



PGS
HERITAGE

**THE PROPOSED DEVELOPMENT OF THE ESKOM
MELKSPRUIT TO ROUXVILLE 132 KV OVERHEAD
POWERLINE, FREE STATE PROVINCE**

Heritage Impact Assessment

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+27 (0) 12 332 5305



+27 (0) 86 675 8077



contact@pgsheritage.co.za



PO Box 32542, Totiusdal, 0134

Offices in South Africa, Kingdom of Lesotho and Mozambique

Head Office:
906 Bergarend Streets
Waverley, Pretoria,
South Africa

Directors: HS Steyn, PD Birkholtz, W Fourie

Declaration of Independence

I, Wouter Fourie, declare that –

General declaration:

- I act as the independent heritage practitioner in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting heritage impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in section 38 of the NHRA when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- All the particulars furnished by me in this form are true and correct;
- I will perform all other obligations as expected from a heritage practitioner in terms of the Act and the constitutions of my affiliated professional bodies; and
- I realise that a false declaration is an offence in terms of regulation 71 of the Regulations and is punishable in terms of section 24F of the NEMA.

Disclosure of Vested Interest

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

HERITAGE CONSULTANT:

PGS Heritage (Pty) Ltd

CONTACT PERSON:


Wouter Fourie

Tel: +27 (0) 12 332 5305

Email: wouter@pgsheritage.com

SIGNATURE:

ACKNOWLEDGEMENT OF RECEIPT

Report Title	<i>THE PROPOSED DEVELOPMENT OF THE ESKOM MELKSPRUIT TO ROUXVILLE 132 KV OVERHEAD POWERLINE, FREE STATE PROVINCE</i>		
Control	Name	Signature	Designation
Author	Wouter Fourie		Principal Heritage Specialist
Reviewed	Dirk Prinsloo		

CLIENT: GA Environment (Pty) Ltd

CONTACT PERSON: Dirk Prinsloo
Tel: +27 (110 312 2537
E-mail: dirkp@gaenvironment.com

SIGNATURE: _____

EXECUTIVE SUMMARY

PGS Heritage (Pty) Ltd (PGS) was appointed by GA Environment (Pty) Ltd (GAE) to undertake a Heritage Impact Assessment (HIA) which will serve to inform the Basic Assessment Report (BAR) and Environmental Management Programme (EMPr) for the proposed development of the Melkspruit- Rouxville 132kV overhead powerline.

This report addresses the 6km deviation alignment before the Melkspruit substation and must be read in conjunction with the completed HIA (Rossouw, 2017) for the original alignment.

Heritage resources are unique and non-renewable and as such, any impact on such resources must be seen as significant. The HIA has shown that the study area and surrounding area has some heritage resources situated within the proposed development boundaries. Through data analysis and a site investigation, the following issues were identified from a heritage perspective.

Heritage Sites

Large sections of the alignment are characterised by a background scatter of Middle and Later Stone Age material. Two major concentrations of lithics at waypoints **507 and 511** has a **moderate heritage significance** with a **heritage grading of IIIB**.

The structures at **509, 514, 515 and 517** are the remains of historic structures and can most probably be associated with farmworker homesteads. These homestead are generally known for the presence of stillborn burials as associated with indigenous burial practices. Due this fact these structures are given a **moderate heritage significance** and an **IIIB heritage rating**.

Possible Burial Grounds and graves

Due to the possibility of still born burials at the historical structures the impact significance before mitigation on the graves will be VERY HIGH negative before mitigation. *Only isolated sites will be affected by the proposed development.* The possibility of the impact could occur . The expected duration of the impact is assessed as potentially permanent. Implementation of the recommended mitigation measures will modify this impact rating to an acceptable LOW negative.

Archaeological sites

The impact significance before mitigation on the identified archaeological sites will be MODERATE negative before mitigation. As the occurrence of the archaeological materials is over a large area *the study area will be affected by the proposed development.* The possibility of the impact occurring **is very likely**. The expected duration of the impact is assessed as potentially permanent. Implementation of the recommended mitigation measures will modify this impact rating to an acceptable LOW negative.

Mitigation measures

Area and site no.	Mitigation measures	Phase	Timeframe
General project area	Implement a chance to find procedures in case where possible heritage finds are uncovered.	Construction and operation	During construction and operation
Possible graves	The sites at 505, 509, 514, 515 and 517 should be demarcated with a 30-meter buffer and the site should be avoided if any construction is to happen close to it a consultation with local communities must be done to ascertain. If any infant burials are present.	Construction through to Operational	During Construction and Operation
Structures	For site 505 (impacted by pylon MR45) and site 517 (impacted by pylon MR26) a Phase 2 mitigation process must be implemented for this site that will include: <ol style="list-style-type: none"> 1. An application. For a mitigation permit from SAHRA; 2. Documentation of the site through excavations to expose the extent of the structures and then through formal plan drawings. 3. A destruction permit from SAHRA will be then applied for by the client with the backing of the mitigation report. 	Pre-construction	After the approval of the EA and before construction occurs
Identified archaeological sites	All archaeological site must be demarcated with a 30-meter buffer when construction is to take place in close vicinity to the identified areas. Access roads and construction. Camps must be placed in. such. Manner as not to traverse any of these archaeological sites. In the event that sites 507 and 512 (Impacted directly by pylon MR29) cannot be avoided a Phase 2 archaeological mitigation process must be implemented. This will include: <ol style="list-style-type: none"> 1. An application for a permit to mitigate from SAHRA under s35 of the NHRA will be required to conduct such work. 2. Surface collections, test excavations and analysis of recovered material. 3. A destruction permit from SAHRA will be then applied for by the client with the backing of the mitigation report. 	Pre-construction	Pre-construction to be implemented before construction activities occur at these site
Archaeological sensitive areas	It is further recommended that construction activities between point 507 and 516 is monitored by an archaeologist	Construction phase in the specific areas	During construction

General

It is the author's considered opinion that overall impact on heritage resources is Low. Provided that the recommended mitigation measures are implemented, the impact would be acceptably Low or could be totally mitigated to the degree that the project could be approved from a heritage perspective. The management and mitigation measures as described in Section 6 of this report have been developed to minimise the project impact on heritage resources.

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TERMINOLOGY AND ABBREVIATIONS

Archaeological resources

This includes:

- material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;
- rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
- wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation; and
- features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

Cultural significance

This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance

Development

This means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way result in a change to the nature, appearance or physical nature of a place or influence its stability and future well-being, including:

- construction, alteration, demolition, removal or change in use of a place or a structure at a place;
- carrying out any works on or over or under a place;
- subdivision or consolidation of land comprising a place, including the structures or airspace of a place;
- constructing or putting up for display signs or boards;
- any change to the natural or existing condition or topography of land; and
- any removal or destruction of trees, or removal of vegetation or topsoil

Early Stone Age

The archaeology of the Stone Age between 700 000 and 3 300 000 years ago.

Fossil

Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.

Heritage

That which is inherited and forms part of the National Estate (historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999).

Heritage resources

This means any place or object of cultural significance and can include (but not limited to) as stated under Section 3 of the NHRA,

- places, buildings, structures and equipment of cultural significance;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features of cultural significance;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds, and
- sites of significance relating to the history of slavery in South Africa;

Holocene

The most recent geological time period which commenced 10 000 years ago.

Late Stone Age

The archaeology of the last 30 000 years associated with fully modern people.

Late Iron Age (Early Farming Communities)

The archaeology of the last 1000 years up to the 1800's, associated with iron-working and farming activities such as herding and agriculture.

Middle Iron Age

The archaeology of the period between 900-1300AD, associated with the development of the Zimbabwe culture, defined by class distinction and sacred leadership.

Middle Stone Age

The archaeology of the Stone Age between 30 000-300 000 years ago, associated with early modern humans.

Palaeontology

Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

Table 1 – List of abbreviations used in this report

Abbreviations	Description
AIA	Archaeological Impact Assessment
APHP	Association of Professional Heritage Practitioners
ASAPA	Association of South African Professional Archaeologists
CRM	Cultural Resource Management
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
EIAs practitioner	Environmental Impact Assessment Practitioner
ESA	Earlier Stone Age
GAE	GA Environmental (Pty) Ltd
GN	Government Notice
GPS	Global Positioning System
HIA	Heritage Impact Assessment
I&AP	Interested & Affected Party
LIA	Late Iron Age
LSA	Late Stone Age
MIA	Middle Iron Age
MSA	Middle Stone Age
NEMA	National Environmental Management Act, 1998 (Act No 107 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act No 25 of 1999)
NCW	Not Conservation Worthy
PGS	PGS Heritage (Pty) Ltd
PHRA	Provincial Heritage Resources Authority
SADC	Southern African Development Community
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System

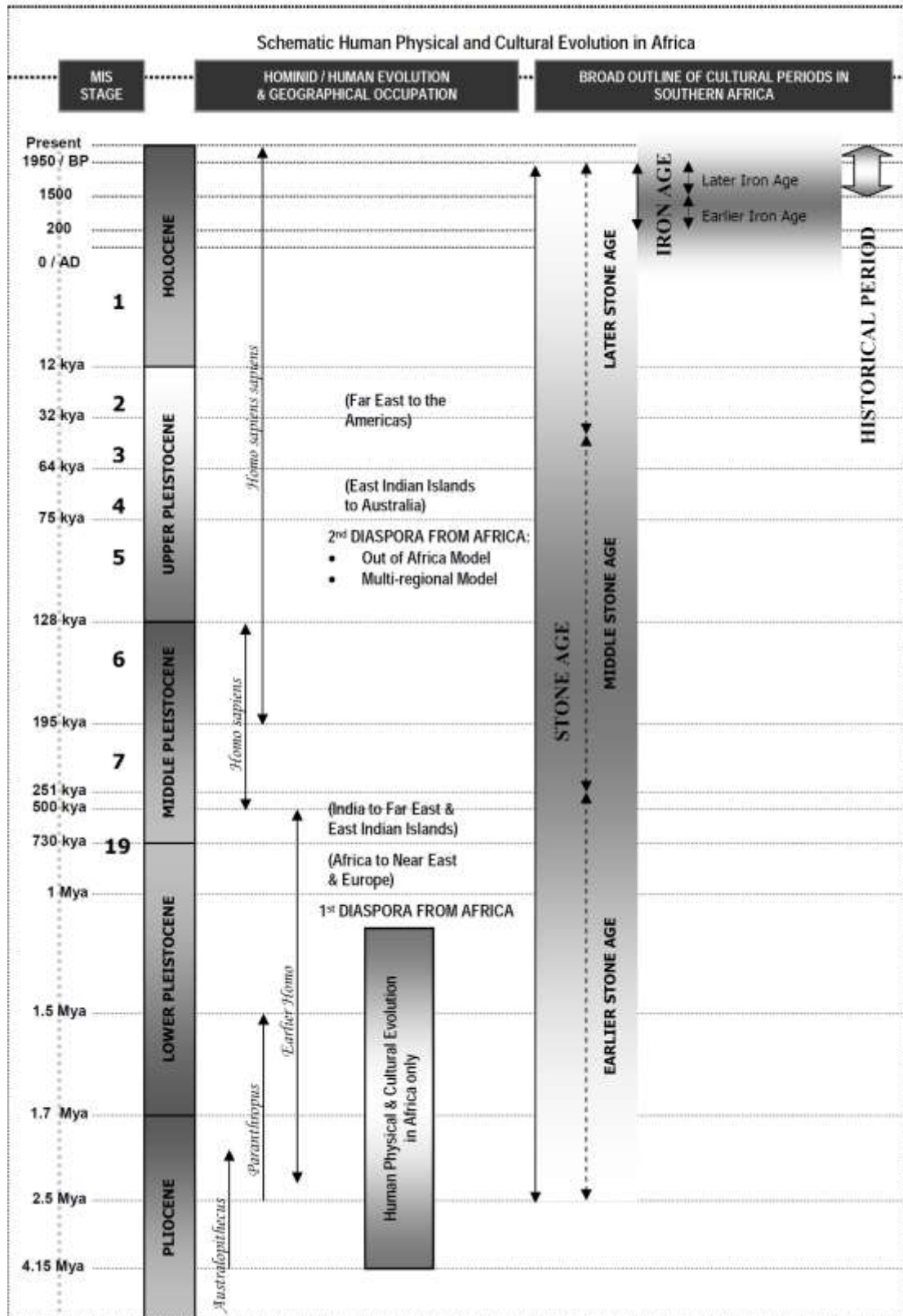


Figure 1 – Human and Cultural Timeline in Africa

1 INTRODUCTION

PGS Heritage (Pty) Ltd (PGS) was appointed by GA Environment (Pty) Ltd (GAE) to undertake a Heritage Impact Assessment (HIA) which will serve to inform the Basic Assessment Report (BAR) and Environmental Management Programme (EMPr) for the proposed 132kV overhead powerline between Melkspruit Substation in Aliwal North, Eastern Cape Province and Rouxville Substation, Free State Province.

