HERITAGE IMPACT ASSESSMENT

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

FOR THE PROPOSED CLEARING OF INDIGENOUS VEGETATION FOR THE CONSTRUCTION OF AN OFF-STREAM STORAGE DAM AND RELATED INFRASTRUCTURE ON THE FARM: KLEIN POS 420 MR WITHIN BLOUBERG LOCAL MUNICIPALITY, CAPRICORN DISTRICT, LIMPOPO PROVINCE

Type of development:

Off-stream Storage Dam

Client:

Tua Conserva Environmental and Conservation Services cc

Applicant:

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Project number 23097
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September 2023

APPROVAL PAGE

Project Name	Die Berg Dam
Report Title	Heritage Impact Assessment for the proposed Clearing of Indigenous Vegetation for the Construction of an Off-Stream Storage Dam and Related Infrastructure on the Farm: Klein Pos 420 MR within Blouberg Local Municipality, Capricorn District, Limpopo Province
Authority Reference Number	TBC
Report Status	Final Report
Applicant Name	Ian & Hannetjie Beleggings (Edms) Bpk

Responsibility	Name	Qualifications and Certifications	Date
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Amendments on Document

Date	Report Reference Number	Description of Amendment

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REPORT OUTLINE

Appendix 6 of the GNR 326 EIA Regulations published on 7 April 2017 provides the requirements for specialist reports undertaken as part of the Environmental Authorisation process. In line with this, Table 1 provides an overview of Appendix 6 together with information on how these requirements have been met.

Table 1. Specialist Report Requirements.

Requirement from Appendix 6 of GN 326 EIA Regulation 2017	Chapter
(a) Details of - (i) the specialist who prepared the report; and (ii) the expertise of that specialist to compile a specialist report including a curriculum vitae.	Section a
(b) Declaration that the specialist is independent in a form as may be specified by the competent authority.	*Declaration of Independence*
(c) Indication of the scope of, and the purpose for which, the report was prepared.	Section 1
(cA) An indication of the quality and age of base data used for the specialist report.	Section 3.4.
(cB) A description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change.	Section 9
(d) Duration, Date and season of the site investigation and the relevance of the season to the outcome of the assessment.	Section 3.4
(e) Description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used.	Section 3
(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 site plan identifying site alternatives.	Section 8 and 9
(g) Identification of any areas to be avoided, including buffers.	Section 8 and 9
(h) Map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers.	Section 8
(I) Description of any assumptions made and any uncertainties or gaps in knowledge.	Section 3.7
(j) A description of the findings and potential implications of such findings on the impact of the proposed activity including identified alternatives on the environment or activities.	Section 1.3
(k) Mitigation measures for inclusion in the EMPr.	Section 9.1 and 9.5
(l) Conditions for inclusion in the environmental authorisation.	Section 9.1 and 9.5
(m) Monitoring requirements for inclusion in the EMPr or environmental authorisation.	Section 9.5
(n) Reasoned opinion - (i) As to whether the proposed activity, activities or portions thereof should be authorised; (iA) Regarding the acceptability of the proposed activity or activities; and (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 9.3
(o) Description of any consultation process that was undertaken during the course of preparing the specialist report.	Section 5
(p) A summary and copies of any comments received during any consultation process and where applicable all responses thereto.	Refer to the EIA report
(q) Any other information requested by the competent authority.	No other information requested at this time

Executive Summary

Tua Conserva Environmental and Conservation Services cc was appointed as the independent Environmental Assessment Practitioner (EAP) to apply for Environmental Authorization for the clearing of indigenous vegetation for the construction of an off-stream storage dam and related infrastructure on the Farm Klein Pos 420 in Limpopo Province. Tua Conserva Environmental and Conservation Services cc, in turn, appointed Beyond Heritage to conduct a Heritage Impact Assessment (HIA) for the Project and the study area was assessed through a desktop assessment and by a non-intrusive pedestrian field survey that was conducted for the Die Berg Dam Project. Key findings of the assessment include:

- Middle Stone Age scatters and an Late Iron Age site with ceramics that could be classified as *Letsibogo* ceramic facies were found on the western neighbouring farm Zwartberg 72 MR in a survey conducted in 2022 (see van der Walt 2022a). The Project area yielded no heritage resources like those found on Zwartberg 72 MR;
- Sections of the Project area has been disturbed through historical cultivation since the 1960s onwards including active cultivation along the proposed pipelines;
- The Project area is therefore considered to be of low heritage potential and this was confirmed during the field survey whereby no tangible heritage resources were identified within the impact area;
- According to the South African Heritage Resource Authority (SAHRA) Paleontological sensitivity map the study area is of insignificant and moderate palaeontological sensitivity and a desktop study was conducted for this aspect. The desktop study concluded that the farm lies on the moderately fossiliferous sands of the Cenozoic Rooibokkraal Formation, with minor outcrops of ancient Beit Bridge Complex igneous rocks. Only the silcretes and calcretes are likely to preserve or trap fossils. Since the area to be cleared is on soils and sandy soils, it is very unlikely that any fossils will be disturbed or destroyed. The Mt Dowe Gneiss (Beit Bridge Group) does not have any fossils. Nonetheless, a Fossil Chance Find Protocol should be added to the EMPr (Bamford 2023).

The impact on heritage resources is low, and the Project can be authorised provided that the recommendations in this report are adhered to and based on the SAHRA's approval.

Recommendations:

- From a heritage perspective, either pipeline alternative is acceptable as neither alternative would impact on known heritage resources;
- Monitoring of the Project area by the Environmental Control Officer (ECO) during pre-construction and construction phases for heritage chance finds, if chance finds are encountered to implement the Chance Find Procedure for the project.

Declaration of Independence

Specialist Name	Jaco van der Walt
Declaration of Independence	I declare, as a specialist appointed in terms of the National Environmental Management Act (Act No 107 of 1998) and the associated 2014 Environmental Impact Assessment (EIA) Regulations (as amended), that I: • I act as an 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 49 A of the Act.
Signature	
Date	06/09/2023

a) Expertise of the specialist

Jaco van der Walt has been practising as a Cultural Resource Management (CRM) archaeologist for 15 years. Jaco is an accredited member of the Association of South African Professional Archaeologists (ASAPA) (#159) and APHP #114 and has conducted more than 500 impact assessments in Limpopo, Mpumalanga, North West, Free State, Gauteng, Kwa Zulu Natal (KZN) as well as the Northern and Eastern Cape Provinces in South Africa.

Jaco has worked on various international projects in Zimbabwe, Botswana, Mozambique, Lesotho, Democratic Republic of the Congo (DRC) Zambia, Guinea, Afghanistan, Nigeria and Tanzania. Through this, he has a sound understanding of the International Finance Corporations (IFC) Performance Standard requirements, with specific reference to Performance Standard 8 – Cultural Heritage

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ABBREVIATIONS

ASAPA	Association of South African Professional Archaeologists
BGG	Burial Ground and Graves
CFPs	Chance Find Procedures
CMP	Conservation Management Plan
CoGHSTA	Co-operative Governance, Human Settlements and Traditional Affairs
CRR	Comments and Response Report
CRM	Cultural Resource Management
DFFE	Department of Fisheries, Forestry and Environment,
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment*
EIA	Early Iron Age*
EAP	Environmental Assessment Practitioner
EMPr	Environmental Management Programme
ESA	Early Stone Age
ESIA	Environmental and Social Impact Assessment
GIS	Geographical Information System
GPS	Global Positioning System
GRP	Grave Relocation Plan
HIA	Heritage Impact Assessment
LIA	Late Iron Age
LSA	Late Stone Age
MEC	Member of the Executive Council
MIA	Middle Iron Age
MPRDA	Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
MSA	Middle Stone Age
NCHM	National Cultural History Museum
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NID	Notification of Intent to Develop
NoK	Next-of-Kin
PRHA	Provincial Heritage Resource Agency
SADC	Southern African Development Community
SAHRA	South African Heritage Resources Agency

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

GLOSSARY

Archaeological site	Remains of human activity over 100 years old
Earlier Stone Age	~ 2.6 million to 250 000 years ago
Middle Stone Age	~ 250 000 to 40-25 000 years ago
Later Stone Age	~ 40-25 000, to the historic period
The Iron Age	~ AD 400 to 1840
Historic	~ AD 1840 to 1950
Historic building	Over 60 years old

1 Introduction

Tua Conserva Environmental and Conservation Services cc appointed Beyond Heritage to conduct a Heritage Impact Assessment (HIA) for the clearing of indigenous vegetation for the construction of an off-stream storage dam and related infrastructure. The project is situated on the Farm Klein Pos 420 MR (also known as Graaff Reinet 71 MR), between the R572 and the Limpopo River and accessed via the district road along the river in Limpopo Province. The development area is situated within the Blouberg Local Municipality within the Capricorn District Municipality (Figures 1.1 to 1.3). The report forms part of the Environmental Impact Assessment (EIA) and Environmental Management Programme (EMPr) for the development.

The aim of the study was to survey the proposed development footprint to understand the cultural layering of the area, and if heritage features are found, to assess their importance within local, provincial, and national context. It further served to assess the impact of the proposed Project on non-renewable heritage resources. The study will submit appropriate recommendations with regard to the responsible cultural resources management measures that might be required to assist the developer in managing the discovered heritage resources in a responsible manner. Recommendations are included to protect, preserve, and develop such resources within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999) (NHRA).

