure that everyone within their area of responsibility is made aware and conversant with the requirements of this procedure.

5.3. Employee

The employee or anyone else at a workplace has the obligation to adhere to this procedure to eliminate potential risk exposures within Booysendal Mine boundaries.

6. Procedure

6.1. The Booysendal mining area is rich in archaeological and heritage resources. Due to the sensitivity of the area, the following applies to everyone working for or on behalf of the mine:

6.1.1. All surface work to remain within the approved footprint.

6.1.2. No employee, contractor or service provider will be allowed access to archaeological, and heritage sites/finds that have been identified and that are already fenced off.

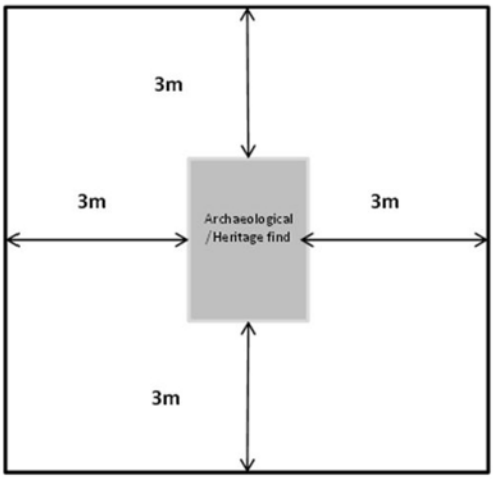
6.1.3. Families of the graves on the mine site will have access to these graves as per the agreement reached between the families and Booysendal Mine.

6.2. In the event of the discovery of an unmarked grave or Archaeological /Heritage Resources

6.2.1. If during the pre-construction phase, construction, operations or closure phases of this project, any person working for or on behalf of the mine, finds any gravesite, artefact of cultural significance or rock engraving, this person must

cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.

6.2.2. The area will be fenced off with danger tape, and no work will be allowed within 3m of the site, as per the figure below:



6.2.3. The supervisor to remain at the site to ensure that no further damage is done to the site.

6.2.4. The supervisor will inform the Environmental Department and SHEQ Manager

6.2.5. The Environmental Officer will:

6.2.5.1. Ensure that the area is secured.

6.2.5.2. Ensure that the site is photographed.

6.2.5.3. Contact the professional archaeologist for an assessment of the finds who will then notify SAHRA.

6.3. **All archaeological resources are protected by law. No work will be allowed in the area until:**

6.3.1. The archaeological excavations have been done (if instructed by SAHRA).

6.3.2. A destruction permit has been granted by SAHRA should it be required.

6.4. Management measures applicable to all heritage resources found on Booysendal Mine

6.4.1. All heritage resources must be registered in a heritage register. A uniform standard must be used to register (number) all the types and ranges of heritage resources.

6.4.2. Regular intervals not exceeding every 3 months inspection of heritage resources and ensuring its protection.

6.4.3. Inspections and findings thereof should be recorded in an inspection register. The register should outline the state of the heritage resources during each inspection. Reports on damages to any of the heritage resources should be followed with the necessary mitigation measures.

6.4.4. Obtaining permits from SAHRA for the mitigating work. The nature of the mitigation work should be recorded in the inspection register.

6.4.5. Maintain at least a 3m corridor from the outer edge of graves and heritage resources and any new development footprint.

6.5. Management measures applicable to all graveyards and graves

6.5.1. Graveyards and graves must be demarcated with fences and/or with pallisades and should be fitted with access gates.

6.5.2. Regulated visiting hours should be implemented that is compatible with the existing or future mine safety rules.

6.5.3. Corridors of at least 3m should be erected and maintained between graveyard and grave's fences and any new developmental components, such as roads or other infrastructure that may be developed in the future.

6.5.4. Graveyards and graves should be inspected on a regular basis using periodic intervals not exceeding every 3 months. Inspections and findings thereof should be recorded and noted in an inspection register. The register should outline the state of the graveyards and graves during each inspection.