This report addresses the 6km deviation alignment before the Melkspruit substation and must be read in conjunction with the completed HIA (Rossouw, 2017) for the original alignment.

1.1 Scope of the Study

The aim of the study is to identify possible heritage sites and finds that may occur in the proposed development area. The HIA aims to inform the EIA in the development of a comprehensive EMPr to assist the project applicant in responsibly managing the identified heritage resources in order to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act (Act 25 of 1999) (NHRA).

1.2 Specialist Qualifications

This HIA was compiled by PGS.

The staff at PGS have a combined experience of nearly 70 years in the heritage consulting industry. PGS and its staff have extensive experience in managing HIA processes. PGS will only undertake heritage assessment work where they have the relevant expertise and experience to undertake that work competently.

Ruan van der Merwe, field archaeologist for this report is registered with the Association of Southern African Professional Archaeologists (ASAPA) as a Professional Archaeologist.

Wouter Fourie, the author and Project Coordinator, is registered with the ASAPA as a Professional Archaeologist and is accredited as a Principal Investigator; he is further an Accredited Professional Heritage Practitioner with the Association of Professional Heritage Practitioners (APHP).

1.3 Assumptions and Limitations

Not detracting in any way from the comprehensiveness of the research undertaken, it is necessary to realise that the heritage resources located during the desktop research and fieldwork do not necessarily represent all the possible heritage resources present within the area.

Such observed or located heritage features and/or objects may not be disturbed or removed in any way until such time that the heritage specialist has been able to make an assessment as to the significance of the site (or material) in question. This applies to graves and cemeteries as well.

1.4 Legislative Context

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

- Notice 648 of the Government Gazette 45421- general requirements for undertaking an initial site sensitivity verification where no specific assessment protocol has been identified
- National Environmental Management Act (NEMA), Act 107 of 1998 – Appendix 6
- National Heritage Resources Act (NHRA), Act 25 of 1999

1.4.1 Notice 648 of the Government Gazette 45421

Although minimum standards for archaeological (2007) and palaeontological (2012) assessments were published by SAHRA, GN.648 requires sensitivity verification for a site selected on the national web based environmental screening tool for which no specific assessment protocol related to any theme has been identified. The requirements for this Government Notice (GN) are listed in **Table 2** and the applicable section in this report noted.

Table 2 - Reporting requirements for GN648

GN 648	Relevant section in report	Where not applicable in this report
2.2 (a) a desktop analysis, using satellite imagery;	section 4.3	
2.2 (b) a preliminary on-site inspection to identify if there are any discrepancies with the current use of land and environmental status quo versus the environmental sensitivity as identified on the national web-based environmental screening tool, such as new developments, infrastructure, indigenous/pristine vegetation, etc.	4.1	-
2.3(a) confirms or disputes the current use of the land and environmental sensitivity as identified by the national web-based environmental screening tool;	section 4.1	-
2.3(b) contains motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity;	section 4.1	-

1.4.2 NEMA – Appendix 6 requirements

The HIA report has been compiled considering the NEMA Appendix 6 requirements for specialist reports as indicated in the table below. For ease of reference, the table below provides cross-references to the report sections where these requirements have been addressed. It is important to note, that where something is not applicable to this HIA, this has been indicated in the table below.

Table 3 - Reporting requirements as per NEMA Appendix 6 for specialist reports

Requirements of Appendix 6 – GN R326 EIA Regulations of 7 April 2017	Relevant section in report	Comment where not applicable.
1.(1) (a) (i) Details of the specialist who prepared the report	Page 2 of Report – Contact details and company	-
(ii) The expertise of that person to compile a specialist report including a curriculum vita	Section 1.2 – refer to Appendix B	-
(b) A declaration that the person is independent in a form as may be specified by the competent authority	Page ii of the report	-
(c) An indication of the scope of, and the purpose for which, the report was prepared	Section 2.1	-
(cA) An indication of the quality and age of base data used for the specialist report	Section 3	-
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 6	-
(d) The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment	Section 3	-
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used	Section 3 and Appendix A	-
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 5	
(g) An identification of any areas to be avoided, including buffers	Section 4.6	
(h) A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;		
(i) A description of any assumptions made and any uncertainties or gaps in knowledge;	Section 1.3	-
(j) A description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives, on the environment	Section 8	
(k) Any mitigation measures for inclusion in the EMPr	Section 7.11	
(l) Any conditions for inclusion in the environmental authorisation		None required
(m) Any monitoring requirements for inclusion in the EMPr or environmental authorisation	Section 7.11	
(n)(i) A reasoned opinion as to whether the proposed activity, activities or portions thereof should be authorised and	Section 8	
(n)(iA) A reasoned opinion regarding the acceptability of the proposed activity or activities; and		
(n)(ii) If the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	Section 8	-
(o) A description of any consultation process that was undertaken during the course of carrying out the study		Not applicable. A public consultation process was handled as part of the EIA and EMP process.
(p) A summary and copies if any comments that were received during any consultation process		Not applicable. To date no comments

Requirements of Appendix 6 – GN R326 EIA Regulations of 7 April 2017	Relevant section in report	Comment where not applicable.
		regarding heritage resources that require input from a specialist have been raised.
(q) Any other information requested by the competent authority.		Not applicable.
(2) Where a government notice by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	NEMA Appendix 6 and GN648	

1.4.3 The National Heritage Resources Act

- National Heritage Resources Act (NHRA) Act 25 of 1999
 - Protection of Heritage Resources – Sections 34 to 36; and
 - Heritage Resources Management – Section 38

The NHRA is utilized as the basis for the identification, evaluation and management of heritage resources and in the case of Cultural Resource Management (CRM) those resources specifically impacted on by development as stipulated in Section 38 of NHRA. This study falls under s38(8) and requires comment from the relevant heritage resources authority.

2 SITE LOCATION AND DESCRIPTION

2.1 Locality and Site Description (provided by GAE)

The proposed powerline is to be located between Aliwal North within Walter Sisulu Local Municipality in the Eastern Cape Province and Rouxville within Mohokare Local Municipality in the Free State Province. Since the powerline is a linear development, its location will cut across several different natural and human-made features. From the starting point of the powerline at the Melkspruit Substation located 30°42'07.89" S and 26°40'31.81" E, the powerline crosses the Orange River alongside the N6 national Road, watercourses, provincial roads, farmland and ends at the Rouxville Substation which is located 30°25'49.91" S, and 26°50'18.40" E. The average length of the route is approximately 37km.

During the land negotiations it became apparent that a realignment of a 6 km section of the powerline will be required. This deviation and subject of this study is indicated in **Figure 2**.

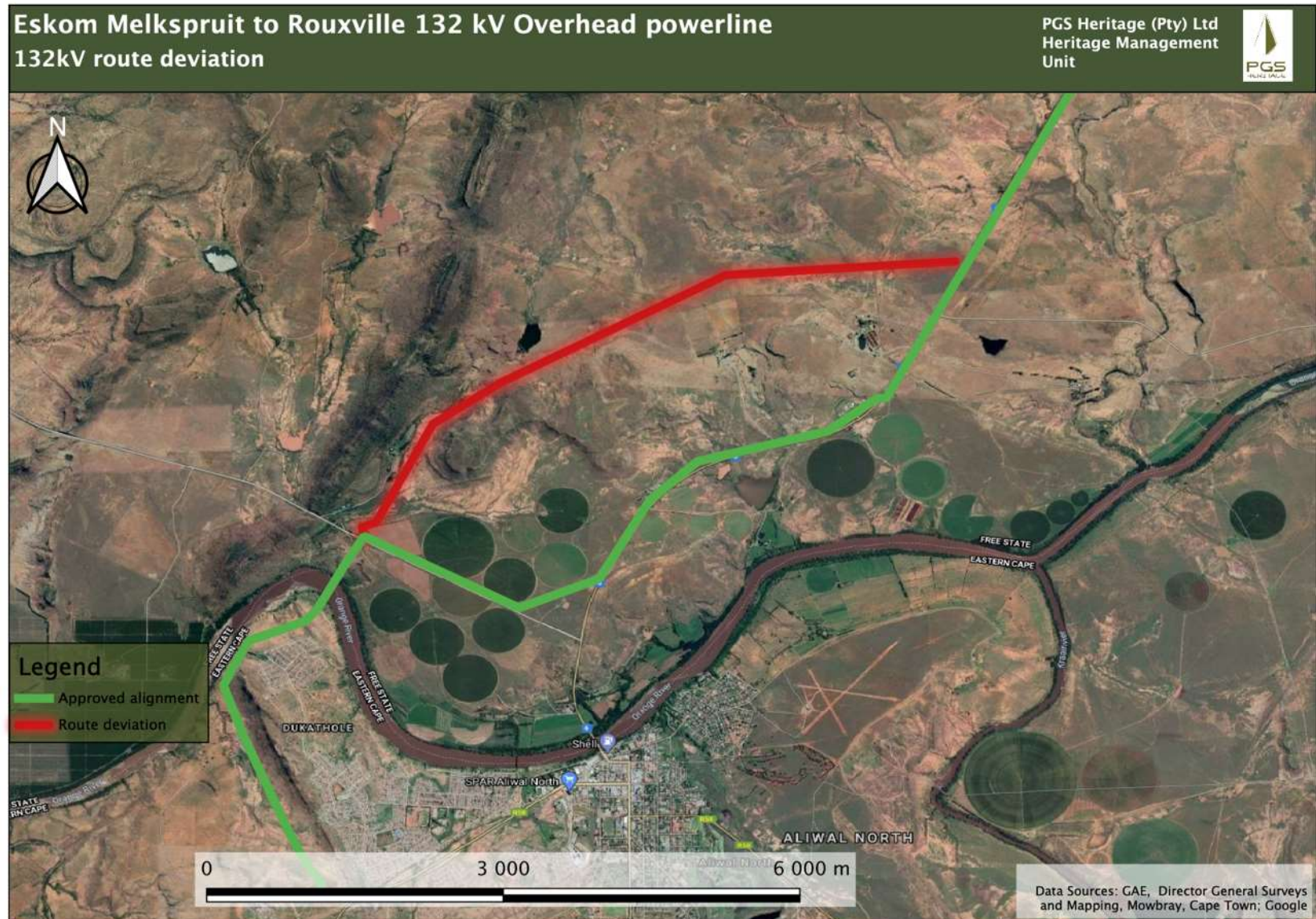


Figure 2 – Locality map of the proposed deviation of the powerline as assed in this report

2.2 Project description (provided by GAE)

The proposed route starts from Melkspruit Substation in a southerly direction along the existing 66kV powerline route. It then extends between the Orange River and Area 13, Dukathole and thereafter crosses the Orange River in a north to north easterly direction towards the Rouxville Substation. It extends on the eastern side of the N6 Road and at some sections crosses over provincial roads, farming and grazing lands, hills/ridges, watercourses, railway line and telecommunication and powerlines. A 1km corridor has been assessed on the proposed route alternative although only 31m servitude is required for the proposed powerline.