The report outlines the approach and methodology utilized before and during the survey, which includes:

- Phase 1, review of relevant literature;
- Phase 2, the physical surveying of the area on foot and by vehicle;
- Phase 3, reporting the outcome of the study.

During the survey, no heritage resources were recorded in the study area. General site conditions and features in the study area were recorded by means of photographs, GPS locations and descriptions. Possible impacts were identified, and mitigation measures are proposed in this report.

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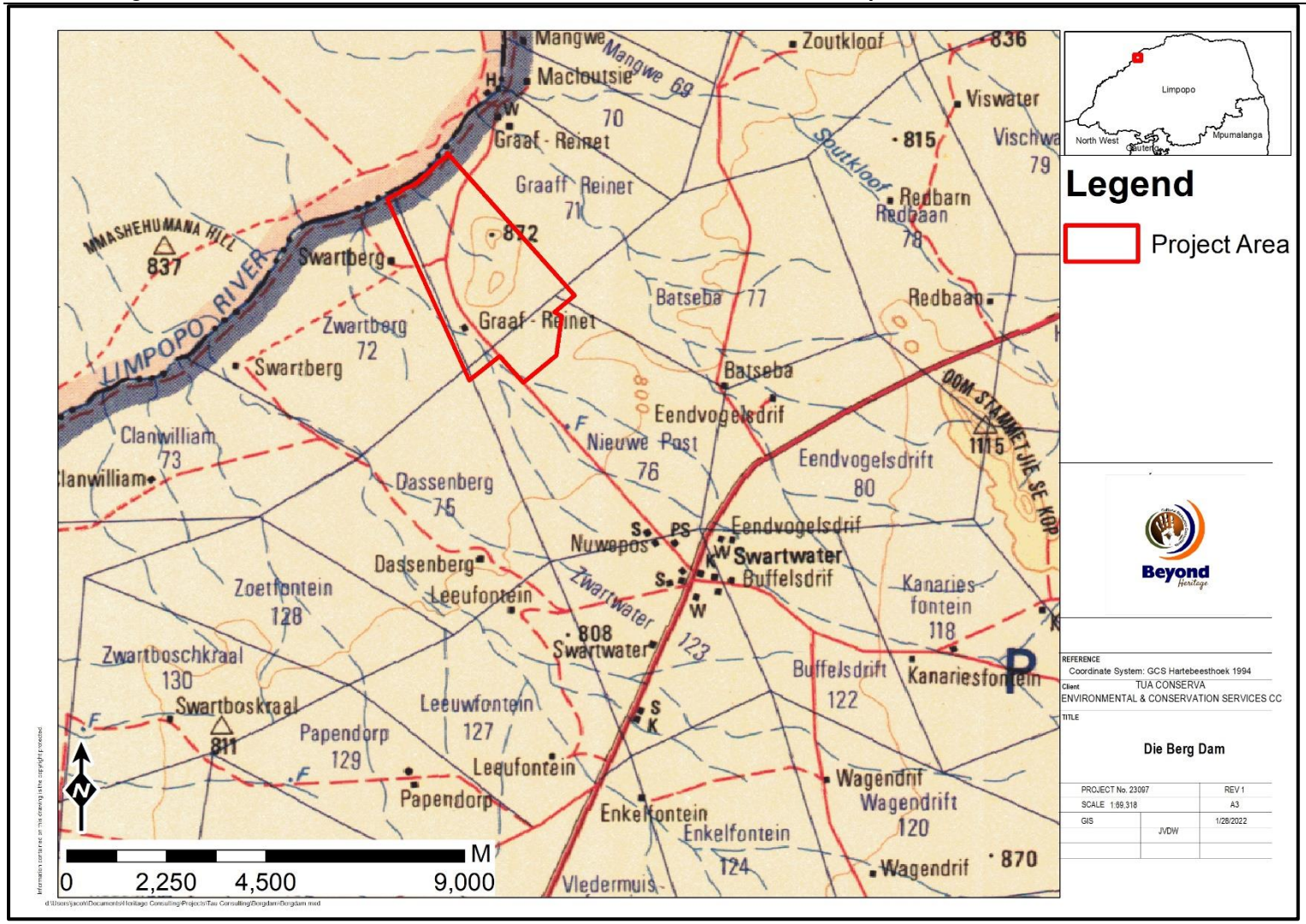

Figure 1.1. Regional setting of the Project (2227 1: 250 000 topographical map).

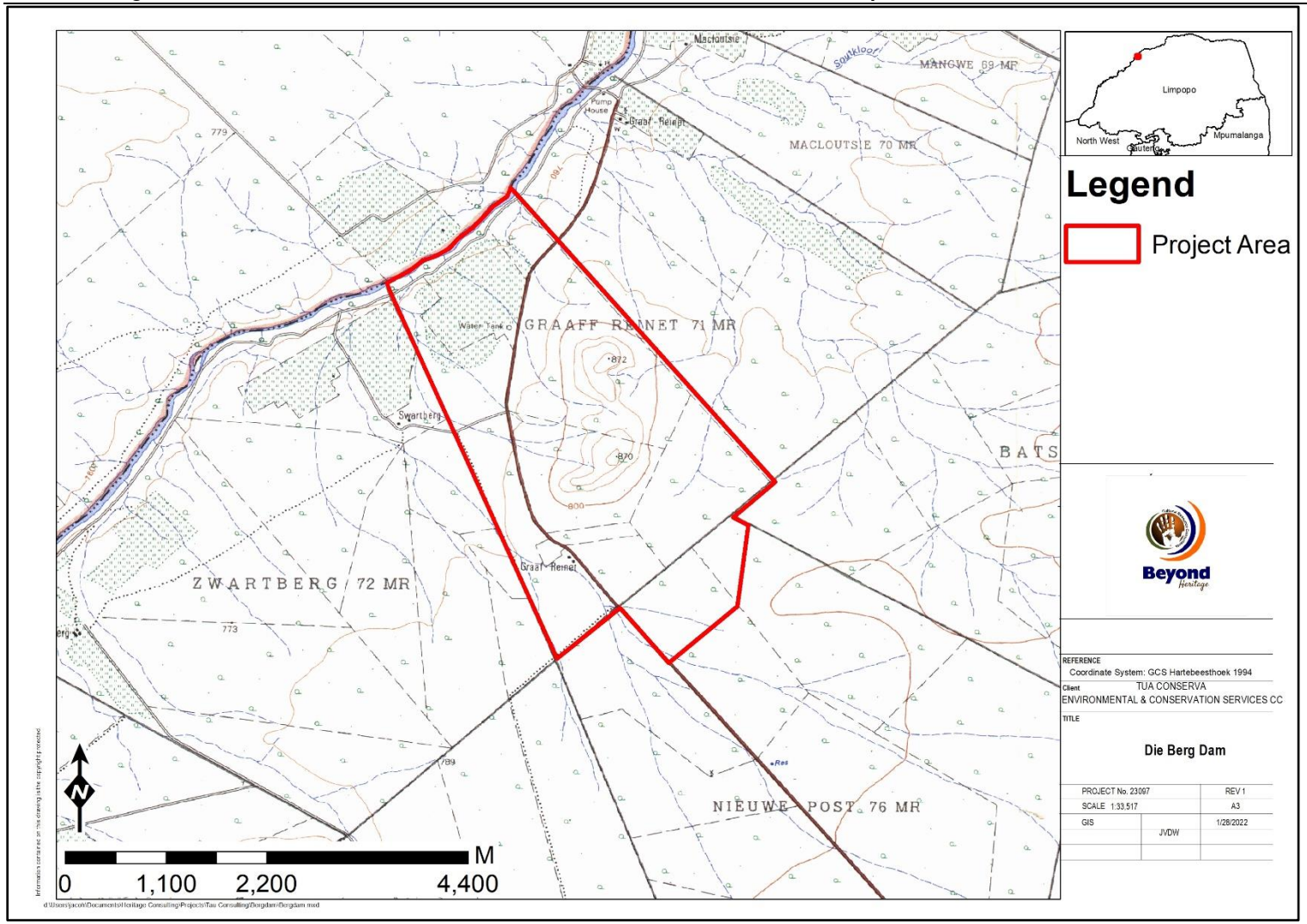

Figure 1.2. Local setting of the Project (2227 DD 1: 50 000 topographical map).

