

PHASE I ARCHAEOLOGICAL AND CULTURAL HERITAGE IMPACT ASSESSMENT SPECIALIST REPORT FOR PROSPECTING RIGHT APPLICATION ON THE FARM TWEED 362 IL WITHIN JOE MOROLONG LOCAL MUNICIPALITY OF JOHN TAOLO GAETSEWE DISTRICT MUNICIPALITY (FORMERLY KGALAGADI), NORTHERN CAPE PROVINCE.



MARCH 2023

ABILITY TO CONDUCT THE PROJECT

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INDEPENDENCE

I, Alvord Nhundu, declare that:

- I act as an independent specialist;
- I am conducting work relating to the prospecting right application in an objective manner, even if this results in views and findings that are not favourable to the client;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have the required experience in conducting the specialist report and I will comply with legislation, regulations and any guidelines that have relevance to the proposed activity;
- I have not, 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 details and particulars furnished by me in this declaration 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 know 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.



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EXECUTIVE SUMMARY

The author was appointed by Biometal Services (Pty) Ltd to conduct an Archaeological and Cultural Heritage Impact Assessment study for Prospecting Right Application on the farm Tweed 362 IL within the jurisdiction of Joe Morolong Local Municipality of John Taolo Gaetsewe District Municipality (formerly Kgalagadi) in Northern Cape Province. As prescribed by SAHRA and stipulated by the legislation, an HIA is a pre-requisite for such a development. The main purpose of the study was to identify and document the archaeological sites, cultural resources, sites associated with oral histories, graves, cultural landscapes, and any structure of historical significance that may be affected by the proposed development. The Heritage Impact Assessment was undertaken in terms of Section 38 (3) of the National Heritage Resources Act (NHRA), No. 25 of 1999).

To understand the archaeology of the area, a background study was undertaken and relevant institutions were consulted. These studies entail the view of archaeological and heritage impact assessment studies that have been conducted in and around the proposed area thorough SAHRIS. The field survey was undertaken by the author on the **4th of March 2023**. The survey was conducted in collaboration with other specialists. A vehicle was used to reach the site. The land was investigated on both vehicle and foot for any traces of cultural material.

The Phase I Cultural-Heritage Impact Assessment study for the proposed mining right did not reveal any sites or cultural material dating to the Stone Age, Iron Age or Historical Age; neither did it identify any graves within the footprint of the proposed development. However, the study area falls within a sensitive cultural landscape. Previous heritage studies in and Kuruman yielded some heritage resources; Ubique Heritage consultants in their HIA study for infrastructural developments on farm Erf4440 found MSA tools and an unfenced graveyard (Fivaz & Engelbrecht 2021). Dreyer (2014) noted some MSA and LSA tools in the study carried out in the wider study area. A study by (Kaplan 2012a) revealed thirty-one sites that yielded about 50 Stone Age tools belonging to all the 3 stone ages on farm 321. The stone assemblage was dominated by the MSA and LSA tools. Another study in the same year by the same researcher near Kuruman on the farm 321 yielded stone tools dominated by MSA lithics with a high possibility of on-site knapping as several large chunks had been flaked and modified (Kaplan 2012b). The closest study to the site was by Kusel & van der Ryst (2009) and it was for the development of manganese mining, north of Kuruman,;the study yielded a lot of heritage resources such as stone tools, ESA and MSA, a large cemetery for mine workers and the ancient mine that represents the early history of manganese mining in South Africa (Kusel & van der Ryst 2009).Morris (2010) in his HIA study for a proposed housing development in Kuruman found stone tools and a large burial site which tells a history of the area and the country at large and recommended the relics to be sites of memory. Pelser & Vollenhoven 2009) in their HIA study

for mining development on the remaining extent and portions 2,3, 4 and 5 of the farm Kapstewel 436 found a possible Iron Age site, historical buildings and relics of ancient mining. They did another study in the same year for mining development on a farm called Pensfontein 449; the study revealed stone tools. A study by Webley & Halkett (2008) on the farms Adams 328 and Erin 316 in Kuruman revealed some isolated scatters of MSA stone tools and some historical farm structures such as dam kraals, boreholes, shed and a workers' cottage as well as two 20th Century graves on farm Erin 316. On Adams 328 farm they found a scatter of MSA and LSA lithics, two graves, a workers's cottage and a limestone dam all dating to the 20th Century.

Although no heritage resources were found within the footprint of development, it is important to note that unavailability of archaeological and cultural heritage materials does not mean absentee, archaeological material might be buried underground. In addition to that, as noted above, previous heritage studies have revealed some heritage resources in the wider study area. Thus, the client is advised to take precautions during the development. If archaeological materials are unearthed, all the construction within the radius of at least 10m of such indicator should be stopped and the area be demarcated by a danger tape. A professional archaeologist or SAHRA officer should be contacted immediately. In the interim, it is the duty of the client and the contractor to protect the site from publicity until the mutual agreement is reached.

Since there were no heritage resources identified during the assessment, it is recommended that the developer proceed with the project subject to the recommendations given above.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	v
TABLE OF CONTENTS	vii
LIST OF FIGURES	8
LIST OF TABLES	9
ACRONYMS AND ABBREVIATIONS	10
GLOSSARY OF TERMS	11
1. INTRODUCTION.....	13
2. SITES LOCATION AND DESCRIPTION	13
3. NATURE AND NEED OF THE PROPOSED PROJECT.....	22
4. PURPOSE OF THE CULTURAL HERITAGE STUDY	23
5. METHODOLOGY AND APPROACH	23
6. APPLICABLE HERITAGE LEGISLATION.....	24
7. ARCHAEOLOGY AND HISTORY OF THE AREA.....	26
8. PREVIOUS HERITAGE IMPACT STUDIES	34
9. DEGREE OF SIGNIFICANCE	36
10. SURVEY FINDINGS	38
11. RECOMMENDATIONS AND CONCLUSION	40
12. REFERENCES	42
APPENDIX 1: SITE SIGNIFICANCE	46