The powerline will cross the Orange River but there will be no placing of towers within the river or floodline. The exact method of crossing will be determined by the contractor, but the general steps that are followed are:

1. Construct both towers on either side of the river;
2. Run a pilot wire over the river between the two structures by means of a small boat or helicopter or shot across.
3. Use the pilot wire to tension string the conductors over the river (Tension stringing is the only stringing allowed on all Eskom High Voltage lines whereby the conductor is pulled between the structures by means of pilot wire and pulleys attached at the structure and under tension as to avoid the conductor from touching the ground.

The powerline development will entail erection of new steel monopole structures with a T-bar tower. These are used because they are safer and longer lasting structures than the wooden structures used for the existing line. The powerline will have an approximately 31m wide servitude, i.e. approximately 15.5m on either side of the centre line.

3 METHODOLOGY

The applicable maps, tables and figures, are included as stipulated in the NHRA (no 25 of 1999), the NEMA (no 107 of 1998). The HIA process consisted of three steps:

Step I – Literature Review and sensitivity analysis¹: The background information to the field survey relies greatly on previous studies completed for the project to determine known sensitivities, as well as the heritage background research completed for this report.

Step II – Physical Survey: A physical survey was conducted by vehicle through the proposed project area by a qualified heritage specialist. The survey was conducted between 24 September 2020, aimed at locating and documenting sites falling within and adjacent to the proposed development footprint.

¹ According to Notice 648 of the Government Gazette 45421

Step III – The final step involved the recording and documentation of relevant archaeological resources, the assessment of resources in terms of the HIA criteria and report writing, as well as mapping and constructive recommendations.

3.1 Site Significance

Site significance classification standards use is based on the heritage classification of s3 in the NHRA and developed for implementation keeping in mind the grading system approved by SAHRA for archaeological impact assessments. The update classification and rating system as developed by Heritage Western Cape (2016) is implemented in this report

Site significance classification standards prescribed by the Heritage Western Cape Guideline (2016), were used for the purpose of this report (**Table 4** and **Table 5**).

Table 4 - Rating system for archaeological resources

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

Table 5 - Rating system for built environment resources

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
I	Heritage resources with qualities so exceptional that they are of special national significance. Current examples: Robben Island	May be declared as a National Heritage Site managed by SAHRA.	Highest Significance
II	Heritage resources with special qualities which make them significant in the context of a province or region, but do not fulfil the criteria for Grade I status. Current examples: St George's Cathedral, Community House	May be declared as a Provincial Heritage Site managed by HWC.	Exceptionally High Significance
II	Such a resource contributes to the environmental quality or cultural significance of a larger area and fulfils one of the criteria set out in section 3(3) of the Act but that does not fulfil the criteria for Grade II status. Grade III sites may be formally protected by placement on the Heritage Register.		
IIIA	Such a resource must be an excellent example of its kind or must be sufficiently rare. These are heritage resources which are significant in the context of an area.	This grading is applied to buildings and sites that have sufficient intrinsic significance to be regarded as local heritage resources; and are significant enough to warrant that any alteration, both internal and external, is regulated. Such buildings and sites may be representative, being excellent examples of their kind, or may be rare. In either case, they should receive maximum protection at local level.	High Significance
IIIB	Such a resource might have similar significances to those of a Grade III A resource, but to a lesser degree. These are heritage resources which are significant in the context of a townscape, neighbourhood, settlement or community.	Like Grade IIIA buildings and sites, such buildings and sites may be representative, being excellent examples of their kind, or may be rare, but less so than Grade IIIA examples. They would receive less stringent protection than Grade IIIA buildings and sites at local level.	Medium Significance
IIIC	Such a resource is of contributing significance to the environs. These are heritage resources which are significant in the context of a streetscape or direct neighbourhood.	This grading is applied to buildings and/or sites whose significance is contextual, i.e. in large part due to its contribution to the character or significance of the environs. These buildings and sites should, as a consequence, only be regulated if the significance of the environs is sufficient to warrant protective measures, regardless of whether the site falls within a Conservation or Heritage Area. Internal alterations should not necessarily be regulated.	Low Significance
NCW	A resource that, after appropriate investigation, has been determined to not have enough heritage significance to be retained as part of the National Estate.	No further actions under the NHRA are required. This must be motivated by the applicant and approved by the authority. Section 34 can even be lifted by HWC for structures in this category if they are older than 60 years.	No research potential or other cultural significance

4 CURRENT STATUS QUO

4.1 Site Description

The project area falls within the existing agricultural area just to the north of Aliwal North. The area is characterised by open farmland with some ridges and drainage area towards the central and western section of the alignment.

Existing surrounding land uses associated with the project area include a combination of agricultural parcels utilised for cultivating crops as well as grazing.

As a result, the vast majority of the site footprint overlays fairly undisturbed terrain. Overall, the accessibility of the project footprint area was fairly good. Visibility was good.



Figure 3 – General view of eastern section of the realignment



Figure 4 - Ridges in eastern section of the realignment



Figure 5 – Ridge in central part of the realignment



Figure 6 – Entrance into small valley of central realignment



Figure 7 – Eroded slopes in western section of the realignment



Figure 8 – View toward the western extent of the valley

4.2 Archaeological Background to the Study Area and Surroundings

The following information is extracted from the original HIA (Rossouw,2017) completed for the project.

The archaeological footprint in the region is primarily represented by Stone Age localities and rock art sites, early indigenous farming communities as well as historical structures related to early trek-farmers (Goodwin & Van Riet Low 1929; Lye 1967; Sampson 1968, 1972; Maggs 1976). Extensive surveying during the late 1960's revealed that the Gariep Dam flood basin, including the Orange-Caledon interfluvium has a very rich Stone Age archaeological footprint with multiple open and buried sites (Sampson 1968, 1972) (**Figure 9**).

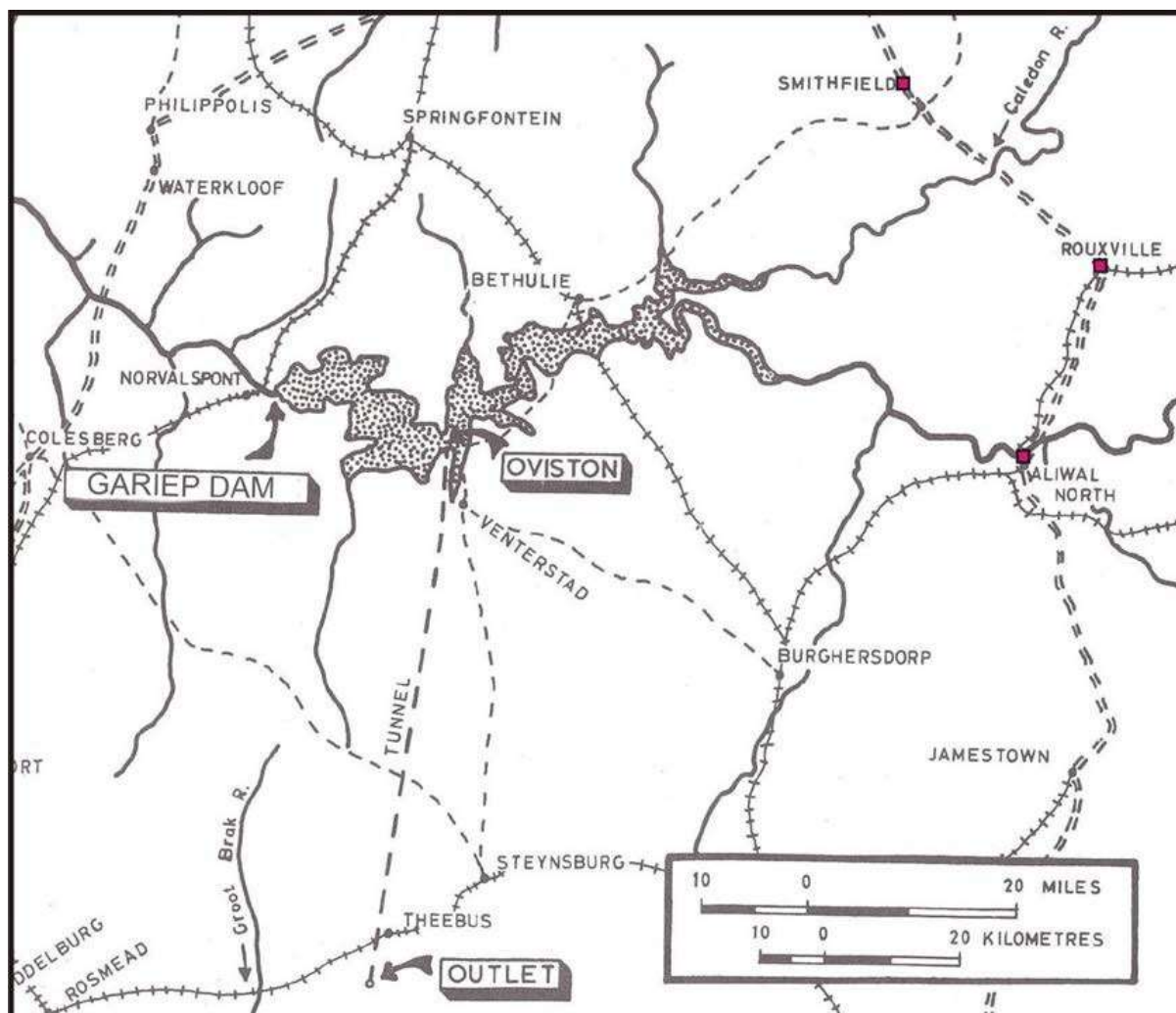


Figure 9 - Area surveyed by Sampson in the late 1960s

Stone tool open-sites have been recorded at Goedemoed, Weenkop and Wesselsdal near Rouxville and at Middelpplaats, Melkspruit, Grassridge Farm in the Aliwal North district (**Figure 10**).

Examples of stone tool “factory” sites are found at Spitzkop near Smithfield, the Smithfield Townlands (the original Smithfield material used by Goodwin and Van Riet Low to describe the Smithfield Stone Tool Industry in 1929 was a surface collection retrieved from the banks of a stream running through the town, locality unknown), Ventershoek near Wepener and Mooifontein near Zastron.