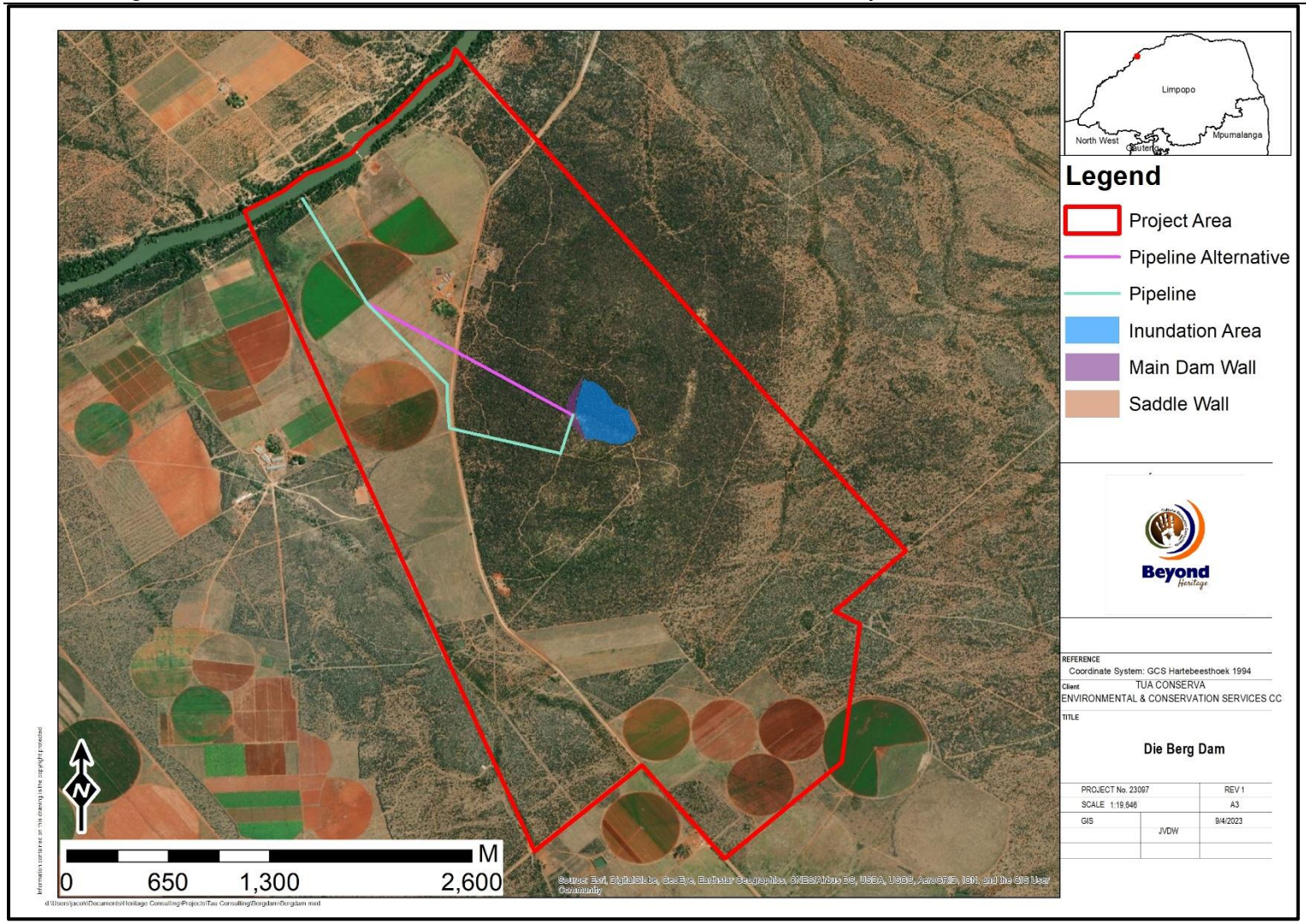

Figure 1.3. Aerial image of the Project area and Project components.

1.1 Terms of Reference

The following Terms of Reference were adhered to in conducting this HIA.

Field study

Conduct a field study to: (a) survey the development footprint to understand the heritage character of the impact area; b) record GPS points of sites/areas identified as significant areas; c) determine the levels of significance of the various types of heritage resources affected by the proposed development.

Reporting

Report on the identification of anticipated and cumulative impacts the operational units of the proposed Project activity may have on the identified heritage resources for all 3 phases of the project, i.e., construction, operation and decommissioning phases. Consider alternatives, should any significant sites be impacted adversely by the proposed project. Ensure that all studies and results comply with the relevant legislation, SAHRA minimum standards and the code of ethics and guidelines of Association of South African Professional Archaeologists (ASAPA).

Recommendations are provided to assist the developer in managing the discovered heritage resources in a responsible manner, and to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999).

1.2 Project Description

Project components and the location of Die Berg Dam Project are outlined in Tables 2 and 3.

Table 2: Project Description

Magisterial District	Blouberg Local Municipality within the Capricorn District
Central co-ordinates of the development	The co-ordinates of the proposed sites are approximate: (i) Dam (Preliminary centre position): Latitude 22°47'26.92"S and Longitude 28° 9'33.71"E. (ii) Pipeline (Preliminary positions): From (Start point) Latitude 22°46'37.37"S and Longitude 28° 8'32.83"E. To (End point) Latitude 22°47'26.55"S and Longitude 28° 9'30.08"E.
1:50 000 Topographic Map Number	2227 DD

Table 3: Infrastructure and project activities

Type of development	Storage Dam and related infrastructure
Project Details: The proposed project involves the clearing of indigenous vegetation for the construction of an off-stream storage dam and related infrastructure such as pipelines, for crop irrigation purposes.	

1.3 Alternatives

Two alternative routes were provided for the pipeline which forms part of the infrastructure for the Project (Figure 1.1 – 1.3).

2 Legislative Requirements

The HIA, as a specialist study to the EIA, is required under the following legislation:

- National Heritage Resources Act ((NHRA), Act No. 25 of 1999)
- National Environmental Management Act ((NEMA), Act No. 107 of 1998 - Section 23(2)(b))

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

- Identify any heritage resources, which may be affected;
- Assess the nature and degree of significance of such resources;
- Assess the negative and positive impact of the development on these resources; and
- Make recommendations for the appropriate heritage management (or avoidance) of these impacts.

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

SAHRA as a commenting authority under section 38(8) of the NHRA require all environmental documents, compiled in support of an EA application as defined by the National Environmental Management Act (NEMA) (Act No 107 of 1998) to be submitted to SAHRA for commenting. Environmental Impact Assessment (EIA) Regulations section 40 (1) and (2). The Environmental Impact Assessment (EIA) Regulations, Government Notice Regulation (GN) R.982 were published on 04 December 2014 and promulgated on 08 December 2014. Together with the EIA Regulations, the Minister also published GN R.983 (Listing Notice No. 1), GN R.984 (Listing Notice No. 2) and GN R.985 (Listing Notice No. 3) in terms of Sections 24(2) and 24D of the NEMA, as amended) Upon submission to SAHRA the project will be automatically given a case number as reference. As such the EIA report and its appendices must be submitted to the case as well as the EMPr, once it's completed by the Environmental Assessment Practitioner (EAP).

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

Phase 1 HIAs are primarily concerned with the location and identification of heritage sites situated within a proposed development area. Identified sites should be assessed according to their significance (refer to Section 3.5). Relevant conservation or mitigation recommendations should be made. Recommendations are subject to evaluation by SAHRA.

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

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

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

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

In the event of a site conservation option being preferred by the developer, a site management plan, prepared by a professional archaeologist and approved by SAHRA, will suffice as minimum requirement. After mitigation of a site, a destruction permit must be applied for with SAHRA by the applicant before development may proceed.

Human remains older than 60 years are protected by the National Heritage Resources Act, with reference to Section 36 and GNR 548 as well as the SAHRA BGG Policy 2020. Graves older than 60 years, but younger than 100 years fall under Section 36 of Act 25 of 1999 of the National Heritage Resources Act (NHRA), as well as the National Health Act of 2003 and are the jurisdiction of SAHRA. The procedure for Consultation Regarding Burial Grounds and Graves (Section 36[5]) of Act 25 of 1999) is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in this age category, located inside a formal cemetery administrated by a local authority, require the same authorisation as set out for graves younger than 60 years, in addition to SAHRA authorisation. If the grave is not situated inside a formal cemetery, but is to be relocated to one, permission from the local authority is required and all regulations, laws and by-laws, set by the cemetery authority, must be adhered to.

Human remains that are less than 60 years old are protected under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance No. 7 of 1925) re-instituted by Proclamation 109 of 17 June 1994 and implemented by CoGHSTA as well as the National Health Act 2003 and are the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the office of the relevant Provincial Premier. Authorisation for exhumation and reinternment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. To handle and transport human remains, the institution conducting the relocation should be authorised under the National Health Act of 2003

3 METHODOLOGY

3.1 Literature Review and background study

A brief survey of available literature was conducted to extract data and information on the area in question to provide general heritage context into which the development would be set. This literature search included published material, unpublished commercial reports and online material, including reports sourced from the South African Heritage Resources Information System (SAHRIS). Findings are included in Section 6.1 and 6.2.

3.2 Genealogical Society and Google Earth Monuments

Google Earth and 1:50 000 topographic maps of the area were utilised to identify possible places of heritage sensitivity might be located; these locations were marked and visited during the fieldwork phase. The database of the Genealogical Society of South Africa (GSSA) was consulted to collect data on any known graves in the area. Results are included in Section 6.3.

3.3 Public Consultation and Stakeholder Engagement:

Stakeholder engagement is a key component of any EIA process, it involves stakeholders interested in, or affected by the proposed development. Stakeholders are provided with an opportunity to raise issues of concern (for the purposes of this report only heritage related issues will be included). The aim of the public consultation process undertaken by the EAP was to capture and address any issues raised by community members and other stakeholders. Results are included in Section 5 and the final EIA report.

3.4 Site Investigation

The aim of the site visit was to:

a) survey the proposed Project area to understand the heritage character of the area and to record, photograph and describe sites of archaeological, historical or cultural interest;

b) record GPS points of sites/areas identified as significant areas;

c) determine the levels of significance of the various types of heritage resources recorded in the Project area.

Table 4: Site Investigation Details

	Site Investigation
Date	29 August 2023
Season	Winter – The time of year and season had a limited effect on the results of the survey as dense grass cover and cultivated areas limited archaeological visibility. The Project area was however sufficiently covered to understand the heritage character of the area (Figure 3.1).

