THE PROPOSED UPGRADE OF THE 66KV NETWORK IN THE KURUMAN AREA – HOTAZEL TO MOTHIBISTAT SUBSTATIONS, NORTHERN CAPE PROVINCE

Heritage Walkdown and Management Plan

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Declaration of Independence

This report has been compiled by PGS Heritage, an appointed Heritage Specialist for Environmental Impact Management Services (Pty) Ltd. The views stipulated in this report are purely objective and no other interests are displayed during the decision making processes discussed in the development of the Heritage management plan.

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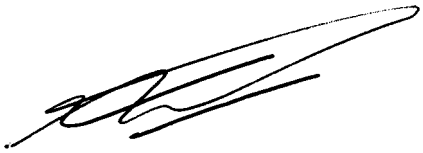

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Report Title	Heritage Management Plan for proposed upgrade of the 66kV network in the Kuruman area – Hotazel to Mothibistat substations, Northern Cape Province		
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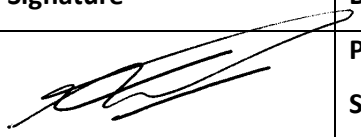
Author	**W Fourie**		**Project Coordinator/Heritage Specialist**
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EXECUTIVE SUMMARY

PGS Heritage (Pty) Ltd (PGS) was appointed by Zitholele Consulting (Pty) Ltd to undertake a Heritage Walk Down and to compile a Heritage Management Plan (EMP) for the for proposed upgrade of the 66kV network in the Kuruman area – Hotazel to Mothibistat substations, Northern Cape Province.

During the survey a total of 8 heritage resources were identified on the Hotazel-Mothibistat alignment and 1 heritage resources on the surveyed section of the Moffat-Valley alignment.

The overall management of heritage resources must lean towards the conservation of the resource in situ and as such to the demarcation of such sites as "no-go" areas during construction.

However, where the cost implication and socio-economic implications outweigh such an option, the next option would be mitigating the impact on the resource by means of the documentation of the site through sampling / surface collections, and in some cases controlled excavations, to collect a representative sample for further study of the site.

All other identified heritage resources must be demarcated as no-go areas during construction, and monitored during and upon completion of construction for damage.

Table 6 lists the sites and associated pylon numbers and management recommendations.

Table 1 - Management measures for heritage resources – Hotazel-Mothibistat alignment

Site Number	Description	Coordinates	Management Measures
Hotazel Mothibistat 66kV alignment			
HK1	Graves	27º 13' 35,0" S 23º 02' 08.0" E	• Demarcate the site as a no go area, with a 20 meter buffer. • The site must be monitored during construction
HK2	Graves	27º 13' 34,8" S 23º 02' 09,4" E	• Demarcate the site as a no go area, with a 20 meter buffer. • The site must be monitored during construction

Site Number	Description	Coordinates	Management Measures
Hotazel Mothibistat 66kV alignment			
HK3	Single grave	27º 13’ 34,2” S23º 02’ 11,0” E	• Demarcate the site as a no go area, with a 20 meter buffer. • The site must be monitored during construction
HK4	Stone Age site	-27° 17' 44.6" S 23° 06' 25.3" E	• Demarcate the site as a no go area, with a 20 meter buffer. • The site must be monitored during construction
HK5	Grave	27º 20’ 37.8” S 23º 12’ 12,4” E	• Demarcate the site as a no go area, with a 20 meter buffer. • The site must be monitored during construction
HK6	Graves	27º 21’ 22,5” S 23º 14’ 34,2” E	• Demarcate the site as a no go area, with a 20 meter buffer. • The site must be monitored during construction
HK7	Cemetery	27º 24’ 11,1” S 23º 25’ 15,8” E	• Demarcate the site as a no go area, with a 20 meter buffer. • The site must be monitored during construction
HK8	Historic furrow	27º 24’ 15,7” S 23º 25 44,2” E	• Demarcate the site as a no go area, with a 20 meter buffer. • The site must be monitored during construction

Table 2 - Management measures for heritage resources – Moffat-Valley alignment

Site Number	Description	Coordinates	Management Measures
Moffat- Valley66kV alignment			
MV1	Graves	27° 35' 29.9" 23°S 27' 01.7""E	• Demarcate the site as a no go area, with a 20 meter buffer. • The site must be monitored during construction

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1 INTRODUCTION

PGS was appointed by Zitholele Consulting (Pty) Ltd to undertake a Heritage Walk Down and to compile a Heritage Management Plan (EMP) for the for proposed upgrade of the 66kV network in the Kuruman area, Northern Cape Province.