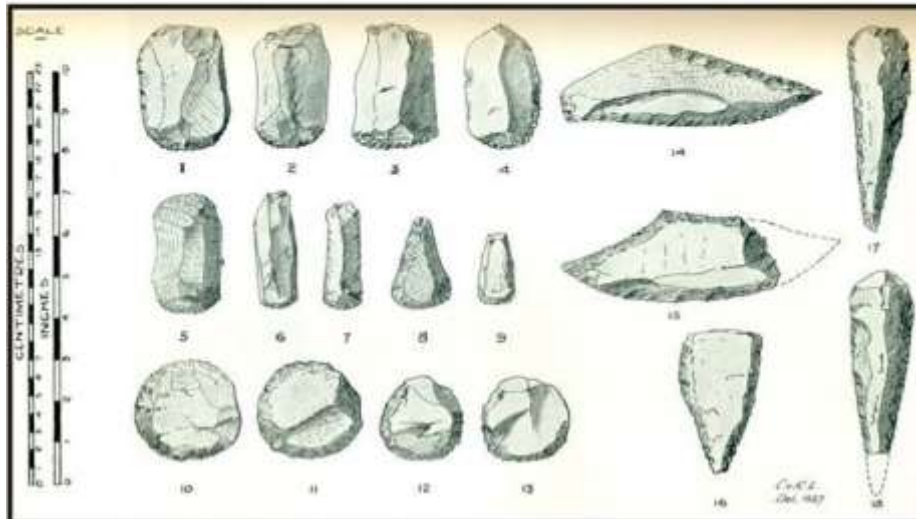
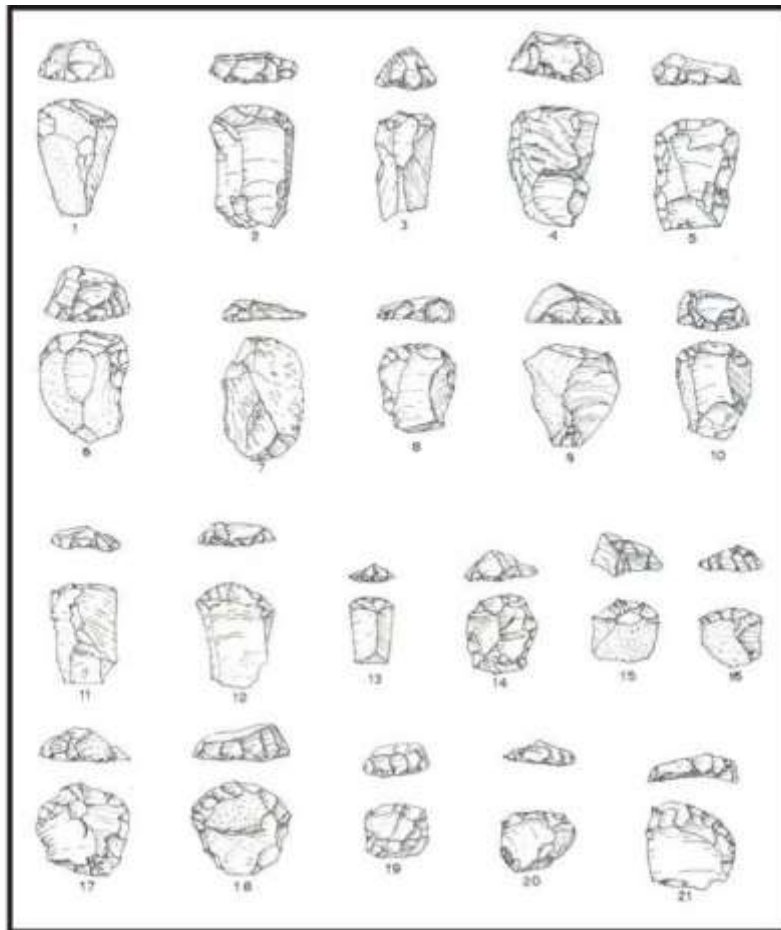


Figure 10 - Examples of Smithfield Industry tools described from Ventershoek, northeast of Rouxville and the Smithfield Townlands

During the early 1820's, the Difaqane resulted in a series of raids and wars carried on by whole communities of displaced and wandering Nguni- and Southern Sotho- speaking groups after the rise of Shaka's Zulu empire, which caused refugee communities to flee over the Drakensberg mountain passes. Locally the Southern Sotho broke up into numerous antagonistic communities which were scattered along

the Caledon River Valley, and unrest continued throughout the countryside, including the Rouxville district.

Rock art localities recorded in the region include sites on more than 31 farms in the Rouxville district and on 21 farms in the Aliwal North district, including Beestekraal 64/0. European trek-farmers crossed the Orange River from the Cape as early as 1819 and settled throughout the region during the 1820's and 1830's. One of the earliest farms in the region was established in 1835 at Klipplaatsdrif, about 24 km from Rouxville on the way to Smithfield. Historical landmarks situated within 5 km of Aliwal North include the Anglo Boer War Concentration Camp Memorial Garden and Graveyard.

4.3 Findings of the historical desktop study

The findings can be compiled as follows and have been combined to produce a heritage sensitivity map for the project based on the desktop assessment (**Figure 13**).

4.3.1 Heritage Screening

A Heritage Screening Report was compiled by the Department of Environmental Affairs National Web-based Environmental Screening Tool as required by Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended (**Figure 12**). According to the Heritage screening report, the directly affected area has a Medium heritage sensitivity.

4.3.2 Heritage Sensitivity

The sensitivity maps were produced by overlying:

- Satellite Imagery;
- Current Topographical Maps; and
- First edition Topographical Maps dating to 1947.

This enabled the identification of possible heritage sensitive areas that included:

- Dwellings;
- Clusters of dwellings (homesteads, huts and farmsteads);
- Archaeological Sensitive areas; and
- Structures/Buildings.

By superimposition and analysis, it was possible to rate these structure/areas according to age and thus their level of protection under the NHRA. Note that these structures refer to possible tangible heritage sites as listed in **Table 6**.

Table 6 -Tangible heritage sites in the study area

Name	Description	Legislative protection
Archaeology - Iron Age Sites	Older than 100 years	NHRA Sect 3 and 35
Architectural Structures	Possibly older than 60 years	NHRA Sect 3 and 34
Graves and Burial Grounds	60 years or older	NHRA Sect 3 and 36

Additionally, evaluation of satellite imagery has indicated the following areas that may be sensitive from a heritage perspective. The analysis of the studies conducted in the area assisted in the development of the following landform type to heritage find matrix in **Table 7**.

Table 7 - Landform type to heritage find matrix

LANDFORM TYPE	HERITAGE TYPE
Crest and foot hill	LSA and MSA scatters, LIA settlements
Crest of small hills	Small LSA sites – scatters of stone artefacts, ostrich eggshell, pottery and beads
Watering holes/pans/rivers	ESA, MSA and LSA sites, LIA settlements
Farmsteads	Historical archaeological material
Ridges and drainage lines	LSA sites, LIA settlements
Forested areas	LIA sites

Eskom Melkspruit to Rouxville 132 kV Overhead powerline 1947 First edition topographical

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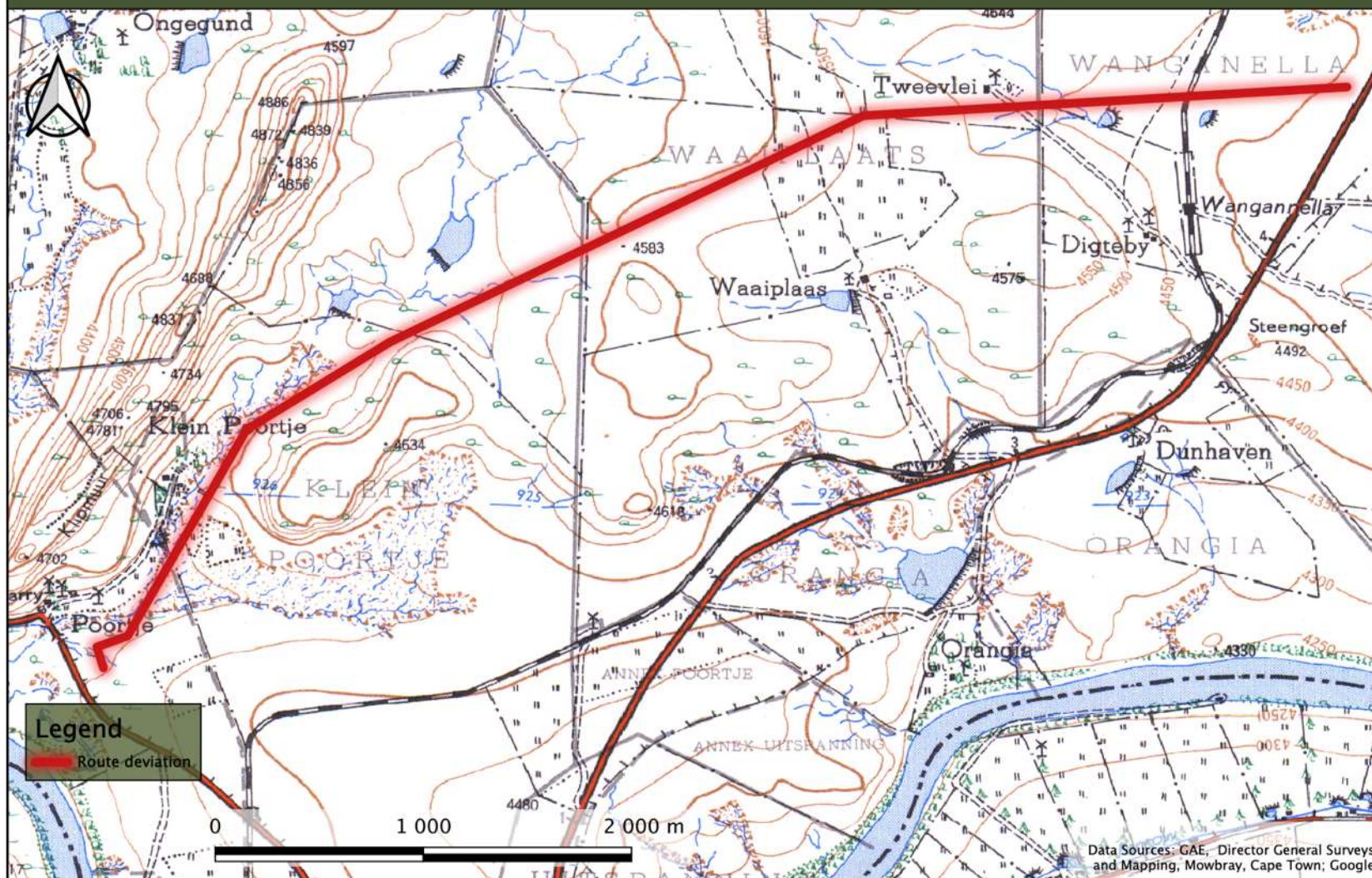


Figure 11 – First Edition of 3026DA Aliwal North Topographic Map 1:50000 dating to 1947