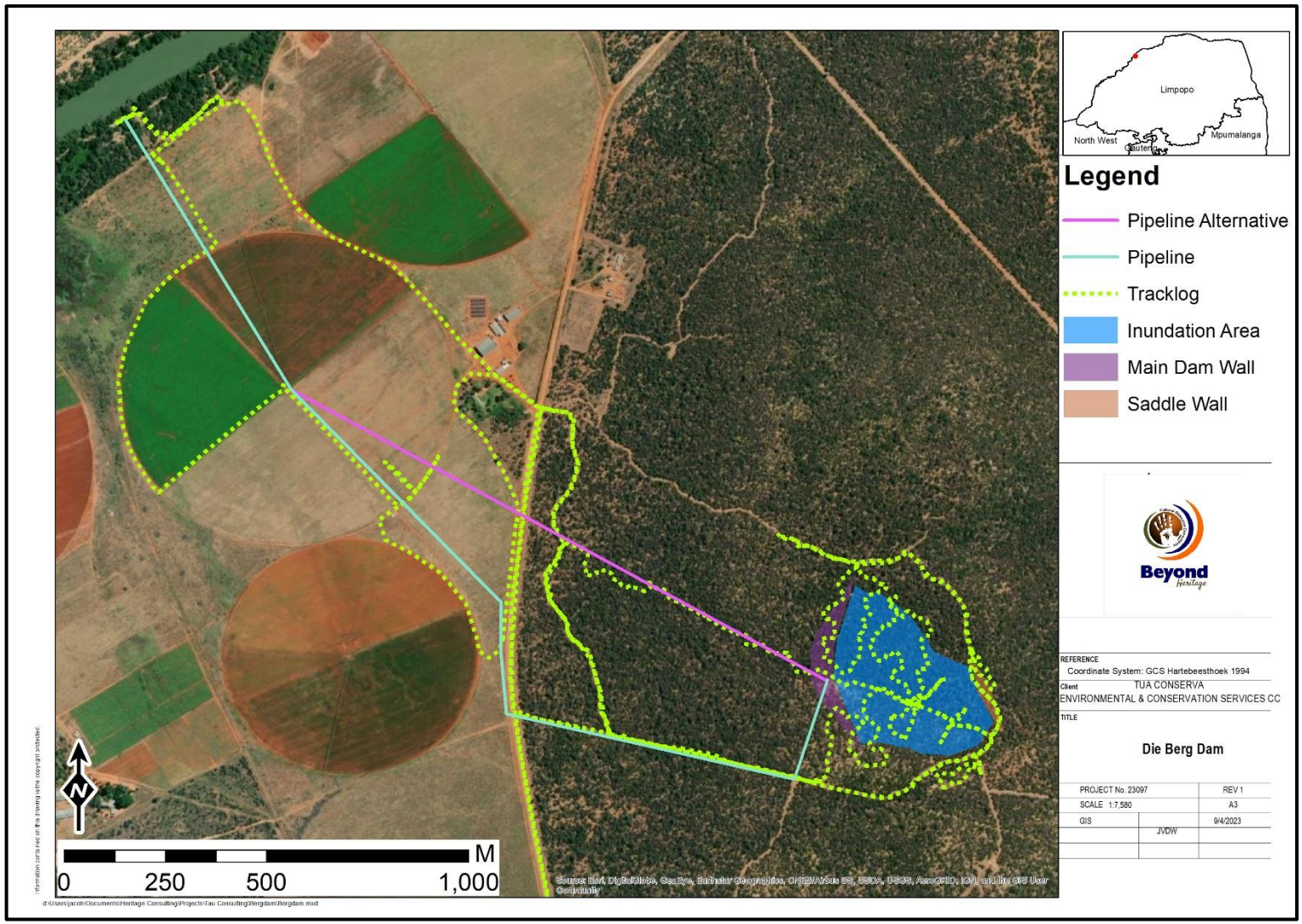

Figure 3.1. Tracklog of the survey path in green.

3.5 Site Significance and Field Rating

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

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

In addition to this criteria, Field Ratings to Heritage Resources is assigned based on the guidelines provided by the SAHRA Minimum Standards for Heritage Specialist Studies in terms of Section 38 of the National Heritage Resources Act (No. 25 of 1999) (2016). The Field-Rating of a feature is a product of the Cultural Significance and Integrity of the feature. Where Cultural Significance is based on the rating from criteria in section 3 of the NHRA and the integrity of the resource is discussed in terms of preservation issues, weathering, erosion etc.

Field Ratings for the resources(s) are included to comply with section 7(2) and 38(3)b of the NHRA, as detailed and described below and in Table 5:

a. **Proposed Field Rating I National Resource**: This resource is considered to be of Field Rating **I** (mention must be made of any relevant international ranking), a protected buffer zone must be proposed/noted (if not in place already), these resources must be maintained *in situ* and a CMP must be recommended for the *in situ* conservation of the site;

b. **Proposed Field Rating II**: This resource is considered to be of Field Rating **II**, a protected buffer zone must be considered, these resources must be maintained *in situ* and a CMP must be recommended for the *in-situ* conservation of the resource;

c. Proposed Field Rating IIIA Local Resource: The resource must be retained as part of the heritage register (High significance) and so mitigation as part of the development process is not advised, a protected buffer zone must be considered, these resources must be maintained *in situ* and a CMP must be recommended for the *in-situ* conservation of the resource;

d. **Proposed Field Rating IIIB Local Resource**: This resource could be mitigated and (partly) retained as part of the heritage register (High/Medium significance), Mitigation of these resources must be subject to a formal permit application process lodged with the relevant heritage resources authority;

e. **Proposed 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, this will be subject to the granting of the Environmental Authorisation*).

Table 5. Field Rating and Cultural Significance

Field Rating	Integrity	No information yield, completely degraded	- Degraded to the extent that little meaning can be derived	Preserved to some extent	Well preserved	Excellent preservation
Cultural Significance	Negligible	IIIC Local Resource	IIIC Local Resource	IIIC Local Resource	IIIC Local Resource	IIIC Local Resource
	Low	IIIC Local Resource	IIIC Local Resource	IIIC Local Resource	IIIC Local Resource	IIIC Local Resource
	Low – Medium	IIIC Local Resource	IIIC Local Resource	IIIC Local Resource	IIIC Local Resource	IIIC Local Resource
	Medium	**Rating IIIB Local Resource**	**Rating IIIB Local Resource**	Rating IIIB Local Resource	Rating IIIB Local Resource	Rating IIIB Local Resource
	Medium High	**Rating IIIB Local Resource**	**Rating IIIB Local Resource**	Rating IIIB Local Resource	Rating IIIB Local Resource	Rating IIIB Local Resource
	High	**Rating IIIB Local Resource**	**Rating IIIB Local Resource**	**IIIA Local Resource**	**IIIA Local Resource**	**IIIA Local Resource**

3.6 Impact Assessment Methodology

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

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

The **significance** is calculated by combining the criteria in the following formula:
S= (E+D+M) P
S = Significance weighting
E = Extent
D = Duration
M = Magnitude
P = Probability

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

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

3.7 Assumptions and limitations of the study

- The authors acknowledge that the brief literature review is not exhaustive of the literature of the area.
- Due to the nature of heritage resources and pedestrian surveys, the possibility exists that some features or artefacts may not have been discovered/recorded and the possible occurrence of graves and other cultural material cannot be excluded. This limitation is successfully mitigated with the implementation of a Chance Find Procedure (CFP) and monitoring of the study area by the Environmental Control Officer (ECO).
- This report only deals with the footprint area of the proposed development and consisted of non-intrusive surface surveys.
- This study did not assess the impact on medicinal plants and intangible heritage as it is assumed that these components will be highlighted through the public consultation process if relevant. This process is facilitated by the EAP and if not done this can be considered a significant limitation and as a potential Project risk. It is possible that new information could come to light in future, which might change the results of this Impact Assessment.

4 Description of Socio-Economic Environment

According to StatsSA "*The population size is 162 629.99% areblack African, with white population being the second highest at 0,6% and coloureds are less than one hundred in number as per Census 2011 results. For every 100 women there are 86 men. Most of the people speak Sepedi as the first language at 89,5%, followed by IsiNdebele at 5,1% and Xitsonga at 2,6%. The other official languages make up 2,9%.*

Only 1% of the population had tertiary education qualifications, 9% completed secondary education and 17% of the population had no schooling.

A second shopping centre was recently opened in Senwabarwana in a bid to boost trade in the municipality.Meantime platinum and iron ore mining exploration, methane gas exploration as well as Venetia mine underground projects are some of the mega projects that are aimed atgrowing the economy and reduce the unemployment rate in Blouberg municipality."

5 Results of Public Consultation and Stakeholder Engagement:

In line with the NHRA, stakeholder engagement is a key component of any EA process, it involves stakeholders interested in, or affected by the proposed development. At the time of writing no heritage concerns have been raised.