6.5.5. Reports on damages to any of the graves or to the graveyards (fences, palliside, gates) should be followed with the necessary mitigation work, which must be registered in the inspection register.

6.5.6. Mitigation done to graves older than sixty years can only be done after SAHRA has issued the necessary permit

6.5.7. Graveyards and graves should be kept tidy from any invader weeds and any other refuse

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6.6. Inspections

6.6.1. All inspections with findings to be loaded on B'SMART.

7. History of Changes

Reason for Change – Index			
A.	As a result of incidents	B.	As a result of audit findings
C.	New/changes in governance documents	D.	Changes in legislation
E.	Changes in technology	F.	Changes in machinery/equipment
G.	Results of risk assessments	H.	Change in training requirements
I.	New document format/ or numbering	J.	Change due to spelling or grammatical error
K.	To integrate a special instruction into the document control system	L.	Periodical Revision due

Date of change	Revised Item (Paragraph number)	Changes Made	Reason Code	Name of reviewer
14/01/2020	5.3	Inserted section 5.3	C	M von Rönge
14/01/2020	5.4	Inserted section 5.4	C	M von Rönge
14/01/2020	Whole document	New numbering	I	M von Rönge
14/01/2020	Whole document	Periodical revision	L	M von Ronge
20/10/2021	6.2	New document format and Periodical revision	I, L	Tumelo Moela
16/05/2022	1.1; 2.1; 5.1; 6.1; 6.4.5; 6.5.1, 6.5.2, 6.5.3 and 6.5.5	Periodical Revision	L	Twarisani Rikhotso
12/02/2026	6.1; 6.2.1; 6.2.2;6.3; 6.4.2; 6.5.2	Grammatical changes and numbering	J, I	Twarisani Rikhotso

8. References

8.1. Amendment to the Environmental Management Programme (EMP) for Booysendal Mine (DMR Ref: LP 30/5/1/3/2/1 (188) EM); 2010
8.2. Booysendal Environmental Construction Phase Policy Document; 2010
8.3. Environmental Authorisation for Booysendal mine's infrastructure (LEDET Ref No: 12/1/9-7/2-GS40); 2010
8.4. Environmental Authorisation for the S24G Rectification process – Booysendal South Expansion Project (DMR Ref: LP 188 & MP 127 EM; 2018
8.5. Environmental Impact Assessment for Booysendal Mine and Associated infrastructure (LEDET Ref: 12/1/9-6/1k-GS6); 2010
8.6. National Heritage Resource Act, 1999 (Act 25 of 1999)
8.7. Heritage Quality Management Plan Booysendal Operations (S24G); May 2017
8.8. Section 24G Environmental Impact Assessment for the Booysendal South Expansion Project (DMR Ref: LP30/5/1/2/3/2/1 (188) EM & MP30/5/1/2/3/2/1 (127) EM; 2017

9. Appendices

9.1. Planned Task Observation (PTO)

REF NO:	**BSD-SHEQ-ENV-PRO-004**	VERSION DATE:	2026-02-11
VERSION NO:	03	NEXT REVISION DATE:	2031-02-10

Annexure 1

Planned Task Observation	
Task Name:	Archaeological and Heritage Management
Ref No.	BSD-SHEQ-ENV-PRC-004

Person Observed:		BD No.	
Occupation:		Section/Department:	
Date of Observation		Shift:	M/S A/S N/S
Observed By:		Occupation:	

Reason for Observation			
Has the Employee/s been notified of the observation			**Yes** / **No**
Novice		Routine Observation	
After an Incident		New Procedure	
New Equipment		Planned Observation	
Performance		Other	