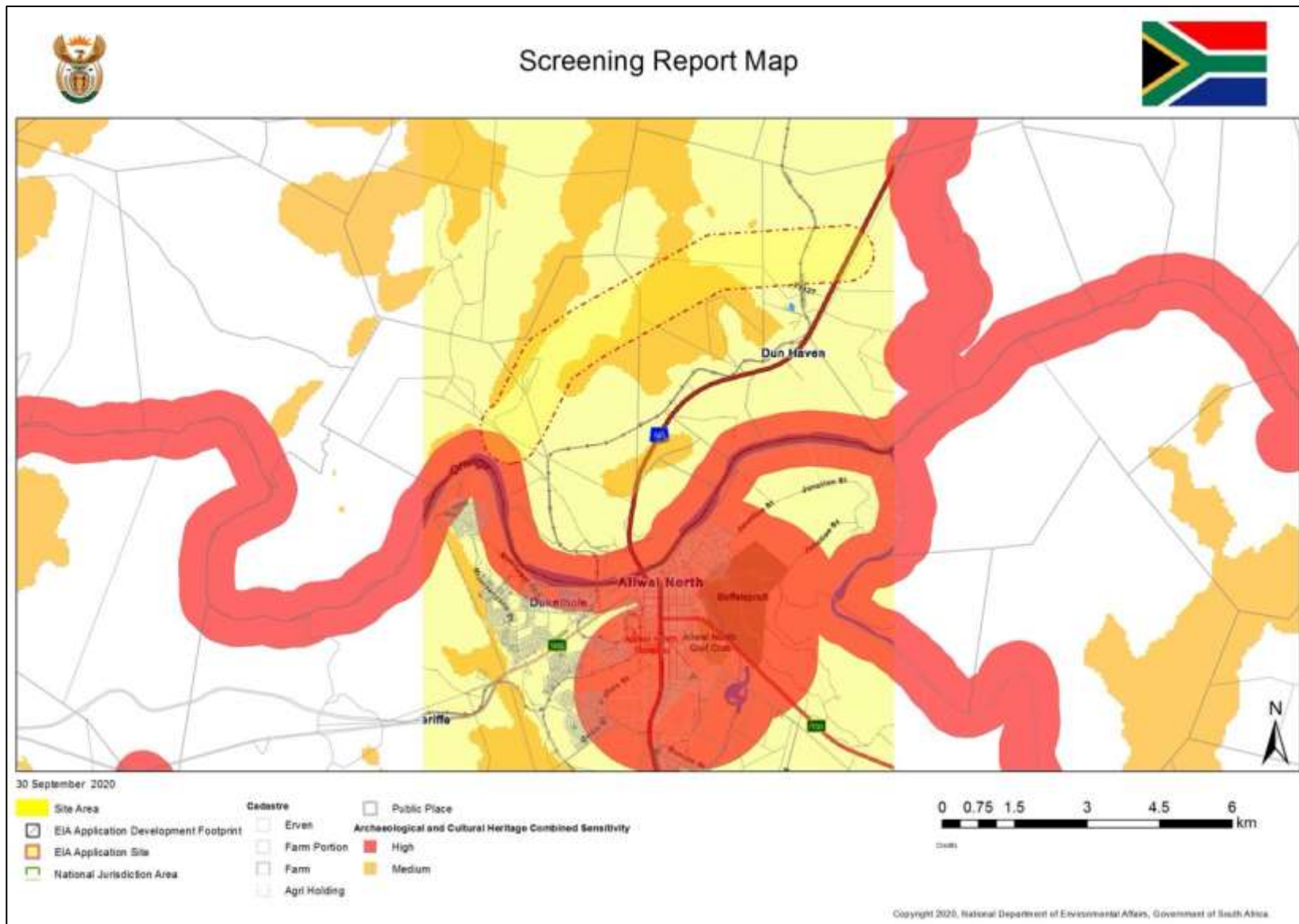


Figure 12 - Heritage Screening map. Source: Department of Environmental Affairs

Eskom Melkspruit to Rouxville 132 kV Overhead powerline Possible heritage sensitive areas

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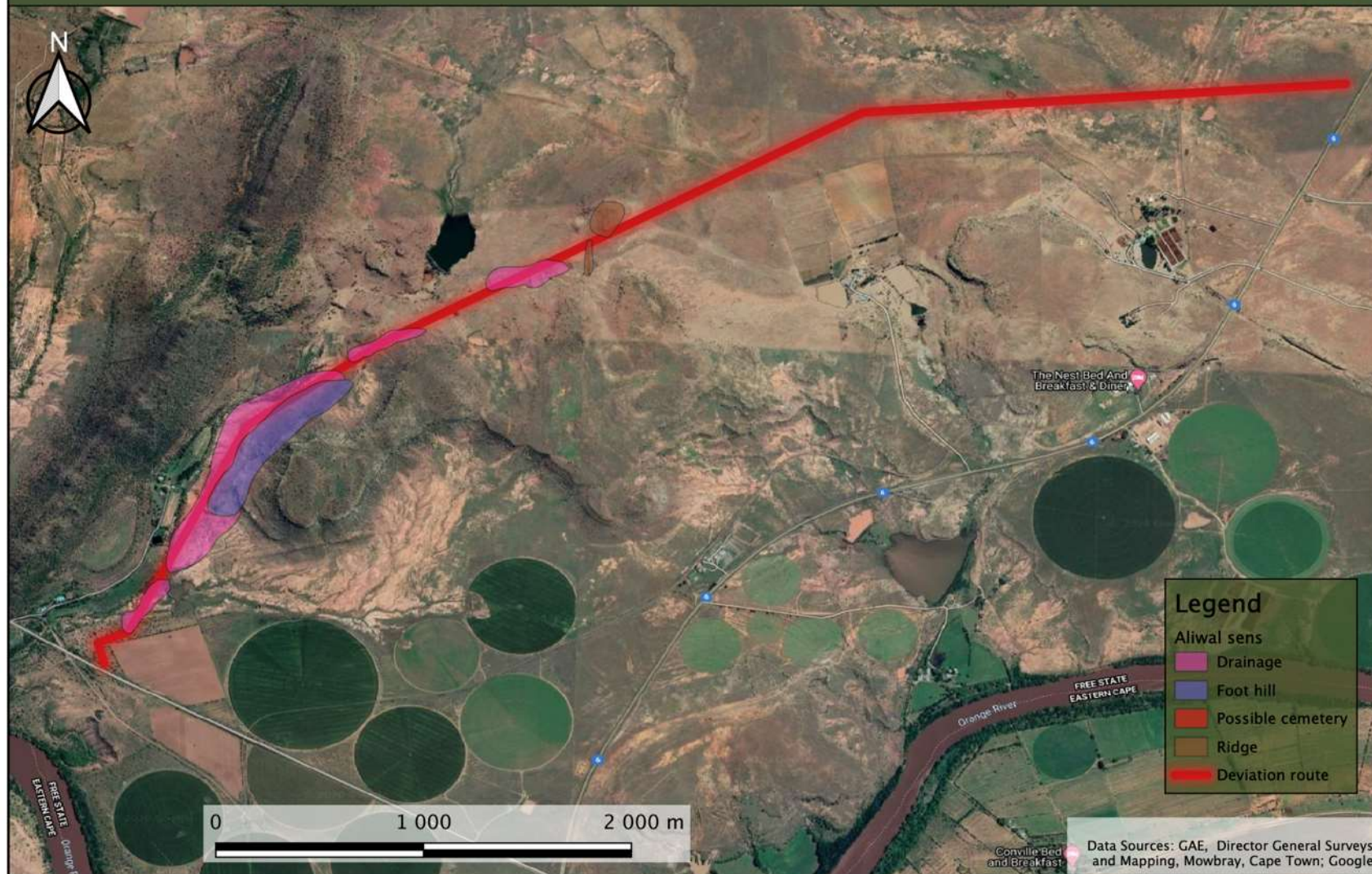


Figure 13 – Heritage sensitivity map indicating possible sensitive areas around and within the proposed deviation alignment

5 FIELDWORK AND FINDINGS

A controlled surface survey was conducted on foot and by a vehicle by an archaeologist from PGS. The fieldwork was conducted 24 September 2020. The tracklogs (in yellow) for the survey are indicated in **Figure 19**.

The study area is a proposed powerline situated about 5 km north of Aliwal-North running from the N6 highway in a south-westerly direction through a valley towards the Orange River. The eastern part of the proposed line runs west from the edge of the N6 over a large open field that is predominantly used as grazing for cattle. A disused railway line runs across this landscape from south to north.

This landscape is mostly flat with a decent amount of grass cover. Multiple small dams were constructed to keep water for the livestock present. No trees or tall grass is located on this landscape, making visibility fairly high.

Waypoint 505 marks the location of an historical feature. The feature is a rectangular packed stone wall with a crush-like structure built onto the north-western section, leading into what seems to be a small holding pen/camp for livestock. Metal car remains are also present next to the feature. The proposed line then turns south-west and from this point follows an existing powerline into a valley (central section of the alignment) that runs all the way to the Orange River. This valley has a small stream running at the bottom. This natural drainage line has caused erosion all along the sides of the valley, exposing high amounts of stone-age artefacts. These artefacts are mostly situated within or close to erosion gullies and/or natural erosion of the stream banks. A moderate scatter of Stone-age materials is present along the entire extent of the valley.



Figure 14 – View of stone foundation at 505



Figure 15 – Structure entrance of structure at 505

Waypoints 514, 515 and 517 marks a Historical homestead that is situated on the end where the valley opens up again into a large open field that is being used to grow crops and graze livestock.

The homestead consists of multiple packed stone features/buildings (515) with some red brick elements present, as well as a large rectangular packed stone enclosure or kraal (514). The small homestead is built on the shoulder inline of the small hill which forms part of the valley through which the proposed line runs. Another small structure (517) is situated further up the hill. This structure is also a small packed stone feature; however, this site is extremely overgrown, making it difficult to assess the extent of the feature.



Figure 16 – Remainder of stone wall at 515



Figure 17 – Artefacts found in midden at 515

Waypoint 516 marks another area where the general scatter of stone-age material is situated close to the stream running towards the Orange River.

The western section of the proposed line runs mostly along the natural drainage line). This area again has high amounts of erosion taking place on the banks of the small stream. **Waypoint 522** marks an area with a very high concentration of artefacts washing out of the sides of the erosion gullies.



Figure 18 - Lithics identified at waypoint 507

Eskom Melkspruit to Rouxville 132 kV Overhead powerline Fieldwork tracklogs

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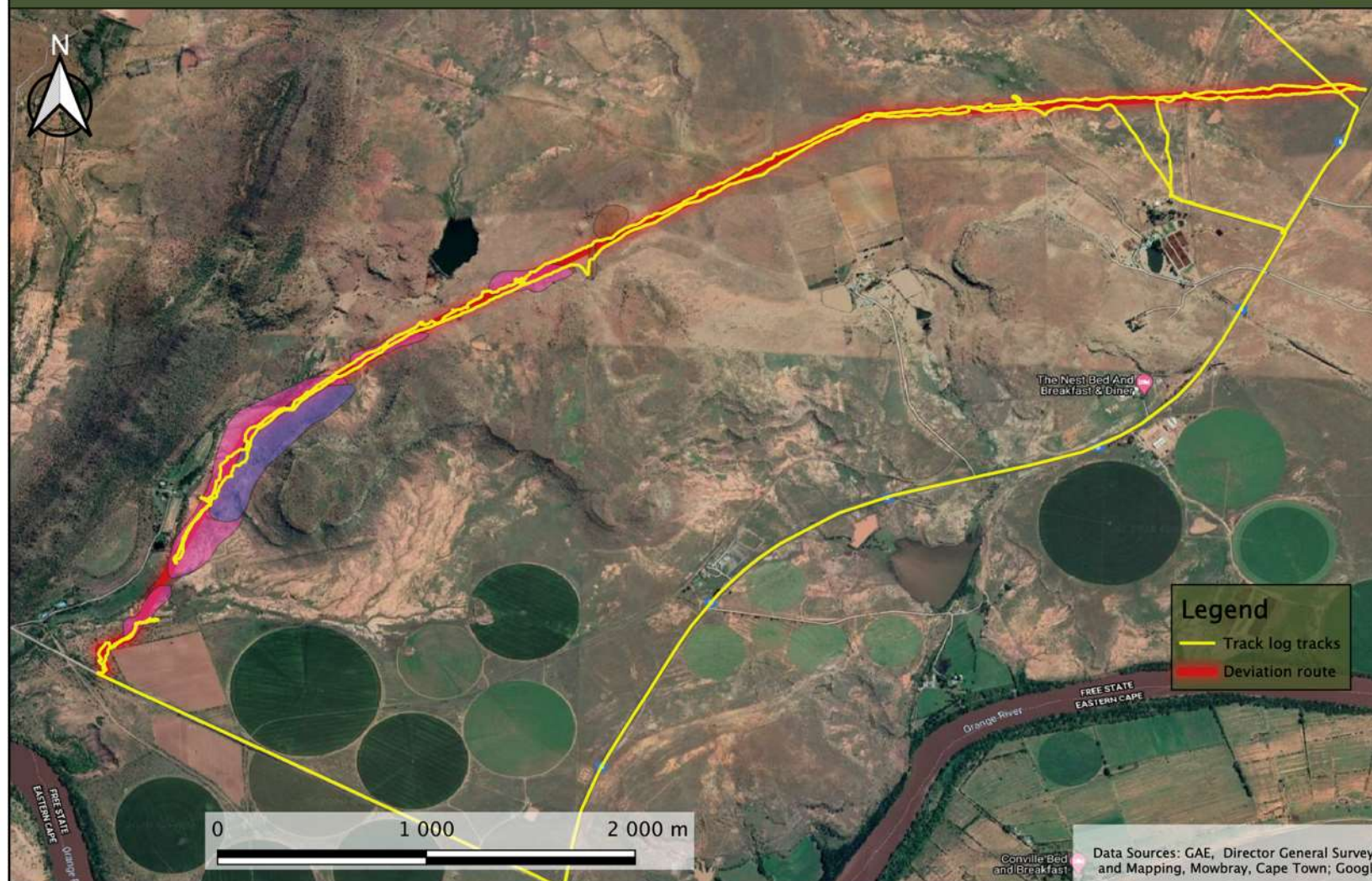