The aim of the study is to identify all heritage sensitive areas, document, and assess their importance within the Local, Provincial and National context. From this we aim to assist the developer in managing the discovered heritage resources in a responsible manner in order to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act 25 of 1999) (NHRA).

General site conditions and features on site were recorded by means of photos, coordinate locations, and description. Management measures to be implemented during construction is supplied in this report.

2 PROJECT DESCRIPTION

2.1 General Description of the Affected Landscape - Area Surveyed

The study area is located within the northern part of the Northern Cape Province and stretches from Hotazel in the north towards Kuruman and then south-westward towards Kathu in the western section of the study area.

The walk down took place between the 18/04/2016 and 21/04/2016. The area under consideration is a predominantly bushveld with very little disturbance up to the town of Kuruman, where the area is transformed by housing agriculture and industrial areas. (Figure 1).

Figure 1- Locality map and alignment of power line

Figure 2- Hotazel Substation

Figure 3- Mothibistat Substation

Figure 4 – General view of veld in the Hotazel area

Figure 5 – Farming activities in the area

Figure 6 – View from ridge on alignment towards Kuruman

The alignment assed is as follows:

No.	Alignment
1.	Hotazel Substation to Eldoret Substation
2.	Eldoret Substation to Riries Substation
3.	Riries Substation to Gamohaan Substation
4.	Gamohaan Substation to Mothibistat Substation

2.2 Methodology

This heritage walkdown report was compiled by PGS Heritage (PGS) for the Hotazel to Mothibistad 66kV power line, including applicable maps, tables and figures, as stipulated in the NHRA (no 25 of 1999) and the National Environmental Management Act (NEMA) (no 107 of 1998).

The process consisted of two steps:

- Step I – Physical Survey: A physical survey was conducted on foot through the proposed project area by qualified archaeologists, aimed at locating and documenting sites falling within and adjacent to the proposed development footprint.

- Step II – The final step involved the recording and documentation of relevant heritage resources, report writing, as well as mapping and management recommendations.

2.3 Specialist Qualifications

This Heritage Impact Assessment was compiled by PGS Heritage (PGS).

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

Wouter Fourie, Principal Investigator for this project, is an Accredited Heritage Practitioner with the APHP (Association of Professional Heritage Practitioners – Western Cape) and is registered with the Association of Southern African Professional Archaeologists (ASAPA) and has CRM accreditation within the said organisation.

Marko Hutten, Field Archaeologist Investigator for this project, is registered with the Association of Southern African Professional Archaeologists (ASAPA) and has CRM accreditation within the said organisation.

2.4 Physical surveying

The study area for the proposed projects covers approximately 78 kilometres. Due to the nature of cultural remains, with the majority of artefacts occurring below surface, an intensive foot-survey that covered the study area was conducted. A controlled-exclusive surface survey was conducted over a period of 5 days on foot and by vehicle by an archaeologist from PGS. The fieldwork was documented and tracked through a Tracklog generated by GPS.

The survey focussed on the 20mx20m pylon footprint as well as 31 meter servitude (as provided by Eskom) that was then surveyed on foot and find sites were documented. Where sites were found in the footprint area of pylons, alternative positions were evaluated for the relocation of the pylon within the existing servitude.

All sites discovered both inside and bordering the proposed alignment were plotted on 1:50 000 maps and their GPS co-ordinates documented. In addition, digital photographs were used to document all the sites.