6 Contextualising the study area

6.1 Archaeological Background

6.1.1 Stone Age

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

Yet sometimes the recognition of cultural groups, affinities or trends in technology and/or subsistence practices, as represented by the sub-phases or industrial complexes, is achievable (Lombard 2012). The three main phases can be divided as follows:

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

The archaeological and historical record is more prevalent within the nearby Blouberg area, Makgabeng Plateau and the Greater Mapungubwe landscape (e.g., Eastwood & Smith 2005; Bradfield et al. 2009; Forssman 2013).
It is possible, but unlikely that significant ESA or MSA lithic material will occur in the immediate study area. One of the closest known sites, is Kudu Koppie located within the Mapungubwe National Park well to the east of the study area. Other rock shelters of significance include, but are not limited to, Cave of Hearths and Olieboomspoort in the Waterberg to the south west. Archaeological research in the province demonstrate that the region was utilised since the ESA and throughout the MSA (e.g., Mason, 1962, 1988; Pollarolo et al. 2010).
The earliest evidence for LSA occupation is around 11 000 years ago at Balerno Main Shelter, also situated within the Greater Mapungubwe Landscape (van Doornum 2008). While archaeological excavations at Leholamogoa shelter indicates that hunter-gatherers have inhabited the Makgabeng plateau to the south since the last 2000 years until the onset of the 19th century (Bradfield et al. 2009). Ceramics first appear in the archaeological record of the Greater Mapungubwe Landscape about 1850 years ago (Hall & Smith 2000; van Doornum 2008; Forssman 2013). Prior to *ca*. 2000 years ago ceramics are absent from archaeological sequences in southern Africa (e.g., Sadr 2008). Thus, ceramics indicates contact between hunter-gatherers, with either Bantu-speaking farmers or possibly Khoekhoe herders. Archaeological evidence confirming the presence of herder communities is currently lacking, although their artwork is present in the region (e.g., Eastwood & Smith 2005).

6.1.2 Iron Age

The Iron Age represents the spread of Bantu speaking people and includes both the pre-Historic and Historic periods. It can be divided into three distinct periods:

- The Early Iron Age: Most of the first millennium AD.
- The Middle Iron Age: 10th to 13th centuries AD
- The Late Iron Age: 14th century to colonial period.

The Iron Age is characterised by the ability of these early people to manipulate and work Iron ore into implements that assisted them in creating a favourable environment to make a better living. As mixed farmers, Iron Age people usually lived in semi-permanent settlements consisting of pole-and-daga (mud mixed with dung) houses and grain bins arranged around a central area for cattle (Huffman, 1982). Usually, these settlements with the 'Central Cattle Pattern' (CCP) were sited near water and good soils that could be cultivated with an iron hoe.

The Middle Iron Age spans the 10th to the 13th Centuries A.D. and includes cultures such as K2 and Mapungubwe. The Late Iron Age began in the 14th Century up to the colonial period and includes traditions such as Icon and Letaba (Hutten 2015). The Limpopo Valley, particularly to the north-east of the study area, is well known for its Early and Middle Iron Age sites in the vicinity of the Shashe-Limpopo confluence and related Zhizo settlements spread to the north and west as the Toutswe culture (contemporary with K2, circa 1000 A.D.) of the Mahalapye-Palapye area of Botswana (Huffman 2007) and north of the study site.

Sotho/Tswana groups arrived in the region during the following century and the ceramic style was collectively named Moloko (Evers 1983). Huffman renamed the first phase of Moloko to the Icon facies. Sites with Icon type pottery extend north and south of the Soutpansberg and westwards across the study area and northwards into Botswana. Icon sites range from 1300 - 1450 AD.

The second phase of Moloko can be divided into the Letsibogo-, Madikwe- and Olifantspoort-facies of which the Letsibogo facies is most relevant to the study area (± 1500 – 1700 AD). The Letsibogo facies is poorly documented but occurs along the Limpopo River to the west and south of the confluence with the Shashe (Huffman 2007). The western parts of Limpopo Province are known for large Sotho-Tswana sites that have been the focus of intensive archaeological investigations (Evers 1983; Mason 1986; Pistorius 1992, Hutten 2015).

The Ba Birwa settled in the region from the 1700's (Bonner & Carruthers 2003). The Ba-Tlokwa (from the east), Bagananwa (from the west and south) and Ndebele (from the north) had periodic influences on the Ba-Birwa from the study area through conflict, trade and intermarriage during the 18th and 19th Centuries. The Bagananwa group settled in the Blouberg region (to the east) during the early 1800's. The Bagananwa originated from the earlier Bahurutshe chiefdom further to the south (Rustenburg/Zeerust). After their split with the Bahurutshe these people moved to Shoshong and then to Tshwapong in Botswana (Bonner & Carruthers 2003).

6.1.3 Historical Period

The first Europeans to reside close by the study area was Coenraad de Buys and his family. Between 1815 and 1825, de Buys stayed in the Blouberg area, until he moved to the Soutpansberg in 1825. During the late 1840s, after the town of Schoemansdal was established and more Europeans traversed the region, a Berlin Missionary Society was established at Blouberg in 1860, and shortly after at Makgabeng. At first relations between the locals and settlers were cordial, but as colonial rule became geographically closer to the Hananwa, settler demands for land, labour, livestock and taxes increased. Being on the periphery of the ZAR colonial domain, the Hananwa were mindful of their political independence. Chief Matseokwane gained political dominance over a large area of what is now Limpopo Province. As a result of his prominence, the local Hananwa were perceived to be a threat by the ZAR government. Mainly because of the supposed risk posed by an independent community, but also for other reasons, such as the non-

payment of taxes and the refusal by the Hananwa to move to another location, ultimately culminated in the Maleboho War of 1894. Soon after the South African War (1899-1902) followed, which led to formal British administration of the area (van Schalkwyk 1995; Makhura 1997; de Jongh 2004; van Schalkwyk & Smith 2004).

With regards to modern history that had a socio-political impact on the area, the South African Union was formed in 1910, soon after World War I (1914-1918) broke out, followed by World War II (1939-1945). These events led to urbanisation along with socio-economic and political change within South Africa, which eventually resulted in the modern-day South Africa (Giliomee & Mbenga 2007).

6.2 Literature Review (SAHRIS)

Few Cultural Resource Management (CRM) surveys are on record for the area e.g., van der Walt (2022a; 2022b), Pelser (2021), Gaigher (2012; 2013), Pelser and van der Walt (2020; 2021), Roodt (2020), van Schalkwyk (2021). The relevant results of these studies are briefly discussed below and outlined in Table 6.

On the Farm Zwartberg 72 MR, which borders the western boundary of the Project area, a survey was conducted for the clearing of vegetation for croplands and infrastructure (van der Walt 2022a). Stone tool scatters dating to the MSA were recorded as a background scatter due to the low artefact density of the scatters. An LIA site was also identified and had already been impacted on through previous cultivation of the area. A single diagnostic ceramic sherd was found amongst the ceramics at the site and its stylistic features to be attributed to the *Letsibogo* ceramic facies which dates to around AD 1500 – 1700. The survey conducted on the farm Zwartberg 72 MR is the nearest survey to the Project area but the farm is also highly disturbed by farming activities which would have an impact on heritage resources.

Table 6. Selected studies consulted for this project.

Author	Year	Project	Findings
Van der Walt, J.	2022a	Heritage Impact Assessment for the proposed Clearing of Indigenous Vegetation for Crop Lands and Related Infrastructure on the Farm: Zwartberg 72 MR, within Blouberg Local Municipality, Capricorn District, Limpopo.	Stone Age scatters, an LIA site.
Van der Walt, J.	2022b	Heritage Impact Assessment for the Clearing of Indigenous Vegetation for Croplands and Related Infrastructure on the Farms: Zoetfontein 385 MR, Mowbray 142 MR (Portion 1) within Lephalale Local Municipality, Waterberg District, Limpopo Province.	Undiagnostic ceramics, isolated stone tools, Historical structure, modern structures.
Pelser, A.J.	2011	Desktop Heritage Assessment Study for prospecting rights application on various farms near Alldays in the Musina & Blouberg Magisterial Districts, Limpopo Province	Desktop study
Gaigher, S.	2012	Proposed Venetia Photovoltaic (PV) Concentrated Photovoltaic (CPV) Solar Energy facility Gotha Farm, Phase 1 (up to 100MW), near Alldays in the Limpopo Province	Not specified
Gaigher, S.	2013	Proposed Venetia Photovoltaic (PV) Concentrated Photovoltaic (CPV) Solar Energy facility Gotha Farm, Phase 1 (up to 100MW), near Alldays in the Limpopo Province. Revised Report	Not specified
Pelser, A.J., van der Walt, J.	2020	Phase 1 HIA report for the Marnitz Kraal boreholes on portions of the farms Cochin-China 46LR, Bristol 17LR & Naples 35LR near Marnitz in the Limpopo Province	No sites were identified
Roodt, F.	2020	Phase 1 heritage impact assessment of the proposed development of a township on the remaining extent of portion 4 of the Alldays 295 MS within Blouberg local municipality of Capricorn District.	No sites were identified

Pelser, A.J., van der Walt, J.	2021	Phase 1 HIA report for various exploration boreholes on the farms Neederland 45LR, Minorca 31LR & Yarmouth 152MR between Marnitz and Tolwe in the Limpopo Province.	No sites were identified
van Schalkwyk, J.A.	2021	Phase 1 Cultural Heritage Impact Assessment: The proposed development of the Steamboat Graphite Mine on portions of the farms Steamboat 305-MR and Inkom 306-MR, Blouberg Local Municipality, Capricorn District, Limpopo Province.	Low number of MSA stone tools, a single grave marked by circular stones (historic era), Historic mining area.

6.3 Google Earth and the Genealogical Society of South Africa (Graves and Burial Sites)

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where archaeological and historical sites might be located. The database of the Genealogical Society of South Africa indicated no known grave sites within the study area.