The sequence of steps for PTO	Mark with an X Yes	No	**Comments** Please comment for any deviation
Overall with reflectors Hard hat with reflectors and deflective clip Steel tip gumboots or safety shoes Safety gloves Ear protection Safety goggles' Cap lamp and SCSR pack belt Pea whistle			
Procedure			
All surface work to remain within the approved footprint			
No employee, contractor or service allowed access to archaeological and heritage sites/finds that have been identified and that are already fenced.			
Families of the graves on the mine site will have access to these graves as per the agreement reached between the families and Booysendal Mine.			
Chance Finds of Unmarked Graves or Archaeological finds/Heritage finds			
If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any gravesite, artefact of cultural significance or rock engraving, this person must cease work at the site of the find and report this find to their immediate supervisor, and through			

their supervisor to the senior on-site manager.			
The area will be fenced off with danger tape and no work will be allowed within 3m of the site.			
The supervisor to remain at the site to ensure that no further damage is done to the site			
The supervisor will inform the SHEQ Manager and Environmental Officer.			
The Environmental Officer will:			
Ensure that the area is secured			
Ensure that site is photographed.			
Contact the professional archaeologist for an assessment of the finds who will then notify SAHRA.			
All archaeological finds are protected by law. No work will be allowed in the area until:			
The archaeological excavations have been done (if instructed by SAHRA).			
A destruction permit has been granted by SAHRA should it be required.			
Management Measures applicable to all heritage resources found on Booysendal Mine			
All heritage resources must be registered in a heritage register			
Regular six-monthly inspection of heritage resources			
Inspections and findings thereof should be recorded noted in an inspection register.			
Reports on damages to any of the heritage resources should be followed with the necessary mitigation measures.			
The nature of the mitigation work should be recorded in the inspection register.			
Maintain at least a 30m corridor from the outer edge of graves and heritage resource and any new development footprint;			
Management measures applicable to all Graveyards and Graves			
Graveyards and graves must be demarcated with fences and/or with walls and should be fitted with access gates.			
Regulated visitor hours should be implemented that is compatible with the existing or future mine safety rules.			
Corridors of at least 30 m should be erected and maintained between graveyard and grave's fences and any new developmental			
Graveyards and graves should be inspected on a regular basis using periodic intervals not exceeding every 3 months			
Inspections and findings thereof should be			

recorded and noted in an inspection register			
Reports on damages to any of the graves or to the graveyards (fences, walls, gates) should be followed with the necessary mitigation work which must be registered in the inspection register.			
Graveyards and graves should be kept tidy from any invader weeds and any other refuse			

Is the observed/assessed employee fully compliant with this procedure & competent to perform the task?	Yes	No

Comments:

_____
_____
_____
_____
_____

Recommendations:

_____
_____
_____
_____
_____
_____
_____

Signed By:

_____ Observed Employee

_____ Observer

Date: _____

Date: _____

Appendix B: Fossil Find Procedure

Monitoring Programme for Palaeontology – to commence once the excavations / drilling activities begin.

1. The following procedure is only required if fossils are seen on the surface and when drilling/excavations commence.
2. When excavations begin the rocks and discard must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (plants, insects, bone or trace fossils) should be put aside in a suitably protected place. This way the project activities will not be interrupted.
3. Photographs of similar fossils must be provided to the developer to assist in recognizing the fossil plants, vertebrates, invertebrates or trace fossils in the shales and mudstones (for example see Figure 7). This information will be built into the EMP's training and awareness plan and procedures.
4. Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment.
5. If there is any possible fossil material found by the developer/environmental officer then the qualified palaeontologist sub-contracted for this project, should visit the site to inspect the selected material and check the dumps where feasible.
6. Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits.
7. If no good fossil material is recovered then no site inspections by the palaeontologist will be necessary. A final report by the palaeontologist must be sent to SAHRA once the project has been completed and only if there are fossils.
8. If no fossils are found and the excavations have finished then no further monitoring is required.