3 LEGISLATIVE REQUIREMENTS

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

i. National Environmental Management Act (NEMA), Act 107 of 1998
ii. National Heritage Resources Act (NHRA), Act 25 of 1999
iii. Mineral and Petroleum Resources Development Act (MPRDA), Act 28 of 2002

The following sections in each Act refer directly to the identification, evaluation and assessment of cultural heritage resources.

i. National Environmental Management Act (NEMA) Act 107 of 1998:
    a. Basic Environmental Assessment (BEA) – Section (23)(2)(d)
    b. Environmental Scoping Report (ESR) – Section (29)(1)(d)
    c. Environmental Impact Assessment (EIA) – Section (32)(2)(d)
    d. Environmental Management Plan (EMP) – Section (34)(b)
ii. National Heritage Resources Act (NHRA) Act 25 of 1999:
    a. Protection of Heritage Resources – Sections 34 to 36; and
    b. Heritage Resources Management – Section 38

iii. Mineral and Petroleum Resources Development Act (MPRDA) Act 28 of 2002:

3.1 Terminology and Abbreviations

Archaeological resources

This includes:

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

Cultural significance

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

Development

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

i. construction, alteration, demolition, removal or change in use of a place or a structure at a place;
ii. carrying out any works on or over or under a place;
iii. subdivision or consolidation of land comprising a place, including the structures or airspace of a place;
iv. constructing or putting up for display signs or boards;
v. any change to the natural or existing condition or topography of land; and

vi. any removal or destruction of trees, or removal of vegetation or topsoil

Early Stone Age

The archaeology of the Stone Age between 700 000 and 2 500 000 years ago.

Fossil

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

Heritage

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

Heritage resources

This means any place or object of cultural significance

Holocene

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

Late Stone Age

The archaeology of the last 20 000 years, associated with fully modern people.

Late Iron Age (Early Farming Communities)

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

Middle Stone Age

The archaeology of the Stone Age between 20 000-300 000 years ago, associated with early modern humans.

Palaeontology

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

Table 3 – Table of abbreviations

ABBREVIATIONS	DESCRIPTION
AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
CRM	Cultural Resource Management
DEA	Department of Environmental Affairs
EIA practitioner	Environmental Impact Assessment Practitioner
EIA	Environmental Impact Assessment
EIMS	Environmental Impact Management Service (Pty) Ltd
GPS	Global Positioning System
HIA	Heritage Impact Assessment
I&AP	Interested & Affected Party
LSA	Late Stone Age
LIA	Late Iron Age
MSA	Middle Stone Age
MIA	Middle Iron Age
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Authority
PSSA	Palaeontological Society of South Africa
SAHRA	South African Heritage Resources Agency