LIST OF FIGURES

Figure 1: Google Earth view of the area proposed for the development.	14
Figure 2: Locality map of the study area.	15
Figure 3: A general view of the proposed prospecting site.	15
Figure 4: Another view of the area proposed for prospecting: note the CLO and other community members.....	16
Figure 5: View of another portion of the farm proposed for the development.....	16
Figure 6: View of the site from a southern direction.	17
Figure 7: View of the site proposed for prospecting from an eastern direction.	18
Figure 8: View of the site proposed for prospecting from the western direction.	18
Figure 9: View of the site from the north.	19
Figure 10: Showing the vegetation that defines the site: note the grass cover.	19
Figure 11: View of another portion of the farm: note the scattered trees and massive grass cover.....	20
Figure 12: View of some tracks on the proposed site of development.	20
Figure 13: View of other specialists during the field survey.	21
Figure 14: Showing a portion of the site where some vegetation has been cleared.	21
Figure 15: View of some signs of site disturbance on the proposed prospecting site.	22

LIST OF TABLES

Table 1: Summary table of project location details	14
Table 2: Previous Heritage studies in and around the town of Kuruman.	34
Table 3: Impact criteria significance.....	36
Table 4: Grading system for identified heritage resources in terms of the NHRA (No.25 of 1999)	38
Table 5: Anticipated impact rating.	40

ACRONYMS AND ABBREVIATIONS

AIA	Archaeological Impact Assessment
EMP	Environmental Management Plan
HIA	Heritage Impact Assessment
LIA	Late Iron Age
MIA	Middle Iron Age
EIA	Early Iron Age
HMP	Heritage Management Plan
LSA	Late Stone Age
MSA	Middle Stone Age
ESA	Early Stone Age
NASA	National Archives of South Africa
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Authority
PHRAG	Provincial Heritage Resources Authority Gauteng
SAHRA	South African Heritage Resources Agency

GLOSSARY OF TERMS

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

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

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

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

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

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

Cultural Resources Management (CRM): the conservation of cultural heritage resources, management, and sustainable utilization and present for present and for the future generations

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

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

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

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

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

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

Heritage impact assessment (HIA): Refers to the process of identifying, predicting and assessing the potential positive and negative cultural, social, economic and biophysical impacts of any proposed project, plan, programme or policy which requires authorisation of permission by law and which may significantly affect the cultural and natural heritage resources. The HIA includes recommendations for appropriate mitigation measures for minimising or avoiding negative impacts, measures enhancing the positive aspects of the proposal and heritage management and monitoring measures.

Historic Material: remains resulting from human activities, which are younger than 100 years, but no longer in use, including artifacts, human remains and artificial features and structures.

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

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

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

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

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

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

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

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

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

Public participation process: A process of involving the public in order to identify issues and concerns, and obtain feedback on options and impacts associated with a proposed project, programme or development. Public Participation Process in terms of NEMA refers to: a process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to specific matters.

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

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

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

1. INTRODUCTION

At the request of Biometal Services (Pty) Ltd, the author conducted a Phase I Archaeological and Cultural Heritage Impact Assessment study for Prospecting Right Application on the farm Tweed 362 IL within the John Morolong Local Municipality of John Taolo Gaetsewe District Municipality (previously Kgalagadi) in Northern Cape Province. The study was conducted in accordance with the SAHRA Minimum Standards for the Archaeology and Palaeontology. The minimum standards clearly specify the required contents of the report of this nature. The study aims to identify and document archaeological sites, cultural resources, sites associated with oral histories, graves, cultural landscapes, and any structure of historical significance that may be affected by the proposed development, these will in turn assist the developer in ensuring proper conservation measures in line with the National Heritage Resource Act, 1999 (Act 25 of 1999).

2. SITES LOCATION AND DESCRIPTION

The proposed development is located on the farm Tweed 362 IL within the Joe Marolong Local Municipality of John Taolo Gaetsewe District Municipality in Northern Cape Province. The project area is situated 114 km north-west of the town of Kuruman, and 4 km from the periphery

of Madibeng village. The topography of the site is fairly flat. In terms of geology, the Northern Cape spans a wide range of geology, on a regional scale the project area is located on the relatively young Transvaal supergroup. The soil is ref sandy. In terms of vegetation, the project area falls within the greater Kuruman Bushveld vegetation type classification (Mucina & Rutherford 2006), that itself is characterised by spaced medium-tall tree layer. The prospecting area is mostly grass and shrubs.

Table 1: Summary table of project location details

Province	Northern Cape
Local	Joe Marolong
District	John Taolo Gaetsewe
Farm (s)	Tweed 362 IL
Development	Prospecting Right Application