Figure 19 – Fieldwork tracklogs

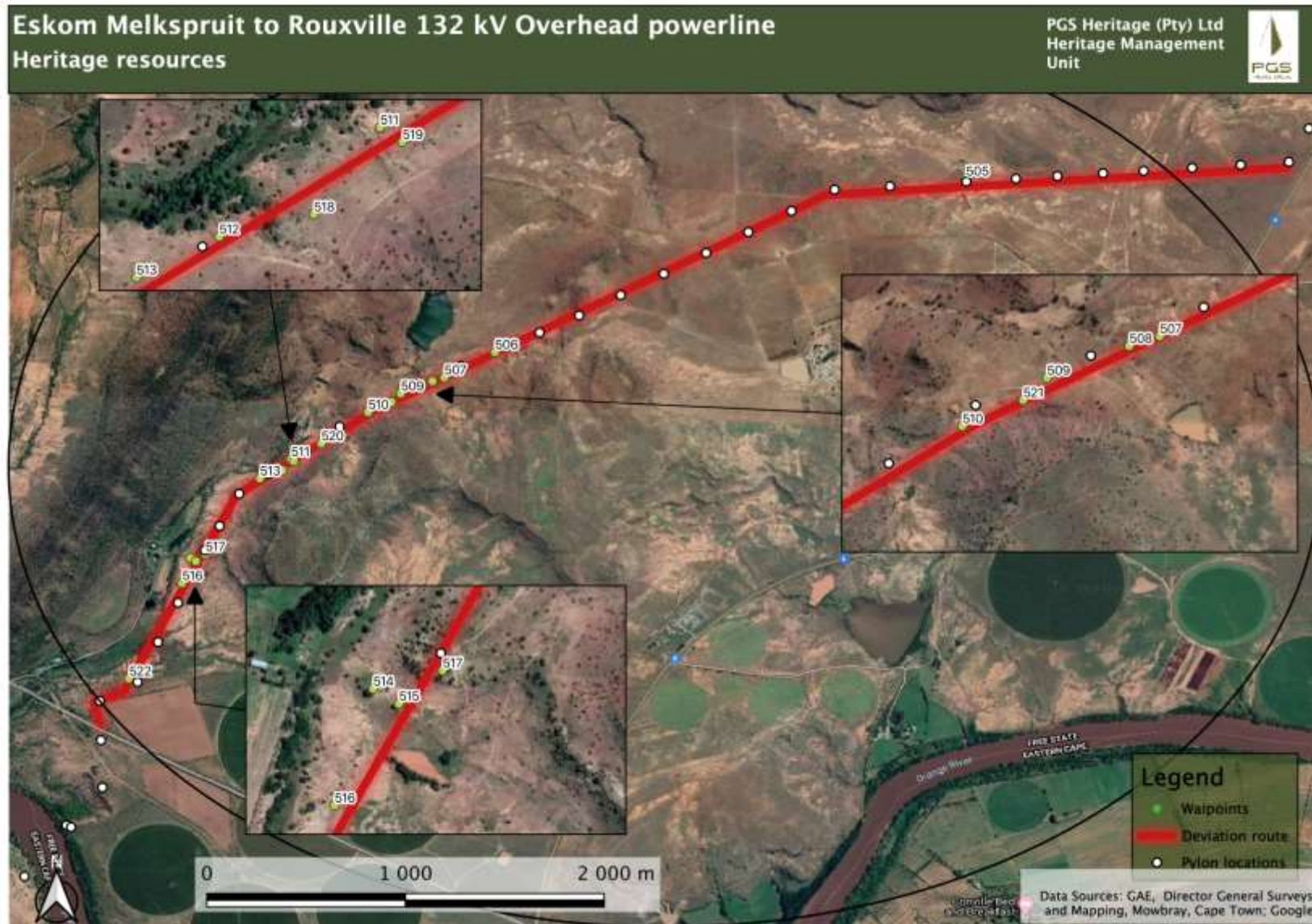


Figure 20 – Locality of the heritage resource– Identified heritage sites and a surface scatter of stone tools throughout the project area

Table 8 – Area identified during the heritage survey

Waypoint	Description	Heritage Significance	Heritage Rating
505	Rectangular packed stone feature with a crush-line extension leading into a small camp/holding pen.	Low	IIIC
506	Scatter of MSA stone-tools situated within an erosion gully. 1 x MSA Point 3 x MSA Blades 3 x Flakes	Low	NCW
507	Scatter of MSA and LSA stone tools situated on a stony outcrop. 20 x MSA Flakes 1 x LSA Core CCS 7 x LSA Flakes	Moderate	IIIB
508	Scatter of MSA and LSA stone tools situated near a small man-made dam. 4 x MSA flakes 1 x Flake CCS	Low	NCW
509	Small house foundation built with red bricks and a cement floor. A Zinc shed-like feature is located next to the small foundation. The Zinc feature could possibly have stood on top of the small foundation.	Moderate	IIIB
510-513	General scatter of stone-tools across the extent of the valley. 511 shows a large concentration of MSA and LSA stone tools. 6 x MSA Flakes 1 Large CCS Core 1 LSA core CCS 11 x LSA Flakes	Moderate	IIIB
514-515	Small historical homestead. 2 small packed stone features. Possibly the remnants of small structures. 1 Rectangular packed stone enclosure. Possibly a small kraal. 1 small midden with broken glass, porcelain and metal artefacts.	Moderate	IIIB
516	Small scatter of stone tools situated close to the banks of the small stream.	Low	NCW
517	Small packed stone feature situated on the side of the hill. Probably related to the features at 514.	Low	IIIC
518-521	Continuation of the general stone tool scatter along the extent of the valley.	Low	IIIC
522	Scatter of stone tools situated within the banks of the stream that are being eroded into gullies. Further activity of burrowing animals also brings these artefacts to the surface. 17 x MSA Flakes 2 x Cores , 11 x MSA flakes (1 = CCS)	Moderate	IIIB

5.1 Sensitivity assessment outcome

From the desktop assessment moderate to low heritage sensitive areas were identified. Many of the heritage sensitive areas identified during the desktop search consisted of old structures and buildings that fall outside the study area.

Large sections of the alignment are characterised by a background scatter of Middle and Later Stone Age material. Two major concentrations of lithics at waypoints **507 and 511** has a **moderate heritage significance** with a **heritage grading of IIIB**.

The structures at **509, 514, 515 and 517** are the remains of historic structures and can most probably be associated with farmworker homesteads. These homestead are generally known for the presence of stillborn burials as associated with indigenous burial practices. Due this fact these structures are given a **moderate heritage significance** and an **IIIB heritage rating**.

6 IMPACT ASSESSMENT

The impact significance rating process serves two purposes: firstly, it helps to highlight the critical impacts requiring consideration in the management and approval process; secondly, it shows the primary impact characteristics, as defined above, used to evaluate impact significance.

The impacts will be ranked according to the methodology described below. Where possible, mitigation measures will be provided to manage impacts. In order to ensure uniformity, a standard impact assessment methodology will be utilised so that a wide range of impacts can be compared with each other. The impact assessment methodology makes provision for the assessment of impacts against the following criteria:

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

A combined quantitative and qualitative methodology was used to describe impacts for each of the aforementioned assessment criteria. A summary of each of the qualitative descriptors along with the equivalent quantitative rating scale for each of the aforementioned criteria is given in **Table 9**.

Table 9 - Quantitative rating and equivalent descriptors for the impact assessment criteria

RATING	SIGNIFICANCE	EXTENT SCALE	TEMPORAL SCALE
1	VERY LOW	Proposed site	Incidental
2	LOW	Study area	Short-term
3	MODERATE	Local	Medium/High-term
4	HIGH	Regional / Provincial	Long-term
5	VERY HIGH	Global / National	Permanent

A more detailed description of each of the assessment criteria is given in the following sections.

6.1 Significance Assessment

Significance rating (importance) of the associated impacts embraces the notion of extent and magnitude but does not always clearly define these since their importance in the rating scale is very relative. For example, the magnitude (i.e. the size) of area affected by atmospheric pollution may be extremely large (1 000 km²) but the significance of this effect is dependent on the concentration or level of pollution. If the concentration is great, the significance of the impact would be HIGH or VERY HIGH, but if it is diluted it would be VERY LOW or LOW. Similarly, if 60 ha of a grassland type are destroyed the impact would be VERY HIGH if only 100 ha of that grassland type

were known. The impact would be VERY LOW if the grassland type was common. A more detailed description of the impact significance rating scale is given in **Table 10** below.

Table 10 - Description of the significance rating scale

RATING		DESCRIPTION
5	Very high	Of the highest order possible within the bounds of impacts which could occur. In the case of adverse impacts: there is no possible mitigation and/or remedial activity which could offset the impact. In the case of beneficial impacts, there is no real alternative to achieving this benefit.
4	High	Impact is of substantial order within the bounds of impacts, which could occur. In the case of adverse impacts: mitigation and/or remedial activity is feasible but difficult, expensive, time-consuming or some combination of these. In the case of beneficial impacts, other means of achieving this benefit are feasible but they are more difficult, expensive, time-consuming or some combination of these.
3	Moderate	Impact is real but not substantial in relation to other impacts, which might take effect within the bounds of those which could occur. In the case of adverse impacts: mitigation and/or remedial activity are both feasible and fairly easily possible. In the case of beneficial impacts: other means of achieving this benefit are about equal in time, cost, effort, etc.
2	Low	Impact is of a low order and therefore likely to have little real effect. In the case of adverse impacts: mitigation and/or remedial activity is either easily achieved or little will be required, or both. In the case of beneficial impacts, alternative means for achieving this benefit are likely to be easier, cheaper, more effective, less time consuming, or some combination of these.
1	Very low	Impact is negligible within the bounds of impacts which could occur. In the case of adverse impacts, almost no mitigation and/or remedial activity are needed, and any minor steps which might be needed are easy, cheap, and simple. In the case of beneficial impacts, alternative means are almost all likely to be better, in one or a number of ways, than this means of achieving the benefit. Three additional categories must also be used where relevant. They are in addition to the category represented on the scale, and if used, will replace the scale.
0	No impact	There is no impact at all - not even a very low impact on a party or system.