7 Heritage Baseline

7.1 Description of the Physical Environment

The vegetation type and landscape features of the area form part of the Limpopo Sweet Bushveld. It is described as plains, sometimes undulating or irregular, traversed by several tributaries of the Limpopo River. Short open woodland; in disturbed areas thickets of *Acacia erubescens, A. mellifera* and *Dichrostachys cinerea* are almost impenetrable (Mucina & Rutherford, 2006).

The Project area is situated on a farm about 8km northwest of Swartwater, Limpopo. The Project area consists of a proposed dam that will be built between two large rocky hills on the eastern side of the main gravel road leading into the farm. The surrounding environment consists of dense wooded vegetation with rocky sections. The proposed pipelines traverse from the dam towards the Limpopo River ~ 2km to the north west of the proposed dam this area is marked by agricultural fields and pivot irrigation systems. These fields are actively being cultivated with various crops such as butternut, pumpkins and potatoes. Dense vegetation outside of the cultivated fields limited visibility and accessibility. General site conditions are indicated in (Figure 7.1 to 7.10).

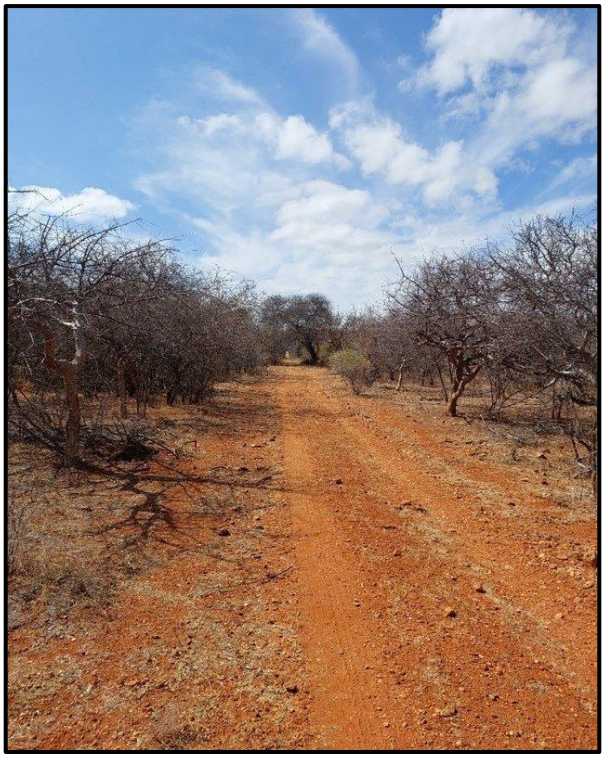

Figure 7.1. General view of the surrounding environment along one of the proposed pipelines.

Figure 7.2. General view of the landscape across the road towards the agricultural fields.

Figure 7.3. View of the cleared areas within the project area - Areas cleared for geotechnical studies.

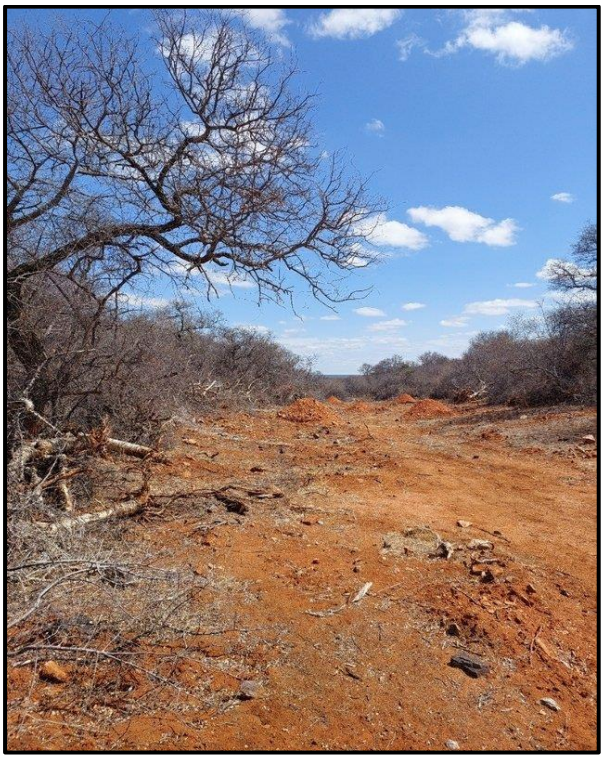

Figure 7.4. View of the cleared areas within the project area - Areas cleared for geotechnical studies.

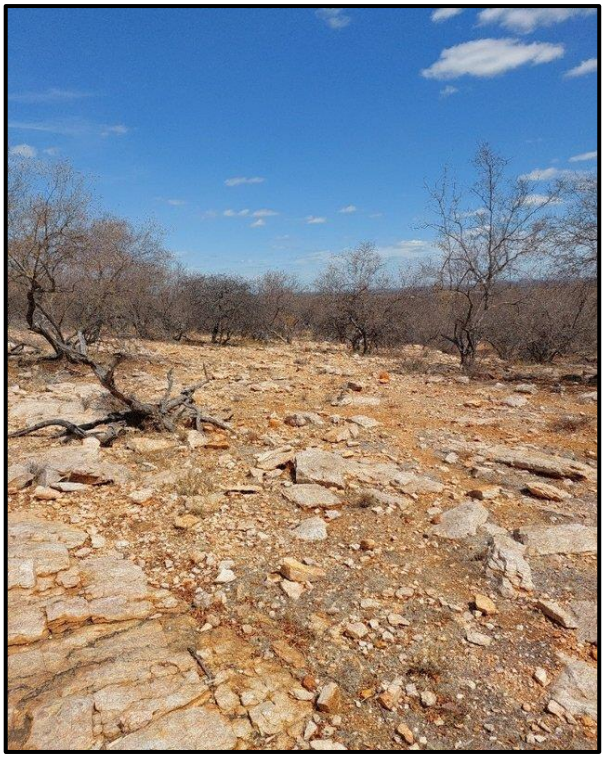

Figure 7.5. General view of the surrounding landscape towards the top of the rocky hills.

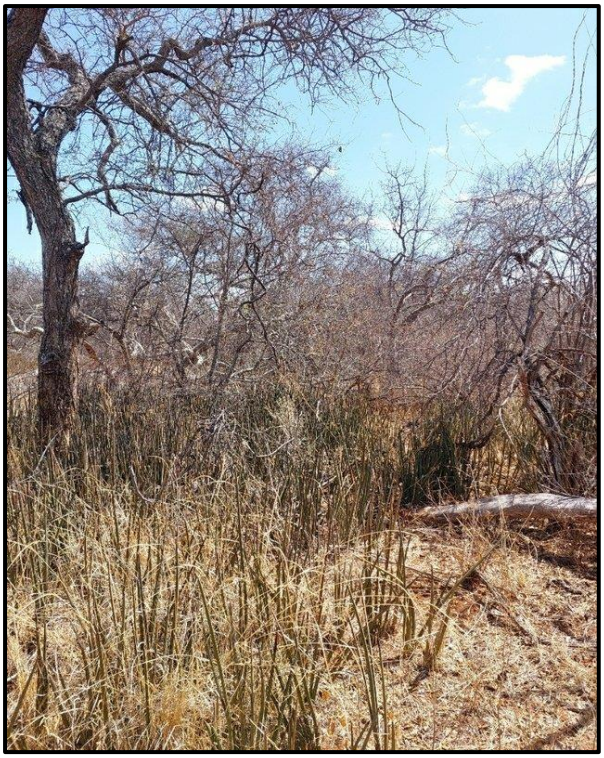

Figure 7.6. View of the dense vegetation at the proposed dam.

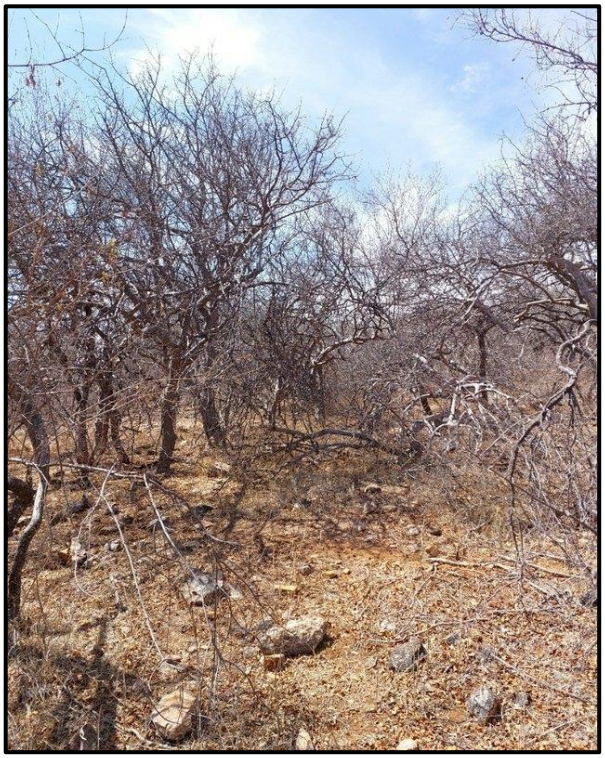

Figure 7.7. View of the dense vegetation at the proposed dam.

Figure 7.8. View of the active agricultural fields west of the main gravel road.