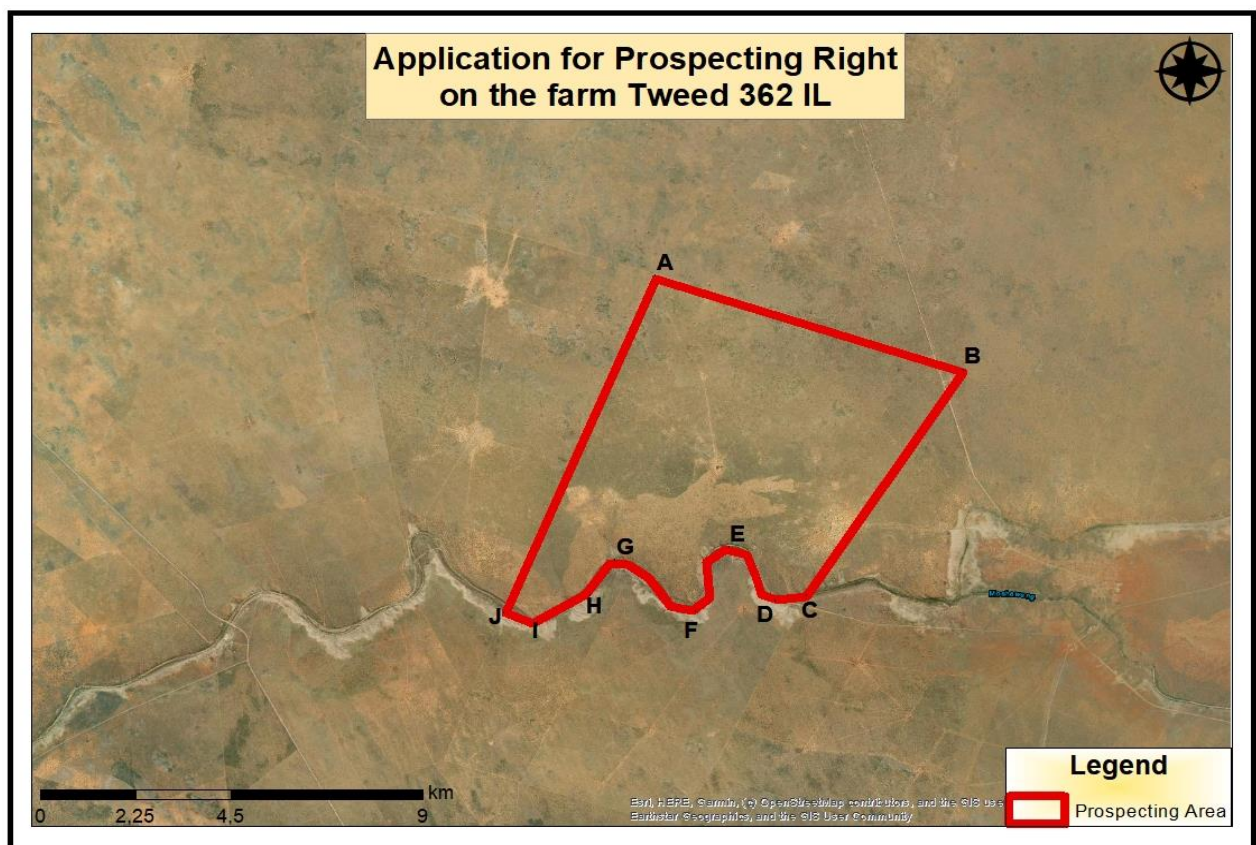


Figure 1: Google Earth view of the area proposed for the development.

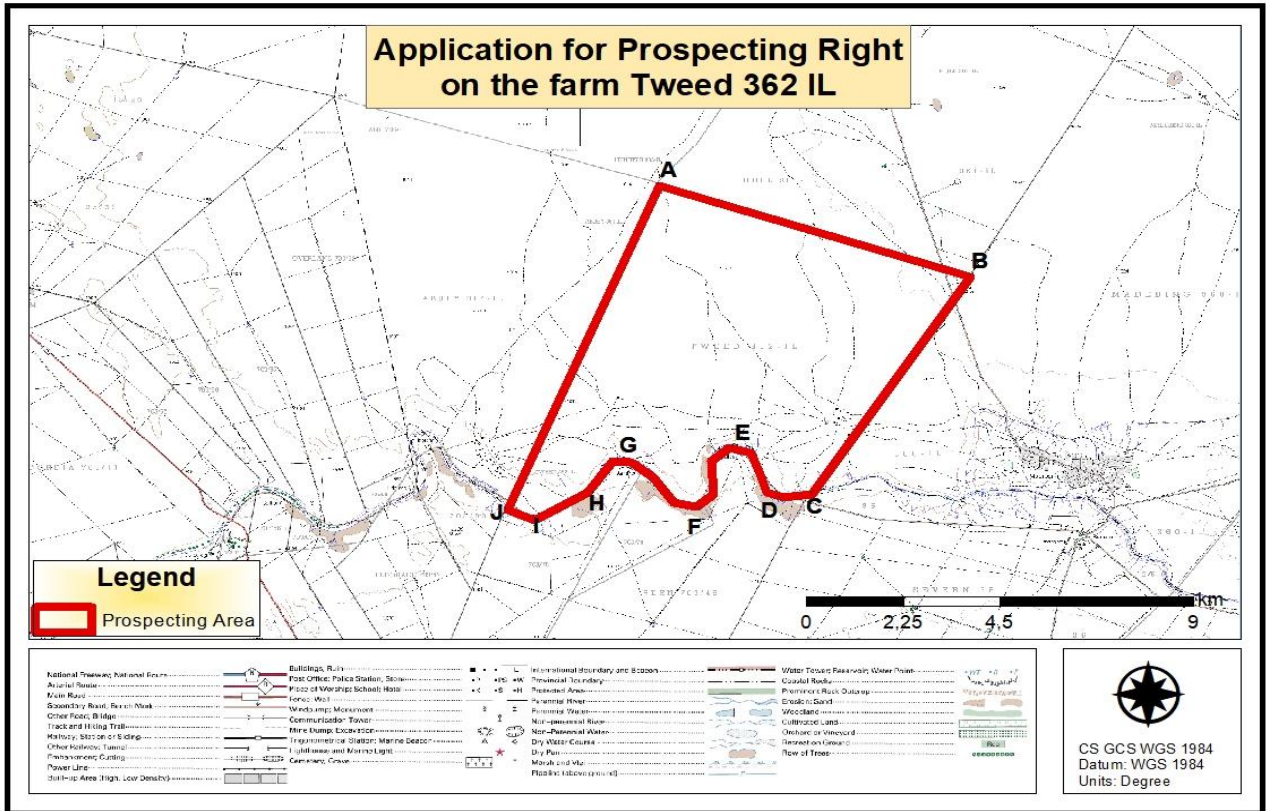


Figure 2: Locality map of the study area.



Figure 3: A general view of the proposed prospecting site.



Figure 4: Another view of the area proposed for prospecting: note the CLO and other community members.



Figure 5: View of another portion of the farm proposed for the development.



Figure 6: View of the site from a southern direction.



Figure 7: View of the site proposed for prospecting from an eastern direction.



Figure 8: View of the site proposed for prospecting from the western direction.



Figure 9: View of the site from the north.



Figure 10: Showing the vegetation that defines the site: note the grass cover.



Figure 11: View of another portion of the farm: note the scattered trees and massive grass cover.



Figure 12: View of some tracks on the proposed site of development.



Figure 13: View of other specialists during the field survey.



Figure 14: Showing a portion of the site where some vegetation has been cleared.



Figure 15: View of some signs of site disturbance on the proposed prospecting site.

3. NATURE AND NEED OF THE PROPOSED PROJECT

The Applicant, Letso Investment (Pty) Ltd intends to do prospecting for manganese and iron ore on farm Tweed 362 IL within Joe Morolong Local Municipality of Joe Taolo Gaetsewe District Municipality in Northern Cape. The prospecting area extent is 5064 ha in size. The Prospecting Plan comprises of various phases ranging from existing historical geological information to the Bankable feasibility study depending on the economic potential of the mineral commodity to be prospected. The prospecting project will be undertaken using non-invasive and invasive techniques over a period of 5years.