Appendix C: Specialist CV

Curriculum Vitae (CV)

Name	Danny Viljoen	Title	Field Archaeologist
Employer	Digby Wells Environmental	Date of Birth	23 July 1994

Language	Speaking	Reading	Writing
Afrikaans	Fluent	Fluent	Fluent
English	Fluent	Fluent	Fluent
German	Intermediate	Intermediate	Intermediate

Education

School, college and/or University Attended	Degree/certificate or other specialized education obtained	Date Obtained
University of Pretoria	BA Hons Archaeology	2018
University of Pretoria	BA Archaeology & History	2017

Professional Certification or Membership in Professional Associations

Professional Certification	Membership Number
Association of Southern African Professional Archaeologists (ASAPA)	744

Countries of Work Experience

Professional Certification	
South Africa	Mali
Cote d'Ivoire	Kenya
Gabon	Angola
Namibia	Saudi Arabia
Democratic Republic of the Congo	Zambia
Tanzania	Guinea

Employment Record

From	To	Employer	Positions held
2024	Present	Digby Wells Environmental	Field Archaeologist
2019	2024	Archaetnos Archaeologists	Archaeologist
2021	2024	Santam Landbou	Agricultural Assessor

Project Experience

Name of assignment or project	Year	Location	Client	Main Project Features / Activities performed
Nandoni Grave Relocation Project	20			
Skimming-Leruleng RAP	2024-2025	South Africa	Rustenburg Platinum Mines Limited	Heritage specialist
Mafube RAP & GRP	2024-	South Africa	Thungela Resources Limited	Heritage specialist
Dandoko ESIA	2024	Mali	B2Gold Corporation	Field Archaeologist
Environmental And Social Impact Assessment for The Assafo-Dibibango Project, Ivory Coast	2024-2025	Cote d'Ivoire	Endeavour Mining Corporation	Field Archaeologist
BA Process in Support of a Prospecting Rights Application for the Kalahari Goldridge Mine in the Northwest Province	2024	South Africa (NW)	Harmony Gold (NW)	Project Lead Archaeologist
Square Kilometre Array (SKA) Project	2024-2026	South Africa (NC)	Power Group	Project Lead Archaeologist
Environmental Impact Assessment for the Variation of the EIA Certificate for the Proposed Carbon Footprint Reduction Project Component in Muleba, Mbogwe, Igunga, Singida and Tanga Districts in Kagera, Geita, Tabora, Singida and Tanga Regions, Tanzania	2026	Tanzania	East African Crude Oil Pipeline (EACOP) Limited	Heritage Specialist

Name of assignment or project	Year	Location	Client	Main Project Features / Activities performed
EIA for the Proposed Ramula-Mwibona Gold Mining Project in Siaya and Vihiga Counties, Gem and Lwanda Sub-Counties, East Gem and Mwibona Wards, Ramula and Mununga Villages	2024-2025	Kenya	Shanta Gold Kenya Limited	Field Archaeologist
Siguiri SAG New TSF	2025	Gabon	Ivindo Iron	Project Lead Archaeologist
EIA for the Construction and Operation of a New Coal Handling and Processing Plant, including a Mineral Residue Deposit at Elders Colliery, near Bethal in the Mpumalanga Province	2024-2025	South Africa (MP)	Thungela Resources Ltd	Project Lead Archaeologist
Re-Evaluation Of Select Cultural Heritage Observations On The Property Mareesburg 8 JT	2024-2025	South Africa (LP)	Anglo-American Platinum	Field Archaeologist
Crown Complex Reclamation Project Environmental Authorisations Application	2025	South Africa (GP)	Ergo Mining (Pty) Ltd	Field Archaeologist
Siguiri New TSF	2026	Guinea	AngloGold Ashanti	Project Lead Archaeologist
Environmental Authorisation Application For The Reclamation Operation Of The Soweto Cluster Tailing Storage Facilities	2025-2026	South Africa (GP)	Mogale Tailings Retreatment (Pty) Ltd	Field Archaeologist
Mareesburg Mototolo Ground Penetrating Radar	2026	South Africa (LP)	Valterra Platinum	Field Archaeologist