6.2 Spatial Scale

The spatial scale refers to the extent of the impact i.e. will the impact be felt at the local, regional, or global scale. The spatial assessment scale is described in more detail in **Table 11**.

Table 11 - Description of the significance rating scale

RATING		DESCRIPTION
5	Global/National	The maximum extent of any impact.
4	Regional/Provincial	The spatial scale is moderate within the bounds of impacts possible and will be felt at a regional scale (District Municipality to Provincial Level).
3	Local	The impact will affect an area up to 10 km from the proposed site.
2	Study Site	The impact will affect an area not exceeding the Eskom property.
1	Proposed site	The impact will affect an area no bigger than the ash disposal site.

6.3 Duration Scale

In order to accurately describe the impact, it is necessary to understand the duration and persistence of an impact in the environment. The temporal scale is rated according to criteria set out in **Table 12**.

Table 12 - Description of the temporal rating scale

RATING		DESCRIPTION
1	Incidental	The impact will be limited to isolated incidences that are expected to occur very sporadically.
2	Short-term	The environmental impact identified will operate for the duration of the construction phase or a period of less than 5 years, whichever is the greater.
3	Medium/High term	The environmental impact identified will operate for the duration of life of facility.
4	Long term	The environmental impact identified will operate beyond the life of operation.
5	Permanent	The environmental impact will be permanent.

6.4 Degree of Probability

Probability or likelihood of an impact occurring will be described as shown in **Table 13** below.

Table 13 - Description of the degree of probability of an impact occurring

RATING	DESCRIPTION
1	Practically impossible
2	Unlikely
3	Could happen
4	Very Likely
5	It's going to happen / has occurred

6.5 Degree of Certainty

As with all studies it is not possible to be 100% certain of all facts, and for this reason a standard “degree of certainty” scale is used as discussed in **Table 14**. The level of detail for specialist studies is determined according to the degree of certainty required for decision-making. The impacts are discussed in terms of affected parties or environmental components.

Table 14 - Description of the degree of certainty rating scale

RATING	DESCRIPTION
Definite	More than 90% sure of a particular fact.
Probable	Between 70 and 90% sure of a particular fact, or of the likelihood of that impact occurring.
Possible	Between 40 and 70% sure of a particular fact or of the likelihood of an impact occurring.
Unsure	Less than 40% sure of a particular fact or the likelihood of an impact occurring.
Can't know	The consultant believes an assessment is not possible even with additional research.
Don't know	The consultant cannot, or is unwilling, to make an assessment given available information.

6.6 Quantitative Description of Impacts

To allow for impacts to be described in a quantitative manner in addition to the qualitative description given above, a rating scale of between 1 and 5 was used for each of the assessment

criteria. Thus, the total value of the impact is described as the function of significance, spatial and temporal scale as described below:

$$\text{Impact Risk} = \frac{(\text{SIGNIFICANCE} + \text{Spatial} + \text{Temporal})}{3} \times \frac{\text{Probability}}{5}$$

An example of how this rating scale is applied is shown in **Table 15**.

Table 15 - Example of Rating Scale

Impact	Significance	Spatial Scale	Temporal Scale	Probability	Rating
	LOW	Local	Medium/High-term	Could Happen	
Impact to air	2	3	3	3	1.6

Note: The significance, spatial and temporal scales are added to give a total of 8, that is divided by 3 to give a criteria rating of 2,67. The probability (3) is divided by 5 to give a probability rating of 0,6. The criteria rating of 2,67 is then multiplied by the probability rating (0,6) to give the final rating of 1,6.

The impact risk is classified according to five classes as described in the **Table 16** below.

Table 16 - Impact Risk Classes

RATING	IMPACT CLASS	DESCRIPTION
0.1 – 1.0	1	Very Low
1.1 – 2.0	2	Low
2.1 – 3.0	3	Moderate
3.1 – 4.0	4	High
4.1 – 5.0	5	Very High

Therefore, with reference to the example used for air quality above, an impact rating of 1.6 will fall in the Impact Class 2, which will be considered to be a low impact.

6.7 Heritage Impacts

Large sections of the alignment are characterised by a background scatter of Middle and Later Stone Age material. Two major concentrations of lithics at waypoints **507 and 511** has a **moderate heritage significance** with a **heritage grading of IIIB**.

The structures at **509, 514, 515 and 517** are the remains of historic structures and can most probably be associated with farmworker homesteads. These homestead are generally known for the presence of stillborn burials as associated with indigenous burial practices. Due this fact these structures are given a **moderate heritage significance** and an **IIIB heritage rating**.

6.7.1 Possible Burial Grounds and graves

Due to the possibility of still born burials at the historical structures the impact significance before mitigation on the graves will be VERY HIGH negative before mitigation. *Only isolated sites will be*

affected by the proposed development. The possibility of the impact could occur . The expected duration of the impact is assessed as potentially permanent. Implementation of the recommended mitigation measures will modify this impact rating to an acceptable LOW negative.

6.7.2 Archaeological sites

The impact significance before mitigation on the identified archaeological sites will be MODERATE negative before mitigation. As the occurrence of the archaeological materials is over a large area *the study area will be affected by the proposed development.* The possibility of the impact occurring **is very likely.** The expected duration of the impact is assessed as potentially permanent. Implementation of the recommended mitigation measures will modify this impact rating to an acceptable LOW negative.

Eskom Melkspruit to Rouxville 132 kV Overhead powerline Heritage resources with 30 m buffer

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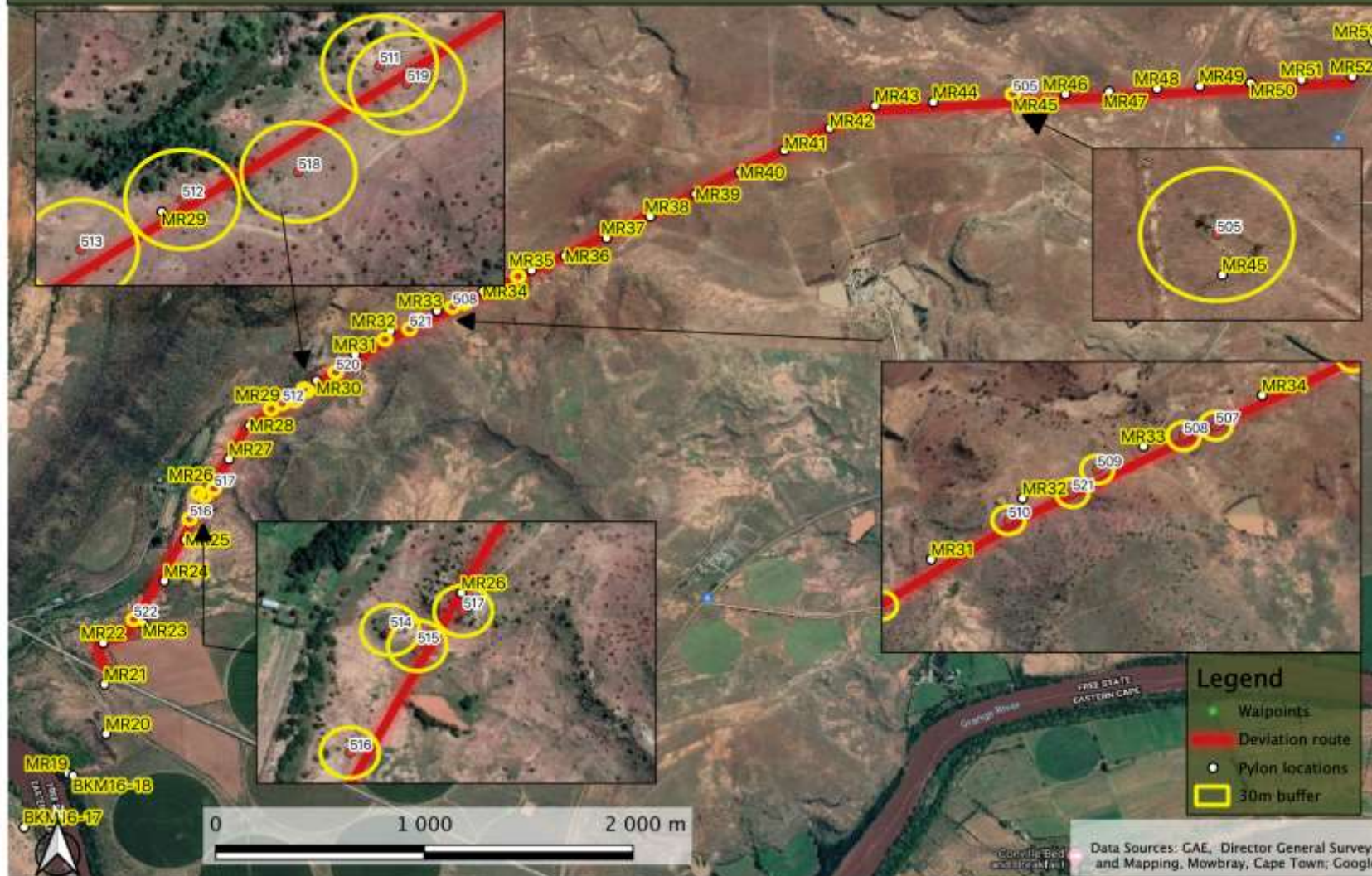


Figure 21 – Locality of the heritage resource in relation to the proposed pylons

6.8 Impact Assessment Table

Table 17 - Impact Assessment Table (pre-mitigation)

IMPACT	IMPACT DIRECTION	SIGNIFICANCE	SPATIAL SCALE	TEMPORAL SCALE	PROBABILITY	RATING
Impact on burial ground and graves	Negative	VERY HIGH	Isolated Sites / proposed site	Permanent	Could happen	
		5	1	5	3	2,20
Impact on archaeological sites	Negative	MODERATE	Study Area	Permanent	Very Likely	
	-	3	2	5	4	2,67

Table 18 - Impact Assessment Table (post-mitigation)

IMPACT	IMPACT DIRECTION	SIGNIFICANCE	SPATIAL SCALE	TEMPORAL SCALE	PROBABILITY	RATING
Impact on burial ground and graves	Negative	LOW	Isolated Sites / proposed site	Permanent	Unlikely	
		2	1	5	2	1,07
Impact on archaeological sites	Negative	LOW	Isolated Sites / proposed site	Permanent	Could happen	
	-	2	1	5	3	1,60

6.9 Management recommendations and guidelines

6.9.1 Construction phase

The project will encompass a range of activities during the construction phase, including ground clearance, establishment of construction camp areas and small-scale infrastructure development associated with the project.

It is possible that cultural material will be exposed during construction and may be recoverable, keeping in mind delays can be costly during construction and as such must be minimised. Development surrounding infrastructure and construction of facilities results in significant disturbance, however foundation holes do offer a window into the past and it thus may be possible to rescue some of the data and materials. It is also possible that substantial alterations will be implemented during this phase of the project and these must be catered for. Temporary infrastructure developments, such as construction camps and laydown areas, are often changed or added to the project as required. In general, these are low impact developments as they are superficial, resulting in little alteration of the land surface, but still need to be catered for.

During the construction phase, it is important to recognize any significant material being unearthed, making the correct judgment on which actions should be taken. It is recommended that the following chance find procedure should be implemented.