The prospecting activity being applied for here are required in order to investigate the presence of suitability mineralisation, and if so whether this mineralisation can be economically and feasible mined in future, which in turn presents various socio-economic to the surrounding communities, the country and the region at large. The proposed prospecting activities are needed in order to determine the exact position, extent, grades and quality of manganese and iron ore. These minerals are of significant value and the mining therefore has the potential to contribute positively to the South African economy. The geological characteristics of the

preferred location meet the requisites for concentration of these minerals. These project would create employment, earns the country foreign currency and will contribute immensely to the GDP.

4. PURPOSE OF THE CULTURAL HERITAGE STUDY

The purpose of this Archaeological and Cultural Heritage study was to entirely identify and document archaeological sites, cultural resources, sites associated with oral histories, graves, cultural landscapes, and any structure of historical significance that may be affected by the prospecting right application, these will in turn assist the developer in ensuring proper conservation measures in line with the National Heritage Resource Act, 1999 (Act 25 of 1999). Impact assessments highlight many issues facing sites in terms of their management, conservation, monitoring and maintenance, and the environment in and around the site. Therefore, this study involves the following:

- Identification and recording of heritage resources that maybe affected by the prospecting right application;
- Providing recommendations on how best to appropriately safeguard identified heritage sites. Mitigation is an important aspect of any development on areas where heritage sites can be identified.

5. METHODOLOGY AND APPROACH

The methods utilised in this study are informed by the 2012 SAHRA Policy Guidelines for impact assessment. To achieve the purpose and objectives sources were used, this includes;

I. Literature review

Relevant literatures were consulted through the SAHRIS website, with an intention to review previous Cultural Heritage Impact Assessments conducted in and around the area of the proposed development. Various archaeological, historical sources and recently published and unpublished books were used to aid this study.

II. Field survey

The field survey was carried out by the author on the **4th of March 2023**. The survey was conducted in the presence of Biomental Services (Pty) Ltd officials and in collaboration with other specialists. The survey made use of the vehicle to get to the site. The whole site was walked through. The survey covered the entire farm area. It was surveyed through farm tracks and some access roads. The pedestrian survey focussed on parts of the project area where it seemed as if disturbances may have occurred in the past.

III. Documentation

In line with the appropriate legislation, the site was documented by taking photographs using a camera 10.1 mega pixel Sony Cybershort Digital Camera and plotting of finds using a Garmin etrex Venture HC.

IV. Restriction and assumption

The site is covered in grass that inhibited surface visibility. The farm tracks and footpath may also have had a negative impact on the preservation and context of the material culture. However, a thorough and exhaustive method of survey was applied, and on inspecting these no heritage resources were noted. Underground heritage may not be represented on the surface making the identification difficult. This serves as considerable limitation. Should any cultural material be identified when the development begins, a specialist must be consulted to examine the finds.

6. APPLICABLE HERITAGE LEGISLATION

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

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
 - (b) the construction of a bridge or similar structure exceeding 50 m in length; and*
 - (c) any development or other activity which will change the character of an area of land, or water -*
 - (i) exceeding 5 000 m² in extent;*
 - (ii) involving three or more existing erven or subdivisions thereof; or*
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years;*
- or*

- (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a Provincial Heritage Resources Authority;*
- (d) the re-zoning of a site exceeding 10 000 m² in extent; or*
- (e) any other category of development provided for in regulations by SAHRA or a Provincial Heritage Resources Authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.*

Section 3 of the National Heritage Resources Act (25 of 1999) lists a wide range of national resources protected under the act as they are deemed to be national estate. When conducting a Heritage Impact Assessment (HIA) the following heritage resources have to be identified:

- (a) Places, buildings structures and equipment of cultural significance*
- (b) Places to which oral traditions are attached or which are associated with living heritage*
- (c) Historical settlements and townscapes*
- (d) Landscapes and natural features of cultural significance*
- (e) Geological sites of scientific or cultural importance*
- (f) Archaeological and paleontological sites*
- (g) Graves and burial grounds including-*
 - (i) ancestral graves*
 - (ii) royal graves and graves of traditional leaders*
 - (iii) graves of victims of conflict*
 - (iv) graves of individuals designated by the Minister by notice in the Gazette*
 - (v) historical graves and cemeteries; and*
 - (vi) other human remains which are not covered by in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983)*
- (h) Sites of significance relating to the history of slavery in South Africa*
 - (i) moveable objects, including -*
 - (i) objects recovered from the soil or waters of South Africa, including archaeological and paleontological objects and material, meteorites and rare geological specimens*
 - (ii) objects to which oral traditions are attached or which are associated with living heritage*
 - (iii) ethnographic art and objects*
 - (iv) military objects*
 - (v) objects of decorative or fine art*
 - (vi) objects of scientific or technological interest; and*
 - (vii) books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1 of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).*

Section 3 of the National Heritage Resources Act (No. 25 of 1999) also 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 the following:

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

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

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

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

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

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

- *destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside formal cemetery administered by a local authority; or*
- *bring onto or use at a burial ground or grave any excavation equipment, or any equipment which assists in detection or recovery of metals.*

7. ARCHAEOLOGY AND HISTORY OF THE AREA

The archaeology of southern Africa is broadly divided into Stone Age, Iron Age and the Historical Age, and South Africa fits well into this periodisation.

The Stone Age is the first period in a series of cultural developments in the history of evolution. It refers to the earliest culture in which people utilised the stone to make tools (Clark 1970). In South Africa, in line with the picture in southern Africa, the Stone Age is divided into three categories namely the Early Stone (ESA), The Middle Stone Age (MSA) and the Later Stone Age (LSA). ESA dates between 2.6 million and 250 000 years ago. It is characterised by two archaeological industries, the Oldowan and the Acheulean. (Clarke; Kuman 2000; Klein 2000; Lombard *et al.*, 2012). The Oldowan industry is the oldest known stone industry and dates to 2.6 million ya. It is characterised by cobbles cores, pebble choppers and percussive tools (Klein 2000; Toth & Schick 2007). Oldowan tools have not been found in any other continent outside Africa (Esterhuysen & Smith 2007). It was completely replaced by the Acheulian around 1.7 million years ago.