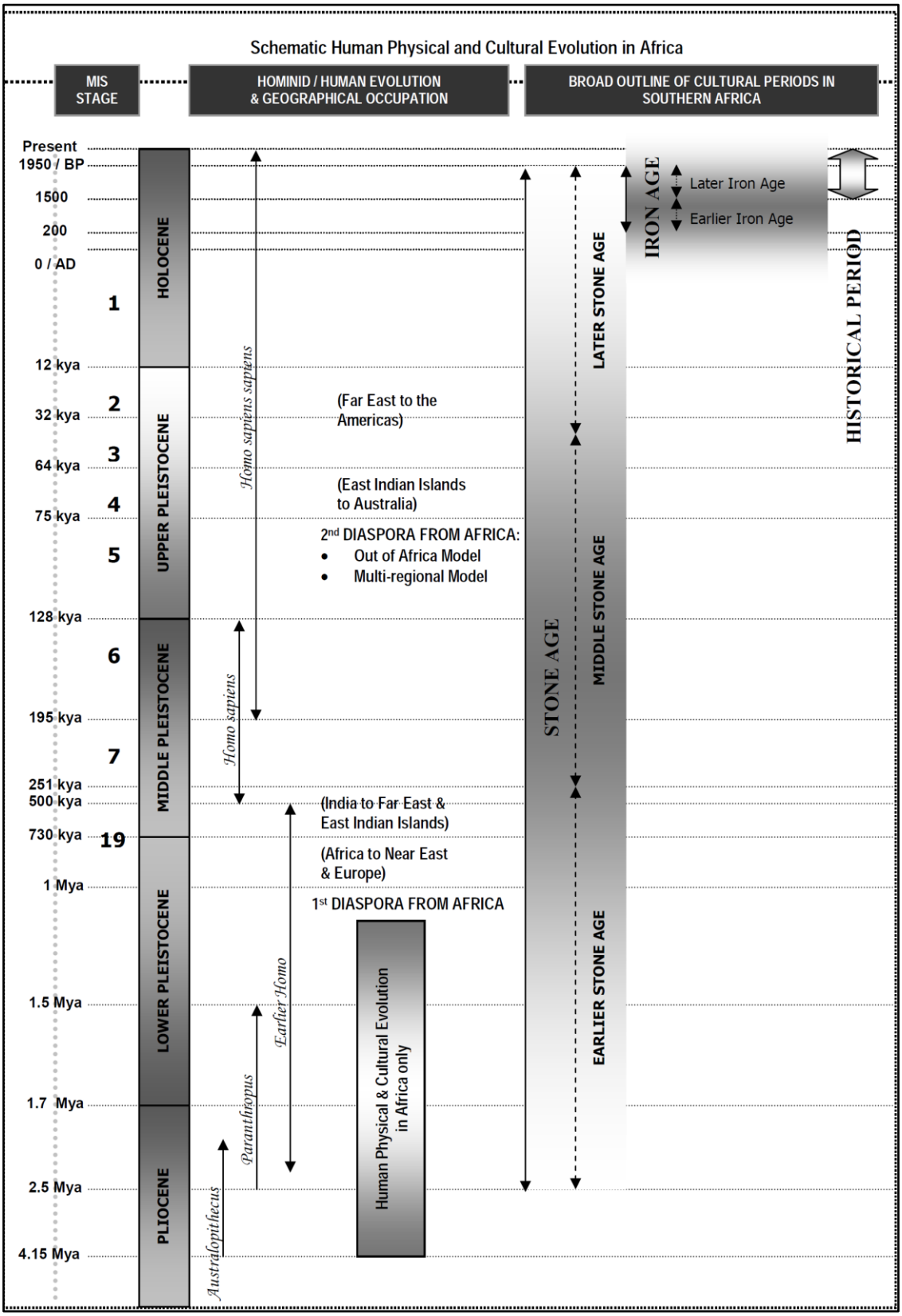

Figure 7 – Human and Cultural Timeline in Africa ((Morris, 2008))

3.2 Site Significance

Site significance classification standards prescribed by the South African Heritage Resources Agency (2006) and approved by the Association for Southern African Professional Archaeologists (ASAPA) for the Southern African Development Community (SADC) region, were used for the purpose of this report (see **Table 4**).

Table 4 - Site significance classification standards as prescribed by SAHRA

FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION
National Significance (NS)	Grade 1	-	Conservation; National Site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; Provincial Site nomination
Local Significance (LS)	Grade 3A	High	Conservation; Mitigation not advised
Local Significance (LS)	Grade 3B	High	Mitigation (Part of site should be retained)
Generally Protected A (GP.A)		High/Medium	Mitigation before destruction
Generally Protected B (GP.B)		Medium	Recording before destruction
Generally Protected C (GP.C)		Low	Destruction

4 HERITAGE SITES

During the survey a total of 8 heritage resources were identified inside or on the periphery of the servitude alignment.