6.9.2 Chance find procedure

- A heritage practitioner / archaeologist should be appointed to develop a heritage induction program and conduct training for the ECO as well as team leaders in the identification of heritage resources and artefacts **during the implementation of the EMP**.
- An appropriately qualified heritage practitioner / archaeologist must be identified to be called upon in the event that any possible heritage resources or artefacts are identified.
- Should an archaeological site or cultural material be discovered during construction (or operation), the area should be demarcated, and construction activities halted.
- The qualified heritage practitioner / archaeologist will then need to come out to the site and evaluate the extent and importance of the heritage resources and make the necessary recommendations for mitigating the find and the impact on the heritage resource.
- The contractor therefore should have some sort of contingency plan so that operations could move elsewhere temporarily while the materials and data are recovered.
- Construction can commence as soon as the site has been cleared and signed off by the heritage practitioner / archaeologist.

6.9.3 Possible finds during construction

The study area occurs within a greater historical and archaeological site as identified during the desktop and fieldwork phase. Soil clearance for infrastructure as well as the proposed reclamation activities, could uncover the following:

- High density concentrations of stone artefact
- unmarked graves

6.10 Timeframes

It must be kept in mind that mitigation and monitoring of heritage resources discovered during construction activity will require permitting for collection or excavation of heritage resources and lead times must be worked into the construction time frames. **Table 19** gives guidelines for lead times on permitting.

Table 19 - Lead times for permitting and mobilisation

Action	Responsibility	Timeframe
Preparation for field monitoring and finalisation of contracts	The contractor and service provider	1 month
Application for permits to do necessary mitigation work	Service provider – Archaeologist and SAHRA	3 months
Documentation, excavation and archaeological report on the relevant site	Service provider – Archaeologist	3 months
Handling of chance finds – Graves/Human Remains	Service provider – Archaeologist and SAHRA	2 weeks
Relocation of burial grounds or graves in the way of construction	Service provider – Archaeologist, SAHRA, local government and provincial government	6 months

6.11 Heritage Management Plan for EMPr implementation

Table 20 - Heritage Management Plan for EMPr implementation

Area and site no.	Mitigation measures	Phase	Timeframe	The responsible party for implementation	Monitoring Party (frequency)	Target	Performance indicators (monitoring tool)
General project area	Implement a chance to find procedures in case where possible heritage finds are uncovered.	Construction and operation	During construction and operation	Applicant ECO Heritage Specialist	ECO (monthly / as or when required)	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 34-36 and 38 of NHRA	ECO Monthly Checklist/Report
Possible graves	The sites at 505, 509, 514, 515 and 517 should be demarcated with a 30-meter buffer and the site should be avoided if any construction is to happen close to it a consultation with local communities must be done to ascertain. If any infant burials are present.	Construction through to Operational	During Construction and Operation	Applicant Environmental Control Officer (ECO) Heritage specialist	Monthly	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 36 and 38 of NHRA	ECO Monthly Checklist/Report
Structures	For site 505 (impacted by pylon MR45) and site 517 (impacted by pylon MR26) a Phase 2 mitigation process must be implemented for this site that will include: 1. An application. For a mitigation permit from SAHRA; 2. Documentation of the site through excavations to expose the extent of the structures and then through formal plan drawings. 3. A destruction permit from SAHRA will be then applied for by the client with the backing of the mitigation report.	Pre-construction	After the approval of the EA and before construction occurs	Applicant Environmental Control Officer (ECO) Archaeologist		Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35, 36 and 38 of NHRA	ECO Monthly Checklist/Report
Identified archaeological sites	All archaeological site must be demarcated with a 30-meter buffer when construction is to take place in close vicinity to the identified areas. Access roads and construction. Camps must be placed in. such. Manner as not to	Pre-construction	Pre-construction to be implemented before construction	Applicant Archaeologist	None	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35 of NHRA	Final report to be used by the develop to apply for a destruction permit under s35 of the NHRA

Area and site no.	Mitigation measures	Phase	Timeframe	The responsible party for implementation	Monitoring Party (frequency)	Target	Performance indicators (monitoring tool)
	<p>traverse any of these archaeological sites.</p> <p>In the event that sites 507 and 512 (Impacted directly by pylon MR29) cannot be avoided a Phase 2 archaeological mitigation process must be implemented. This will include:</p> <ol style="list-style-type: none"> 4. An application for a permit to mitigate from SAHRA under s35 of the NHRA will be required to conduct such work. 5. Surface collections, test excavations and analysis of recovered material. 6. A destruction permit from SAHRA will be then applied for by the client with the backing of the mitigation report. 		activities occur at these site				
Archaeological sensitive areas	It is further recommended that construction activities between point 507 and 516 is monitored by an archaeologist	Construction phase in the specific areas	During construction	Applicant Environmental Control Officer (ECO) Heritage specialist	Daily	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 36 and 38 of NHRA	ECO Monthly Checklist/Report Archaeologist daily report

7 CONCLUSIONS

The HIA has shown that the study area and surrounding area has some heritage resources situated within the proposed development boundaries. Through data analysis and a site investigation, the following issues were identified from a heritage perspective.

7.1 Heritage Sites

Large sections of the alignment are characterised by a background scatter of Middle and Later Stone Age material. Two major concentrations of lithics at waypoints **507 and 511** has a **moderate heritage significance** with a **heritage grading of IIIB**.

The structures at **509, 514, 515 and 517** are the remains of historic structures and can most probably be associated with farmworker homesteads. These homestead are generally known for the presence of stillborn burials as associated with indigenous burial practices. Due this fact these structures are given a **moderate heritage significance** and an **IIIB heritage rating**.

7.1.1 Possible Burial Grounds and graves

Due to the possibility of still born burials at the historical structures the impact significance before mitigation on the graves will be VERY HIGH negative before mitigation. *Only isolated sites will be affected by the proposed development.* The possibility of the impact could occur . The expected duration of the impact is assessed as potentially permanent. Implementation of the recommended mitigation measures will modify this impact rating to an acceptable LOW negative.

7.1.2 Archaeological sites

The impact significance before mitigation on the identified archaeological sites will be MODERATE negative before mitigation. As the occurrence of the archaeological materials is over a large area *the study area will be affected by the proposed development.* The possibility of the impact occurring **is very likely**. The expected duration of the impact is assessed as potentially permanent. Implementation of the recommended mitigation measures will modify this impact rating to an acceptable LOW negative.

7.2 Mitigation measures

Area and site no.	Mitigation measures	Phase	Timeframe
General project area	Implement a chance to find procedures in case where possible heritage finds are uncovered.	Construction and operation	During construction and operation
Possible graves	The sites at 505, 509, 514, 515 and 517 should be demarcated with a 30-meter buffer and the site should be avoided if any construction is to happen close to it a consultation with local communities must be done to ascertain. If any infant burials are present.	Construction through to Operational	During Construction and Operation
Structures	For site 505 (impacted by pylon MR45) and site 517 (impacted by pylon MR26) a Phase 2 mitigation process must be implemented for this site that will include: <ul style="list-style-type: none"> 4. An application. For a mitigation permit from SAHRA; 5. Documentation of the site through excavations to expose the extent of the structures and then through formal plan drawings. 6. A destruction permit from SAHRA will be then applied for by the client with the backing of the mitigation report. 	Pre-construction	After the approval of the EA and before construction occurs
Identified archaeological sites	All archaeological site must be demarcated with a 30-meter buffer when construction is to take place in close vicinity to the identified areas. Access roads and construction. Camps must be placed in. such. Manner as not to traverse any of these archaeological sites. In the event that sites 507 and 512 (Impacted directly by pylon MR29) cannot be avoided a Phase 2 archaeological mitigation process must be implemented. This will include: <ul style="list-style-type: none"> 7. An application for a permit to mitigate from SAHRA under s35 of the NHRA will be required to conduct such work. 8. Surface collections, test excavations and analysis of recovered material. 9. A destruction permit from SAHRA will be then applied for by the client with the backing of the mitigation report. 	Pre-construction	Pre-construction to be implemented before construction activities occur at these site
Archaeological sensitive areas	It is further recommended that construction activities between point 507 and 516 is monitored by an archaeologist	Construction phase in the specific areas	During construction

7.3 General

It is the author's considered opinion that overall impact on heritage resources is Low. Provided that the recommended mitigation measures are implemented, the impact would be acceptably Low or could be totally mitigated to the degree that the project could be approved from a heritage

perspective. The management and mitigation measures as described in Section 6 of this report have been developed to minimise the project impact on heritage resources.

8 REFERENCES

8.1 Published References

- Lye, W.F. 1967. The Difaqane – the Mfecane in the Southern Sotho area, 1822 – 1824. *Journal of African History* 8 (1): 107-131.
- Goodwin H.J. & Van Riet Lowe, C. 1929. The Stone Age cultures of South Africa. *Annals of the South African Museum* 27: 1 – 289.
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- Sampson, C.G. 1968. The Middle Stone Age of the Orange River Scheme Area. National Museum, Bloemfontein. Memoir, no. 4.
- Sampson 1972. The Stone Age Industries of the Orange River Scheme and South Africa. National Museum, Bloemfontein. Memoir, no. 6.

8.2 Unpublished References

- Rossouw, L. 2017. Phase 1 Heritage Impact Assessment of a proposed new Eskom 132kV power line between the Rouxville substation in the Free State Province and the Melkspruit substation in Aliwal North, Eastern Cape Province.

8.3 Historic Topographic Maps

All the historic topographic maps used in this report were obtained from the Directorate: National Geo-spatial Information of the Department of Rural Development and Land Reform in Cape Town.

8.4 Contemporary Cartographic Data

MapSource and Google Earth were used to depict contemporary cartographic data.

WOUTER FOURIE

Professional Heritage Specialist and Professional Archaeologist and Director PGS Heritage

Summary of Experience

Specialised expertise in Archaeological Mitigation and excavations, Cultural Resource Management and Heritage Impact Assessment Management, Archaeology, Anthropology, Applicable survey methods, Fieldwork and project management, Geographic Information Systems, including *inter alia* -

Involvement in various grave relocation projects (some of which relocated up to 1000 graves) and grave “rescue” excavations in the various provinces of South Africa

Involvement with various Heritage Impact Assessments, within South Africa, including -

- Archaeological Walkdowns for various projects
- Phase 2 Heritage Impact Assessments and EMPs for various projects
- Heritage Impact Assessments for various projects
 - Iron Age Mitigation Work for various projects, including archaeological excavations and monitoring
 - Involvement with various Heritage Impact Assessments, outside South Africa, including -
- Archaeological Studies in Democratic Republic of Congo
- Heritage Impact Assessments in Mozambique, Botswana and DRC
- Grave Relocation project in DRC

Key Qualifications

BA [Hons] (Cum laude) - Archaeology and Geography - 1997

BA - Archaeology, Geography and Anthropology - 1996

Professional Archaeologist - Association of Southern African Professional Archaeologists (ASAPA) - Professional Member

Accredited Professional Heritage Specialist – Association of Professional Heritage Practitioners (APHP)

CRM Accreditation (ASAPA) -

- Principal Investigator - Grave Relocations
- Field Director – Iron Age
- Field Supervisor – Colonial Period and Stone Age
- Accredited with Amafa KZN

Key Work Experience

2003- current - Director – Professional Grave Solutions (Pty) Ltd

2007 – 2008 - Project Manager – Matakoma-ARM, Heritage Contracts Unit, University of the Witwatersrand

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2005-2007 - Director – Matakoma Heritage Consultants (Pty) Ltd

2000-2004 - CEO– Matakoma Consultants

1998-2000 - Environmental Coordinator – Randfontein Estates Limited. Randfontein, Gauteng

1997-1998 - Environmental Officer – Department of Minerals and Energy. Johannesburg, Gauteng

Worked on various heritage projects in the SADC region including, Botswana, Mozambique, Malawi, Mauritius, Zimbabwe and the Democratic Republic of the Congo