Homo ergaster was probably responsible for the manufacture of Acheulian tools in South Africa (Esterhuysen & Smith 2007). Acheulian tools were longer with sharper edges which suggest they could be used for a variety of activities ranging from cutting meat from large animals such as elephants, rhinoceros and hippopotamus that would have died from natural causes. Other functions include chopping of wood, digging roots and cracking bones for marrow. The most diagnostic tools of this period are the handaxes and the cleaver, and some other bifacial tools (Klein 2000). The Acheulean tool industry is known to be the longest running stone tool industry which first appeared about 1.7 million ya and survived until the period between 350 000 to 250 000 ya (Klein 2000; Phillipson 2005).

The transition from ESA to MSA took place around 250 000 years ago and it is characterised by a change in technology as handaxes and cleavers were replaced by smaller blades and flakes (Kuman *et al.*, 2005). In contrast to the ESA technique of removing flakes from a core, MSA tools were flakes to start with (Mitchell 2002). There were of a predetermined size and shape and were made by preparing a core of suitable material and striking off the flake so that it was flaked according to a shape which the toolmaker desired (Esterhuysen & Smith 2007). The stone toolkit of the MSA comprise of unifacial and bifacial points, blades, flakes, scrapers and pointed tools that could have been hafted and used as spears or arrowheads (Volman 1984). The repeated use of caves indicates that MSA people had developed the concept of a home base and that they could make fire. These were two important steps in cultural evolution

(Deacon & Deacon 1999). Besides the occupation of caves and introduction of fire, the widespread use of red ochre, probably as body paint, also shows that MSA behaviour had become more human (Wadley 2015). The recent finds of decorated ochre at Blombos and decorated ostrich eggshells at Diepkloof also in the Cape further cement the point.

The LSA dates to between 40 000 and 25 000 to recently, 100 years ago. It was a period when man refined small blade tools conversely abandoning the MSA prepared-core technique (Deacon 1984). The LSA is associated with the San people. Thus, the tool assemblage of this period consists of thumbnails, convex –edge scrapers, crescents, and bladelets. Other tools of the period are hammers, adzes, bores, grooved stones, hafted tools, points. These San people relied to a larger extent on bow-and-arrow hunting with poisoned tips and also snaring. Ceramics were produced and used by hunters and Khoikhoi herders towards the terminal phase of the LSA (Sadr & Sampson 2006). During the LSA, human behaviour was undoubtedly modern with unique human traits such as rock art and purposeful burials with ornaments (Villa *et al.*, 2012).

No Stone Age sites were found within the footprint of the area proposed for the development. Although no Stone Age sites were found, the region has evidence to suggest that the area was inhabited by Stone Age people in the past. The Northern Cape Province is known for its rich Stone Age sites. All the three Stone Age periods are well represented in the region. In the wider study area the ESA is well represented at sites such as Kathu Pan 1, Kathu Townlands, Bestwood 1 (Wilkins & Chazan 2012; Walker *et al.* 2014), and Wonderwerk Cave (Thackeray 1981). All these sites have yielded well-made Acheulian handaxes and cleavers as well as Fauresmith lithic materials that are transitional between the ESA and MSA.

The Middle Stone Age mostly occur on the same sites with the ESA material suggesting longer sequences of occupation and this have allowed researchers to explore the behavioural changes that influenced these technological developments(Porat *et al.* 2010; Walker *et al.* 2014). This characteristic MSA have been reported at sites such as Kathu Pan 1 (Walkins & Chazan 2012), Wonder werk Cave (Beaumont & Vogel 2006). It has also been reported at isolated clusters (Kaplan 2012a, 2012b; Pelsler & van Vollenhoven 2012). At Wonderwek Cave, the MSA component was associated with pieces of haematite and several incised stone labs, most with

curved parallel lines that add to the behavioural shifts that went beyond stone tools and ushered in the new appreciation of art (Beaumont & Vogel 2006).

In the wider study area, the LSA has been recorded at the Wonderwerk Cave, in fact the Wonderwerk Cave lithic sequence serves as a benchmark for the Stone Age archaeology of the Northern Cape as all the three periods are clearly represented (Beaumont & Vogel 2006; Kusel et al. 2009). At Wonderwerk Cave, the uppermost sequence comprises of the LSA in form of ceramic LSA, Wilton and Oakhurst industries. Some researchers refer the Oakhurst industry of the region as the variant Kuruman (characterised by rare retouched tools most of which are large scrapers that are long with retouch on the side. LSA isolated finds have been found in the wider study area at Wrenchville (Fivaz & Engelbrecht 2021).

The Iron Age

Bantu-speaking people moved into eastern and southern Africa about 2000 years ago (Mitchell 2002). These people came with their cultural package. The primary technology used by the Bantu farming communities was the iron hoe, hence the advent of the 'Iron Age' to designate this period. The Iron Age of South Africa is divided into the Early Iron Age (EIA) AD200 - 1000) and the Later Iron Age (LIA) (AD1000-1840). However, Huffman (2007:361) proposed for an additional Middle Iron Age between the two phases. So according to him, the Iron Age of South Africa is divided into three phases namely, the Early Iron Age (EIA) (AD200-900), the Middle Iron Age (MIA) (AD900-1300) and the Late Iron Age (LIA) (AD1300-1840). Other researchers argue that the Middle Iron Age should only be confined to the Shashe Limpopo Basin, as it is not clear outside the Limpopo Basin.

The first settlement in southern Africa is known as the Early Iron Age (Mitchell 2002). Early Iron Age communities in eastern and southern Africa share a common culture called Chifumbaze Complex (Philipson 1994). The Chifumbaze Complex contains evidence of the first farmers who cultivated crops, domesticated cattle, used iron and made pots (Philipson 1994). Some researchers classify Early Iron Age pottery traditions into different streams or trends in pot types and decoration that emerged over time in southern Africa. These streams are identified as the Kwale Branch (east), the Nkope Branch (central) and the Kalundu Branch (west). Early Iron Age pottery display features such as large and prominent inverted rims, large

neck areas and fine elaborate decorations. Inskeep (1977: 124) describes it as ‘thick, pale (pink, buff or reddish) in colour and freely, boldly decorated’.