4.1 Hotazel to Mothibistat Substation

4.1.1 HK 1

Coordinate: 27º 13' 35,0" S 23º 02' 08.0" E

Closest Pylon: 15 meters north of ER020

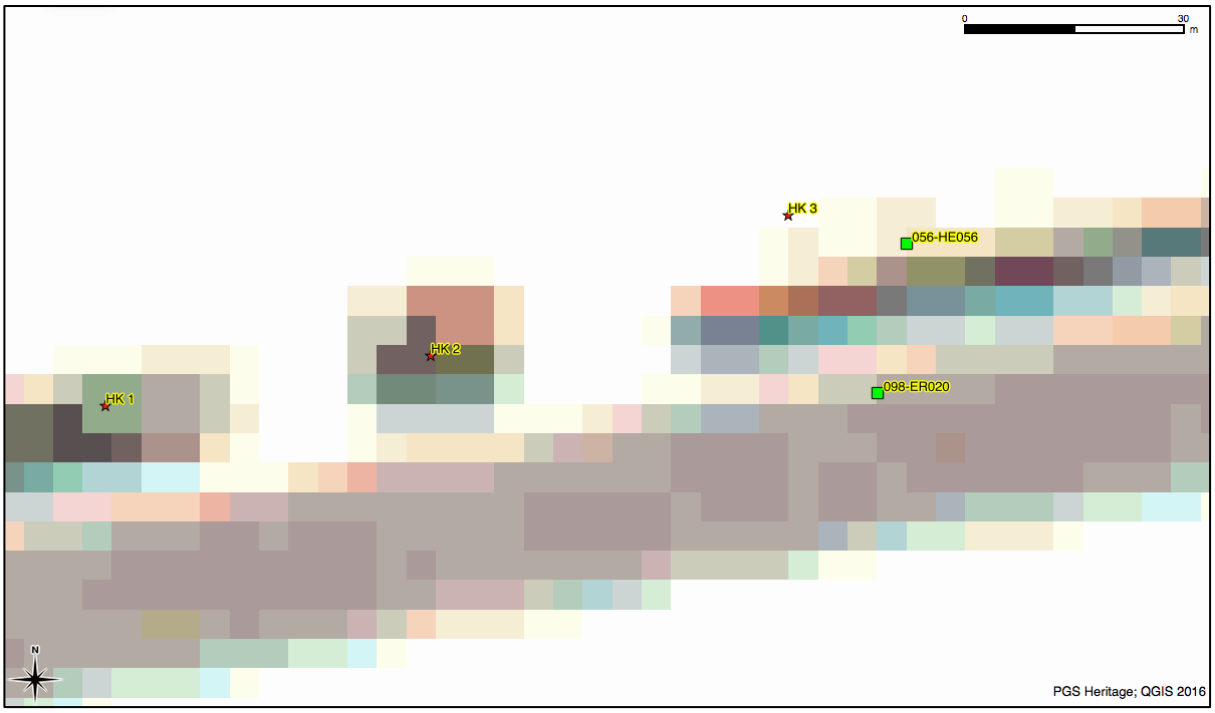

Figure 8 – Position of HK1-HK3 in relation to closest pylons

A single grave was identified at this location. The grave has a single rock as a headstone. This flat rock was placed upright in the soil and the grave is orientated from west to east. The grave is situated approximately 70m to the north of a farm worker's homestead. The farm worker, Daniel Kaogase, was questioned and he confirmed that the identified grave is indeed a grave. The grave does not have any inscriptions and Daniel did not know who was buried here or how old the grave is. He also pointed out two other locations with graves further to the east of this identified grave.

Site size: Approximately 2m x 2m in size.

Grading: The site is seen as having local heritage significance and rated as Grade 3B.

Management:

- Demarcate the site as a no go area, with a 20 meter buffer.
- The site must be monitored during construction

Figure 9 – View of grave marker at HK1

4.1.2 Site HK 2

Coordinate: 27º 13' 34,8" S 23º 02' 09,4" E

Closest Pylon: 40 meters north east of ER020

Two graves were identified at this location. The graves were pointed out by an informant Daniel Kaogase, who stays nearby on the farm. The two graves were placed next to each other and were orientated from west to east. The graves have large oval shaped mounds of packed rock as dressings. The one grave also has an upright rock at the western end which serves as headstone. The graves have no inscriptions and it is not known who were buried here or how old the graves are. The informant also did not know who were buried or how old the graves are. The graves are approximately 40m further to the east from the identified grave at site HK 1.

Site size: Approximately 5m x 2m in size.

Grading: The site is seen as having local heritage significance and rated as Grade 3B.

Management:

- Demarcate the site as a no go area, with a 20 meter buffer.
- The site must be monitored during construction

Figure 10 – Graves at HK2

4.1.3 Site HK 3

Coordinate: 27º 13’ 34,2” S23º 02’ 11,0” E

Closest Pylon: 15 meters northwest of HE056

A single grave and two other possible graves were identified at this location. The graves were also pointed out by an informant Daniel Kaogase, who stays nearby on the farm. The three possible graves were placed next to each other and were orientated from west to east. The one grave has a large oval shaped outline of packed rocks as dressing. It also has an upright rock at the western end which serves as headstone. The one possible grave has an upright placed stone at the western as well as the eastern ends. No other rocks were packed as dressing. The second possible grave only has one upright placed rock which serves as headstone. The graves have no inscriptions and it is not known who were buried here or how old the graves are. The informant also did not know who were buried or how old the graves are. The graves are approximately 30m further to the east from the identified graves at site HK2.