Figure 7.9. View of the active agricultural fields west of the main gravel road.

Figure 7.10. Limpopo river ~ 2km north west of the dam footprint.

7.2 Heritage Resources

Although MSA scatters and an LIA site were recorded on the farm bordering the Project area's western boundary, no heritage resources were identified within the development footprint. Large sections of the Project area have been historically cultivated from the 1960s which has disturbed the area including active agricultural fields. Dense vegetation in the dam footprint have been cleared using machinery for geotechnical assessments of the Project area allowing for higher heritage visibility. No heritage resources of significance was noted along the Project footprint.

7.3 Cultural Landscape

The Project area is in a rural setting and marked by long-term agricultural activities. A large area of the Project area has been historically cultivated from the 1960s (Figure 7.11 to 7.13).

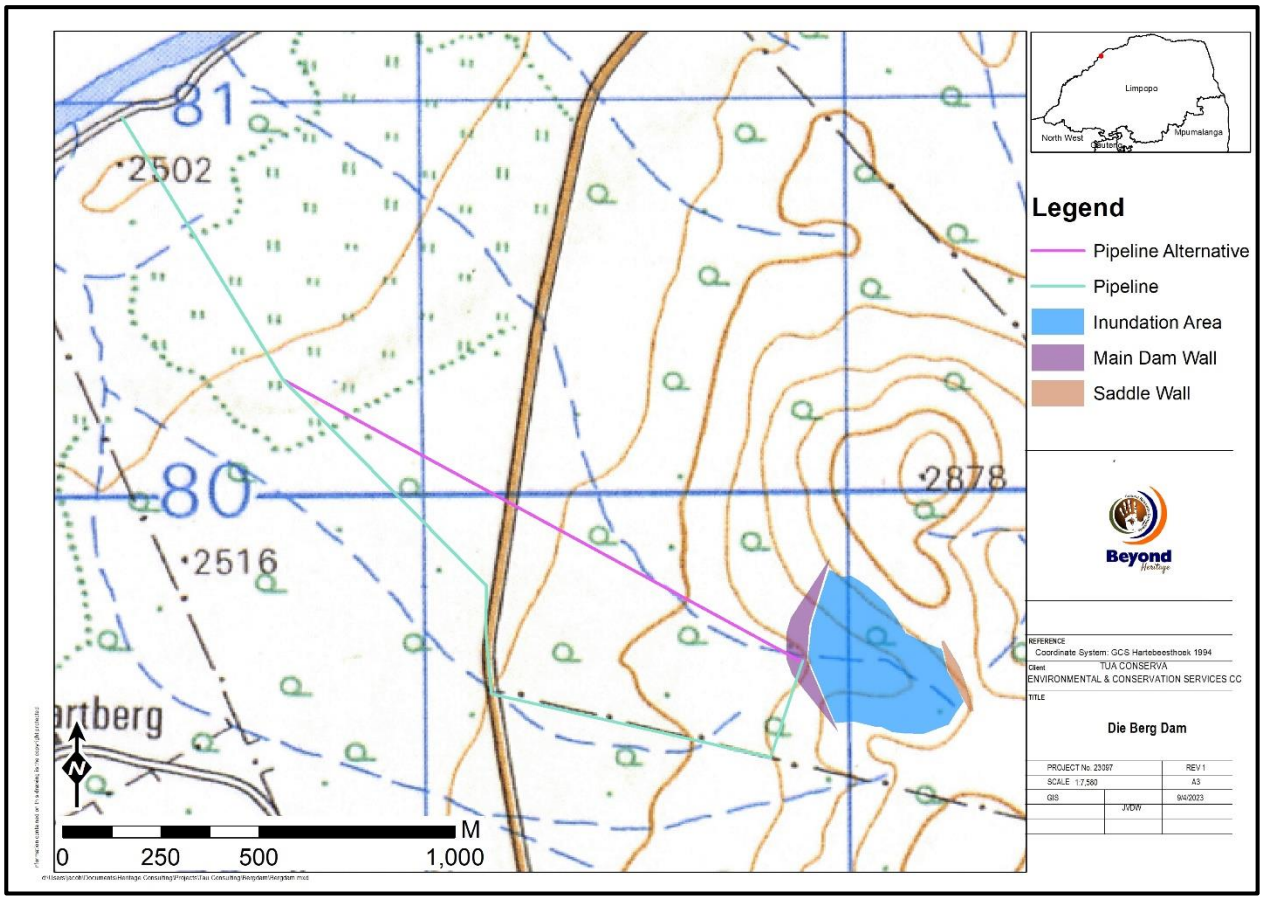

Figure 7.11. Extract of the 1964 Topographic map (1: 50 000) indicating a road running through the pipeline areas and an area of cultivation.

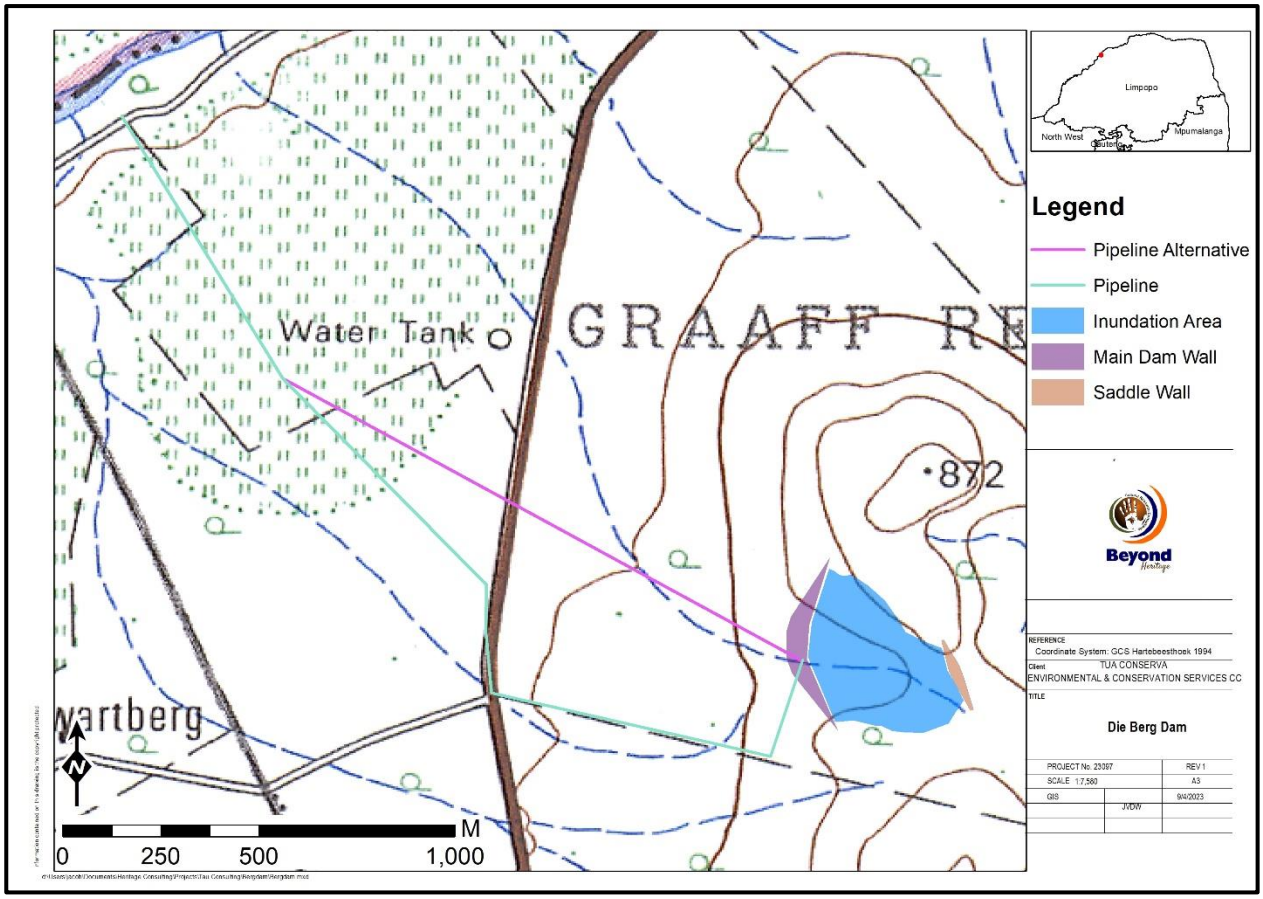

Figure 7.12. Extract of the 1983 Topographic map (1: 50 000) indicating more extensive cultivation in the Project area.