The Middle Iron Age stretches from AD900 to 1300 and it marks the origins of the Zimbabwe culture (Huffman 2007: xiii). During this period, cattle domestication appeared to play an important role in society. The period was also characterised by extensive international trade that boosted the economy resulting sweeping socio-economic changes in the landscape (Huffman 2000). A remarkable change was the development of class distinction and sacred leadership which was witnessed in the Shashe-Limpopo Basin (Huffman 2007).

The Late Iron Age roughly dates from AD1300 to 1840. The LIA was characterised by greater focus on economic growth and the increased importance of trade. Specialisation in terms of natural resources also started to play a role, as can be seen from the distribution of iron slag which tends to occur only at certain localities compared to wider distribution during the earlier times (Huffman 2000, 2007). There is also a marked increase in stonewalling (Huffman 2007).

No Iron Age sites were noted during the survey. There is very little Iron Age in the Northern Cape. Iron Age people preferred to settle on the alluvial soils, near rivers for agricultural purposes (Mitchell 2002; Huffman 2007). It was not until the mid-second millennium AD that serious Iron Age occupation began in the wider geographical area. The study area falls within the fringes of the distribution of LIA people who made the Olifantspoort pottery which was for the ancestral Sotho-Tswana speakers dated to AD1500 and AD1700 (Huffman 2007: 191). Olifantspoort facies represents the second phase of the Moloko sequence and settlements with people who made this pottery are distributed in the area to the north-east of the study area between the Vaal River and Pretoria (Huffman 2007). These people just like the makers of Thlabeng pottery which is the third phase of the Moloko tradition (AD1700-1840) settled in aggregated clusters where space was also demarcated by extensive stone walling. The extensive walled settlements around Kuruman are historically associated with the Tswana people such as the Rolong Tlaro and Thlaping (Pelser 2012; Fourie 2013).

Historical Period

Bartholomeo Diaz was the first European to sail around the southern point of Africa in 1488 (Sadr 1998), and he named it the 'Cape of Good Hope.' He was followed by Vasco da Gama who arrived 9 years later. The Portuguese seafarers were not actually interested in southern Africa, they were just explorers. The start of a significant chapter would be when Jan Van Riebeck arrived in Table Bay with his 3 ships on 6 April 1652. At first his aim was not to colonise the Cape but to establish a station at Table Bay to supply passing ships with fresh meat. The events turned when they granted mine company servants freedom in 1657 to establish private farms in Rondebosch area below the eastern slopes of Table Mountains. By settling at the Cape, the Dutch also aimed to access the herds of cattle kept by the Khoikhoi. At first it was a friendly arrangement, however, disputes erupted over land when the Free Burghers began to encroach into traditional communal lands. By the 1700s, the Dutch colonists had prevailed. These new white settlers would influence the context and content of South Africa starting with the development of Cape Town into an urban centre (Wright & Hamilton 1989).

The British took control of the Cape colony in 1795 after the battle of Muizenberg. This triggered a process of disintegration within many European locals unwilling to contribute to the British government and crown. Between 1803 and 1806, the Dutch gained control temporarily. In 1832, Dr. Andrew Smith, a Briton and William Berg, a Boer embarked on an exploring tour in KZN. When they came back they convinced the Boer leaders of the potential of the land in terms of farming, livestock and settlement. This triggered the beginning of the Great Trek. (Ross 1989; Wright & Hamilton 1989). The first wave of trekkers left the Cape in 1835, and more followed in 1836. About 12 000 people left on the trek being led by renowned figures such as Louis Trichardt, Hans Van Rensburg and Hendrik Potgieter among others. In time, these voortrekkers who were escaping the British policies started to build a unique identity, and started calling themselves Afrikaners. They also developed a hybrid language called Afrikaans which stemmed from the Dutch, but incorporated other languages such as German, French and Black African influences. The Afrikaans descendants of these people would later be called the 'Boere', meaning a farmer (www.sa.history.co.za/)

The early history of South cannot be complete without mentioning the Mfecane/ difaqane. This was the time of trouble when the great Zulu and Sotho tribes fought each other for space and domination throughout southern Africa, killing and displacing hundreds of thousands of people

across the subcontinent. A key figure in these wars was the great Zulu king, Shaka. In the early 1860s, many African states weakened as they lost their tradition and culture due to Christianity. During this time, Europeans further weakened African states by grabbing fertile land from them, exploited them as a source of cheap labour and made them to pay taxes (Wright & Hamilton 1989; Shillington 1989).

In time, tensions between the British and the Boers states arose with the discovery of gold and diamonds the British saw it fit to attempt to take over two states in order to protect the people living under Boer rule and also to thwart a German attempt at taking control of large parts of Africa. These tensions led to the Anglo-Boer War of 1899-1902. The war claimed the lives of probably, 50 000 Boers, as well as Blacks and some British soldiers. The Boers ceded in May 1902, and the British formed the South African Republic. Boers continued to live in the new Republic although many resisted and wished to continue fighting. The 1902 Peace Treaty in Vreeniging ended the Anglo-Boer War. This gave Black South African Peace Treaty as they hope for better opportunities after the suppression and domination by white minority. Unfortunately this did not bring any meaningful changes as far as human rights for black people were concerned, actually the process of segregation in South Africa intensified (Wright & Hamilton 1989).

No Historical cultural material were noted during the study. However, the wider region is endowed with some Historical cultural material such missions, old farm houses and other traits of the Historical era. The wider study area has some isolated occurrences of Historical resources; PGS (2010) found eight homesteads with associated structures, a sparse scatter of late 18th Century glass bottle fragments for medicinal purposes, some 19th Century beverage bottles, tinned food cans as well as structures associated with Historical asbestos mining. The Historical Age of the Northern Cape, just like any other part of South Africa has an umbilical cord of migration. The nature of interaction between the immigrant Tswana and the descendant Khoisan people is complex, but there are indications of acculturation (Breutz 1981), which are even apparent today. Some of the things that formed the locus of trade and interaction between the Tswanas and the Khoisan groups in the area are specularite mining and ivory hunting. For instance, at sites such as Blinkklipkop, a Khoisan specularite mine site date to as early as AD800, there is evidence of either trade with or occupation of the mine by the Thlaping people around 1801 (Thackeray et al. 1983). Specularite was used for non-meturgical purposes such

as pottery decoration and bodily adornment (Hall 1985). It was a prized trade commodity together with ivory and other items during the second millennium trade boom in this part of southern Africa. By the 19th Century, and probably earlier on, the Thlaping people were purchasing glass beads, iron, copper, tin and bronze wares from other Northern Sotho-Tswana groups such as the Kwena and Hurutse, and exchanging the items with the Khoisan groups to the south-west of the region (Godwin 1956; 256).