Site size: Approximately 5m x 2m in size.

Grading: The site is seen as having local heritage significance and rated as Grade 3B.

Management:

- Demarcate the site as a no go area, with a 20 meter buffer.
- The site must be monitored during construction

Figure 11 – View of cemetery at HK3

4.1.4 Site HK 4

Coordinate: 27° 17' 44.6" S 23° 06' 25.3" E

Closest Pylon: 70 meters north west of ER070

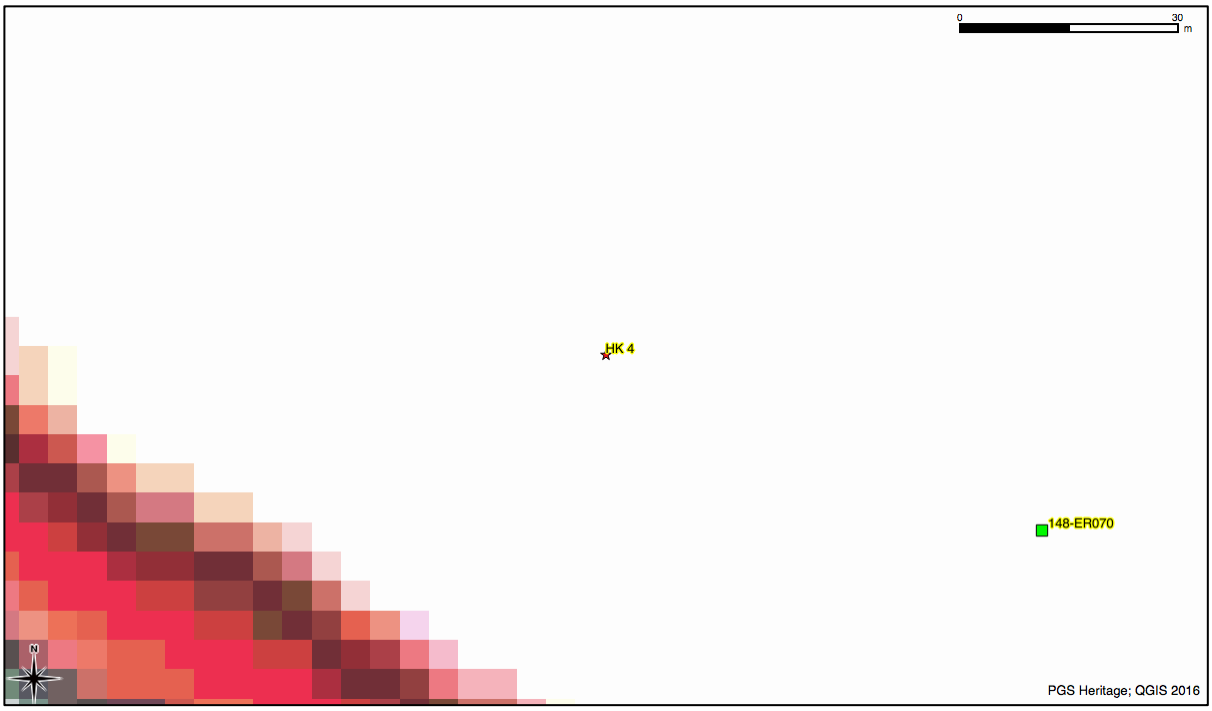

Figure 12 – Position of HK4 in relation to closest pylon

A low density scatter of stone tools was identified at this location (± 2-5 artefacts in 10m x10m). The site is situated in a clearing with the artefacts being exposed by some measure of sheet erosion. The artefacts consist mainly of stone tools from the Late Stone Age and include mostly of LSA blades, scrapers. The artefacts are mainly made of weathered quartzite and are scattered over an area of approximately 30m in diameter.