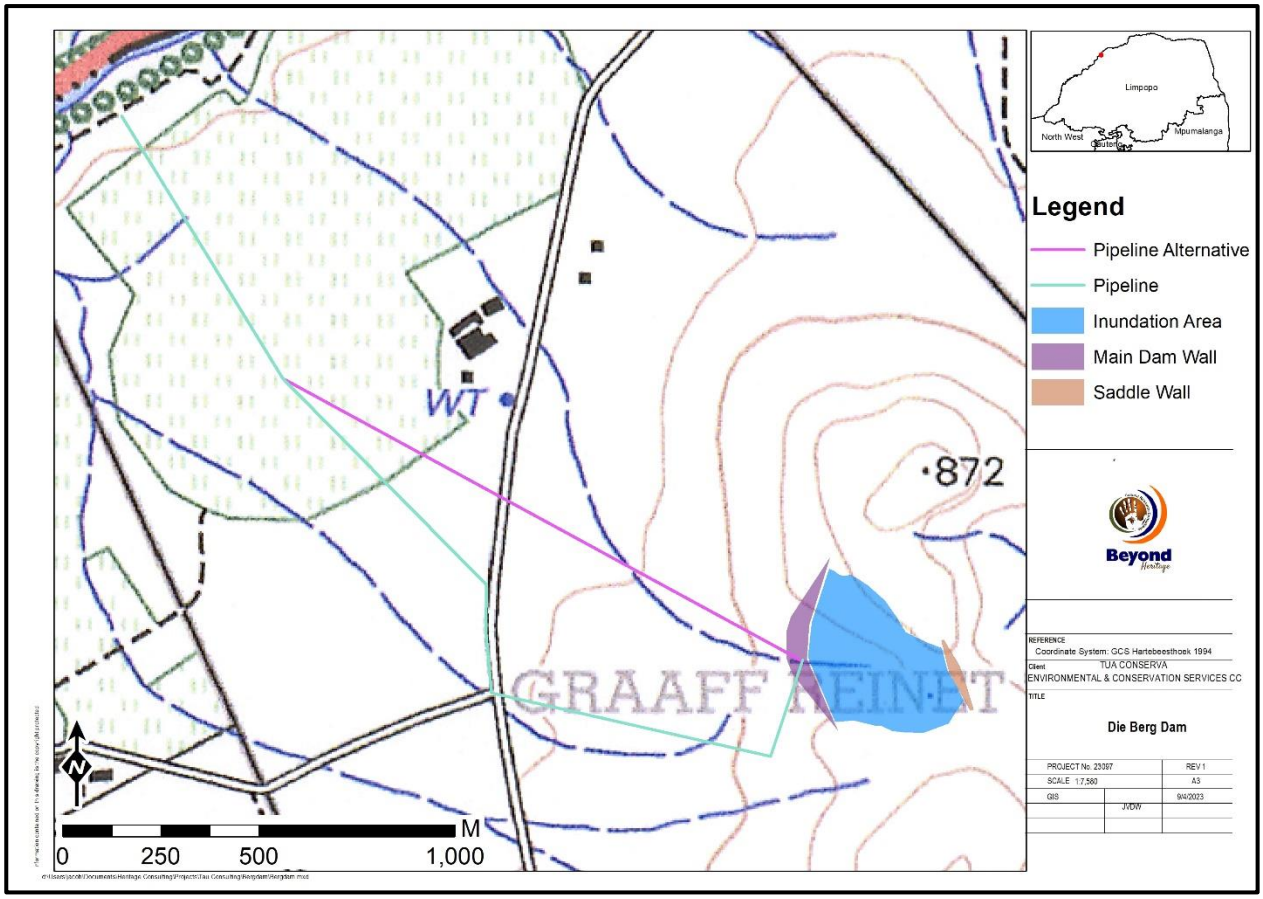

Figure 7.13. Extract of the 1999 Topographic map (1: 50 000) indicating multiple structures on either side of the road.

7.4 Paleontological Heritage

According to the South African Heritage Resource Authority (SAHRA) Paleontological sensitivity map the study area is of insignificant and moderate palaeontological sensitivity and a desktop study was conducted for this aspect. The desktop study by Bamford (2023) concluded that the farms lies on the moderately fossiliferous sands of the Cenozoic Rooibokkraal Formation, with minor outcrops of ancient Beit Bridge Complex igneous rocks. Only the silcretes and calcretes are likely to preserve or trap fossils. Since the area to be cleared is on soils and sandy soils, it is very unlikely that any fossils will be disturbed or destroyed. The Mt Dowe Gneiss (Beit Bridge Group) does not have any fossils. Nonetheless, a Fossil Chance Find Protocol should be added to the EMPr (Figure 7.14).

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 map

Figure 7.14. Paleontological sensitivity of the approximate study area (yellow polygon) as indicated on the SAHRA Palaeontological sensitivity map.

8 Assessment of impacts

8.1 Impacts on tangible heritage resources.

The main cause of impacts to heritage resources is physical disturbance of the cultural material itself and its context during removal of topsoil and vegetation as well as the excavations associated with the establishment of the dam and associated activities. In terms of this Project the main source of impacts will happen during the following activities in the construction phase.

These activities are not expected to manifest in impacts on heritage resources as no heritage resources were recorded in the Project area.

8.1.1 Cumulative impacts

The proposed Project will have a low cumulative impact as no known significant heritage resources will be adversely affected.

8.2 Impact Assessment Tables

Table 7. Impact assessment for the Project area.

Nature: During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological and paleontological material or objects.		
	Without mitigation	**With mitigation (Preservation/ excavation of site)**
Extent	Local (2)	Local (2)
Duration	Permanent (5)	Permanent (5)
Magnitude	Minor (2)	Minor (2)
Probability	Improbable (2)	Improbable (2)
Significance	**18 (Low)**	**18 (Low)**
Status (positive or negative)	Negative	Negative
Reversibility	Not reversible	Not reversible
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	NA	NA
Mitigation: • Implementation of a chance find procedure for the project.		
Cumulative impacts: The proposed project will have a low cumulative impact as no known heritage resources will be adversely affected.		
Residual Impacts: Although surface sites can be avoided or mitigated, there is a chance that completely buried sites would still be impacted on, but this cannot be quantified.		

9 Conclusion and recommendations

The area earmarked for the proposed pipelines are highly disturbed and transformed through historical cultivation form the 1960s onwards including active agricultural fields of crops such as butternut, pumpkins, and potatoes. Dense vegetation characterise the dam footprint. A survey conducted on the Farm Zwartberg 72 MR, situated along the western boundary of the Project area, identified MSA stone tools and an LIA site that based on diagnostic ceramics dates to around AD 1500 – 1700 (see van der Walt 2022a). None of these types of heritage resources were documented within the Project area and no heritage finds of significance was recorded.

According to the SAHRA Paleontological sensitivity map the study area is of insignificant and moderate palaeontological sensitivity and a desktop study was conducted for this aspect. The study by Bamford (2023) concluded that it is extremely unlikely that any fossils would be preserved in the Quaternary sands and soils that will be cleared for agriculture and excavations for piping and infrastructure, so the impact on the palaeontological heritage would be very low.

The impact to heritage resources is low provided that the recommendations in this report are adhered to, based on the South African Heritage Resource Authority (SAHRA) 's approval.

9.1 Recommendations for condition of authorisation

The following recommendations for Environmental Authorisation apply and the Project may only proceed based on approval from SAHRA:

- From a heritage perspective, either pipeline alternative is acceptable as neither alternative would impact on known heritage resources;
- Monitoring of the Project area by the ECO during pre-construction and construction phases for heritage chance finds, if chance finds are encountered to implement the Chance Find Procedure for the Project as outlined in Section 9.2.

9.2 Chance find procedure for Heritage Resources

The possibility of the occurrence of subsurface finds cannot be excluded. Therefore, if during construction any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped, and a qualified archaeologist must be contacted for an assessment of the find and therefor chance find procedures should be put in place as part of the EMP. A short summary of chance find procedures is discussed below and monitoring guidelines applicable to the Chance Find procedure is discussed below and monitoring guidelines for this procedure are provided in Section 10.5.

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

- If during the 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 artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
- It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area.

- The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA.

9.3 Reasoned Opinion

The overall impact of the Project with the recommended mitigation measures is considered to be low and residual impacts can be managed to an acceptable level through implementation of the recommendations made in this report. The socio-economic benefits also outweigh the possible impacts of the development if the correct mitigation measures are implemented for the project.

9.4 Potential risk

Potential risks to the proposed Project are the occurrence of intangible features and unrecorded cultural resources (of which graves, and subsurface cultural material are the highest risk). This can cause delays during construction, as well as additional costs involved in mitigation and possible layout changes. The stakeholder engagement process will assess intangible heritage resources further if this is listed as a concern.

9.5 Monitoring Requirements

Day to day monitoring can be conducted by the ECO. The ECO or other responsible persons should be trained along the following lines:

- *Induction training:*
  - Responsible staff identified by the developer should attend a short course on heritage management and identification of heritage resources.
  - Staff should also receive training on the CFP.
- *Site monitoring and watching brief*: As most heritage resources occur below surface, all earth-moving activities need to be routinely monitored in case of accidental discoveries. The greatest potential impacts are from pre-construction and construction activities. The ECO should monitor all such activities. If any heritage resources are found, the chance finds procedure must be followed as outlined above.

Table 8. Monitoring requirements for the Project

Heritage Monitoring					
Aspect	**Area**	**Responsible for monitoring and measuring**	**Frequency**	**Proactive or reactive measurement**	**Method**
Cultural Heritage Resource Chance Find	Entire Project area	ECO	Weekly (Pre construction and construction phase)	Proactively	• Section 9.2

9.6 Management Measures for inclusion in the EMPr

Table 9. Heritage Management Plan for EMPr implementation

Area	Mitigation measures	Phase	Timeframe	Responsible party for implementation	Target	Performance indicators (Monitoring tool)
General Project area	Monitoring of the Project area by the ECO during pre-construction and construction phases for chance finds, if chance finds are encountered to implement the Chance Find Procedure for the project	Pre-Construction & Construction	Weekly	Applicant Construction Contractor	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35, 36 and 38 of NHRA	ECO Checklist/Report

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