The first white settlers to explore the region were early missionaries and early mine explorers. From as early as 1685 copper had been discovered, however, alluvial diamond had to wait until 1926. Early explorers, hunters, traders and missionaries travelled through the area on their way to Kuruman on what became known as “Missionary Road”. The first mission was established in 1816 by the Methodist church. It was founded by the Scottish Robert Moffat at Kuruman. In time, the San were enslaved; and those who were resistant to the system were killed. The introduction of a loan farm system by the Dutch in 1808 across the Cape Colony enabled Afrikaners to graze their livestock on unoccupied plots of land. With the annexation of the Tswana areas by the British in 1885, a number of reserves were set up for people to stay in. In 1895 the Tswana-speakers rose up in resistance to the British authority as represented by the government of the Cape Colony, their land was taken away, divided up into farms and given out to white farmers to settle on. This prompted farmers to erect fences in their property and also began practising a rotational grazing system.

Brief history of the town of Kuruman

Kuruman is a mining town located 160 km south-west of Vryburg and 232 km north-west of Kimberley (Raper 2014). It is accessed through the N14 Road to Upington. The town has a long history that started in the early 19th Century with the advance of Christian missionaries in the area (Dreyer 2014). In 1816, Robert Moffat, a Scottish, a worker of the London Missionary Society at the time established the Moffat church near the spring known as the eye of Kuruman. The mission station went on to become the most famous in Africa becoming venue for Moffat’s daughter’s marriage and the son of the world’s most famous explorer, David Livingstone (<https://southafrica.co.za/history-kuruman.html>).

The spring is very famous, and has attracted people for centuries. The early Tswana inhabitants named the spring Gasegonyane meaning a ‘little calabash’. The town was laid out in 1887 on

the left bank of the Kuruman River (Raper 2014). At first it was administered by a village management board from 1913, and attained municipal status in 1916 (Raper 2014). The name of the town is derived from the chief who lived in the area called Kudunane (<https://southafrica.co.za/history-kuruman.html>). Some think that the name is derived from the Tswana word Kurwana (gourd), or from Kludu (tortoise) or it may be derived from the Khoekhoen meaning ‘where wild tobacco stands’ (Raper 2014:266).

8. PREVIOUS HERITAGE IMPACT STUDIES

A number of CRM projects were conducted in and around the mining town of Kuruman. Most of these are prospecting right application and mining expansion (Kusel & van der Ryst 2009; Pelsler & Vollenhoven 2009a & b; Webley & Halkett 2008). Other studies are on energy expansion (Kaplan 2012a & b) and infrastructural developments (Morris 2010).

Below is a table summarising previous HIA studies undertaken in and around the area proposed for development, as well as the findings.

Table 2: Previous Heritage studies in and around the town of Kuruman.

Author/Year	Local Municipality	Farm name	Findings
Fivaz & Engelbrecht (2021)	Ga-Segonyana	Erf 4440	One isolated MSA stone tool from Banded Ironstone formation, and an unfenced graveyard.
Dreyer (2014)	Ga-Segonyana	MSA and LSA stone tools
Kaplan (2012a)	Joe Morolong	321	31 sites that yielded more than 50 stone tools. The majority of the stone tools were the MSA and LSA, with one ESA, a possible bifacial.

Kaplan (2012b)	Joe Morolong	379	32 occurrences that yielded 70 stone tools; only MSA and ESA tools, and the majority were MSA with few ESA tools with one outstanding described as 'well-crafted bifacial handaxe'
Kusel & van der Ryst (2009)	Joe Morolong	Belgravia 264 Santoy 230 Gloria 226 Ntwaning 267	The Black Rock mine was declared a National Heritage Site, an isolated cemetery with 3 graves and some Stone Age tools found on the banks of Ga-Mogara River (ESA and MSA).
Morris (2010)	Joe Morolong	Low density of stone tools and a large burial site.
Pelser & Vollenhoven (2009a)	Joe Morolong	Portions 2, 3, 4 and 5 of Kapstewel 436.	Possible Iron Age site, mining heritage resources, Stone walling and possible grave.
Pelser & Vollenhoven (2009b)	Joe Morolong	Portion 1 of Kareepan 450 Remaining extent of Pensfontein 449	Some Stone Age tools were found.
Webley & Helkett (2008)	Ga-Segonyana	Adams 328 Erin 316	Isolated MSA tools at Erin, Historical farm buildings and

		equipment and two burial sites. At Adams 328 they found Historical farm equipment including cottage for workers and two graves. All the historical resources date to the 20 th Century.
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The findings from these previous Heritage studies is a clear testimony that Kuruman and the surrounding areas is a rich cultural landscape.

9. DEGREE OF SIGNIFICANCE

Assessment of significance is important in this study as it provides rating of the impact prompted by the proposed development on heritage resources. The assessment of significance gives mitigation measures to limit the effects of the impact that could result as the cause of the development on heritage resources.

Table 3: Impact criteria significance.