Site size: Approximately 30m in diameter.

Grading: The site is seen as having local heritage significance and rated as Grade 3B.

Management:

- Demarcate the site as a no go area, with a 20 meter buffer.
- The site must be monitored during construction

Figure 13 – View of site at HK4

Figure 14 – Lithics found at HK4

4.1.5 Site HK 5

Coordinate: 27º 20’ 37.8” S 23º 12’ 12,4” E

Closest Pylon: 70 meters east of RG012

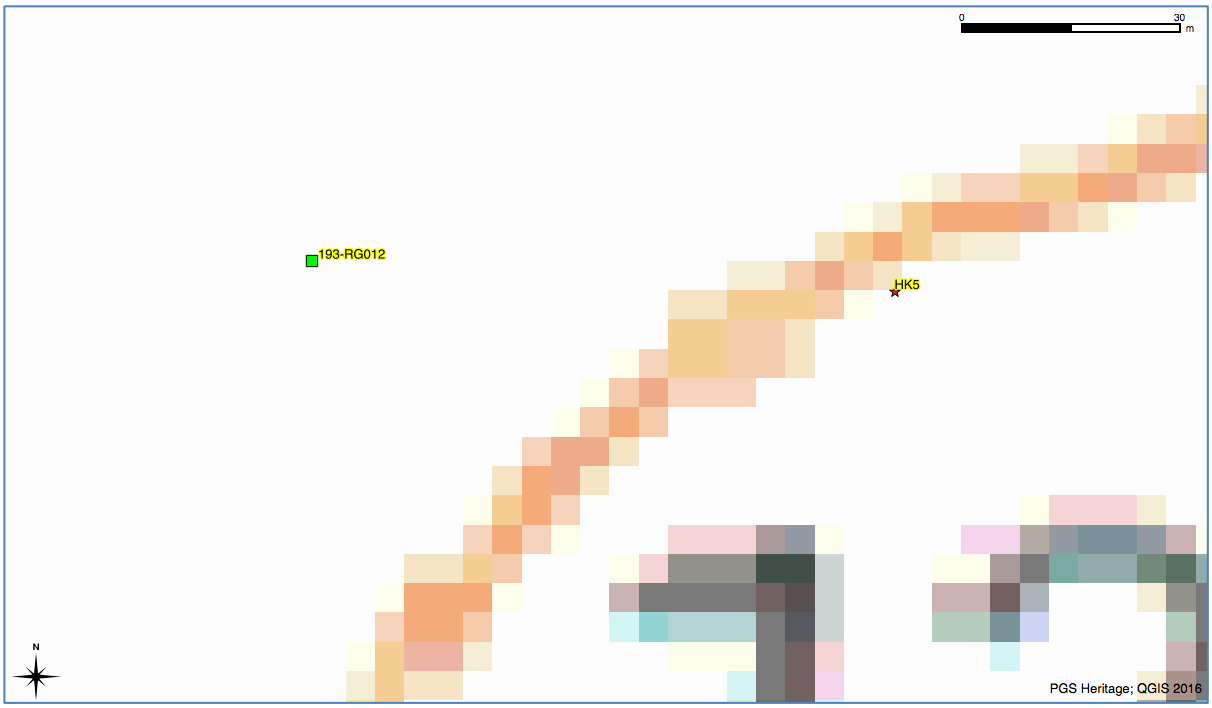

Figure 15 – Position of HK5 in relation to closest pylon

A single grave was identified at this location. The grave has a rectangular shaped mound of packed rocks which serves as dressing. The grave is orientated from west to east. No headstone or any inscription was identified. The grave does not have any inscriptions and it is not known who was buried here or how old the grave is.

Site size: Approximately 2m x 2m in size.

Grading: The site is seen as having local heritage significance and rated as Grade 3B.