Status of Impact
The impacts are assessed as either having a: negative effect (i.e., at a `cost' to the environment), positive effect (i.e., a `benefit' to the environment), or Neutral effect on the environment.
Extent of the Impact
(1) Site (site only), (2) Local (site boundary and immediate surrounds), (3) Regional (within the City of Johannesburg), (4) National, or (5) International.
Duration of the Impact

<p>The length that the impact will last for is described as either:</p> <ul style="list-style-type: none"> (1) immediate (<1 year) (2) short term (1-5 years), (3) medium term (5-15 years), (4) long term (ceases after the operational life span of the project), (5) Permanent.
<p>Magnitude of the Impact</p>
<p>The intensity or severity of the impacts is indicated as either:</p> <ul style="list-style-type: none"> (0) none, (2) Minor, (4) Low, (6) Moderate (environmental functions altered but continue), (8) High (environmental functions temporarily cease), or (10) Very high / Unsure (environmental functions permanently cease).
<p>Probability of Occurrence</p>
<p>The likelihood of the impact actually occurring is indicated as either:</p> <ul style="list-style-type: none"> (0) None (the impact will not occur), (1) improbable (probability very low due to design or experience) (2) low probability (unlikely to occur), (3) medium probability (distinct probability that the impact will occur), (4) high probability (most likely to occur), or (5) Definite.
<p>Significance of the Impact</p>
<p>Based on the information contained in the points above, the potential impacts are assigned a significance rating (S). This rating is formulated by adding the sum of the numbers assigned to extent (E), duration (D) and magnitude (M) and multiplying this sum by the probability (P) of the impact.</p> <p>$S=(E+D+M)P$</p>
<p>The significance ratings are given below</p>

(**<30**) low (i.e., where this impact would not have a direct influence on the decision to develop in the area),
(30-60) medium (i.e., where the impact could influence the decision to develop in the area unless it is effectively mitigated),
(>60) high (i.e., where the impact must have an influence on the decision process to develop in the area).

Table 4: Grading system for identified heritage resources in terms of the NHRA (No.25 of 1999)

Level	Significance	Possible action
National (Grade I)	Site of National Value	Nominated to be declared by SAHRA
Provincial (Grade II)	Site of Provincial Value	Nominated to be declared by PHRA
Local Grade (IIIA)	Site of High Value Locally	Retained as heritage
Local Grade (IIIB)	Site of High Value Locally	Mitigated and part retained as heritage
General Protected Area A	Site of High to Medium	Mitigation necessary before destruction
General Protected Area B	Medium Value	Recording before destruction
General Protected Area C	Low Value	No action required before destruction

10. SURVEY FINDINGS

The Phase I Cultural-Heritage Impact Assessment study for the proposed mining right did not reveal any sites or cultural material dating to the Stone Age, Iron Age or Historical Age; neither did it identify any graves within the area proposed for the development. However, the study area falls within a sensitive cultural landscape. Previous heritage studies in the wider study area yielded some heritage resources; Ubique Heritage consultants in their HIA study for

infrastructural developments on farm Erf4440 found MSA tools and an unfenced graveyard (Fivaz & Engelbrecht 2021). Dreyer (2014) noted some MSA and LSA tools in the study carried out in Kuruman. A study by (Kaplan 2012a) in Kuruman revealed thirty-one sites that yielded about 50 Stone Age tools belonging to all the 3 the stone ages on farm 321. The stone assemblage was dominated by the MSA and LSA tools. Another study in the same year by the same researcher near Kuruman on the farm 321 yielded stone tools dominated by MSA lithics with a high possibility of on-site knapping as several large chunks had been flaked and modified (Kaplan 2012b). The closest study to the site was by Kusel & van der Ryst (2009) and it was for the development of manganese mining, north of Kuruman,;the study yielded a lot of heritage resources such as stone tools, ESA and MSA, a large cemetery for mine workers and the ancient mine represents the early history of manganese mining in South Africa (Kusel & van der Ryst 2009). Morris (2010) in his study for a proposed housing development in Kuruman found stone tools and a large burial site which tells a history of the area and country at large and recommended the relics to be sites of memory. Pelsler & Vollenhoven 2009) in their HIA study for mining development on the remaining extent and portions 2,3, 4 and 5 of the farm Kapstewel 436 found a possible Iron Age site, historical buildings and relics of ancient mining. They did another study in the same year for mining development on a farm called Pensfontein 449; the study revealed stone tools. A study by Webley & Halkett (2008) on the farms Adams 328 and Erin 316 in Kuruman revealed some isolated scatters of MSA stone tools and some historical farm structures such as dam kraals, boreholes, shed and a workers' cottage as well as two 20th Century graves on farm Erin 316. On Adams 328 farm they found a scatter of MSA and LSA lithics, two graves, a workers's cottage and a limestone dam all dating to the 20th Century.

Table 5: Anticipated impact rating.

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 material or objects.		
	Without Mitigation	With Mitigation
Extent	Local (1)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Low (2)	Low (2)
Probability	Not Probable (2)	Not probable (2)
Significance	Low (16)	Low (16)
Status	Negative	Negative
Reversibility	Not irreversible	Not irreversible
Irreplaceable loss of resources	No loss of resources	No loss of resources
Mitigation: Exercise caution during the construction phase as the archaeological and cultural heritage resources might be buried underground.		

11. RECOMMENDATIONS AND CONCLUSION

Although no heritage resources were found within the footprint of development, it is important to note that unavailability of archaeological and cultural heritage materials does not mean absentee, archaeological material might be buried underground. In addition to that, as noted above, previous heritage studies have revealed some heritage resources. Thus, the client is advised to take precautions during the development. If archaeological materials are unearthed, all the construction within the radius of at least 10m of such indicator should be stopped and the area be demarcated by a danger tape. A professional archaeologist or SAHRA officer should be contacted immediately. In the interim, it is the duty of the client and the contractor to protect the site from publicity until the mutual agreement is reached.

In conclusion, since there are no heritage resources identified during the assessment, it is recommended that the developer proceed with the project subject to the recommendations given above.

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APPENDIX 1: SITE SIGNIFICANCE

The following guidelines for determining site *significance* were developed by SAHRA in 2003. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these.

(a) Historic value

- Is it important in the community, or pattern of history?
- Does it have strong or special association with the life or work of a person, group or organization of importance in history?
- Does it have significance relating to the history of slavery?

(b) Aesthetic value

- Is it important in exhibiting particular aesthetic characteristics valued by a community or cultural group?

(c) Scientific value

- Does it have potential to yield information that will contribute to an understanding of natural or cultural heritage?
- Is it important in demonstrating a high degree of creative or technical achievement at a particular period?

(d) Social value

- Does it have strong or special association with a particular community or cultural group for social, cultural or spiritual reasons?

(e) Rarity

- Does it possess uncommon, rare or endangered aspects of natural or cultural heritage?

(f) Representivity

- Is it important in demonstrating the principal characteristics of a particular class of natural or cultural places or objects?
- What is the importance in demonstrating the principal characteristics of a range of landscapes or environments, the attributes of which identify it as being characteristic of its class?
- Is it important in demonstrating the principal characteristics of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, province, region or locality?