Management:

- Demarcate the site as a no go area, with a 20 meter buffer.
- The site must be monitored during construction

Figure 16 – Stone packed grave at HK5

4.1.6 Site HK 6

Coordinate: 27º 21’ 22,5” S 23º 14’ 34,2” E

Closest Pylon: 75 meters south east of RG028

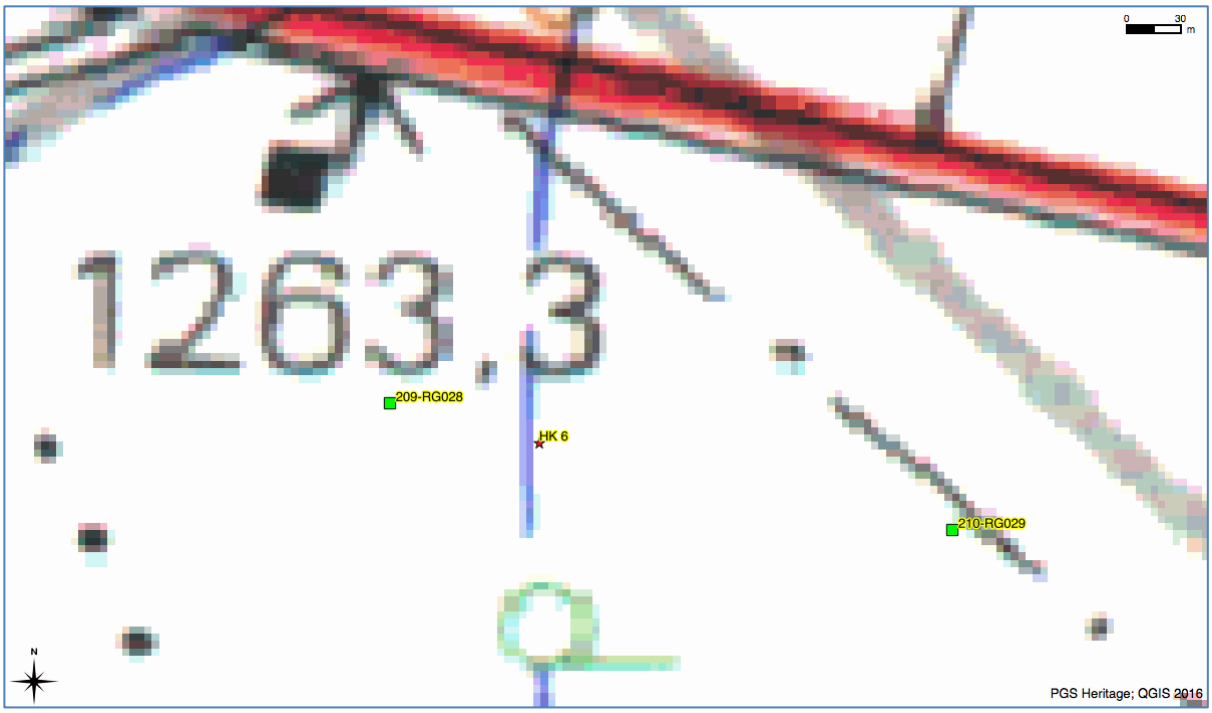

Figure 17 – Position of HK6 in relation to closest pylon

Two graves were identified at this location. The graves were placed next to each other and were orientated from north to south. The graves have rectangular shaped outlines of packed rocks which serve as dressings. The graves also have upright placed rocks at the northern ends which serve as headstones. The graves do not have any inscriptions and it is not known who were buried here or how old the graves are.

Site size: Approximately 5m x 2m in size.

Grading: The site is seen as having local heritage significance and rated as Grade 3B.

Management:

- Demarcate the site as a no go area, with a 20 meter buffer.
- The site must be monitored during construction

Figure 18 – Graves at HK6

4.1.7 Site HK 7

Coordinate: 27º 24’ 11,1” S 23º 25’ 15,8” E

Closest Pylon: 45 meters east of GM030

Figure 19 – Position of HK7 in relation to closest pylon

A small, informal cemetery with approximately 15 graves was identified at this location. Some of the grave’s dressings have been damaged to an extent and the total number of graves is not clear at this stage. The graves were placed in three unequal lines next to each other and were orientated from west to east. The graves have rectangular and oval shaped mounds of rocks packed on them which serve as dressings. Some graves have upright rocks placed at the western ends to serve as headstones. The graves do not have any inscriptions and it is not known who were buried here or how old the graves are.

Site size: Approximately 20m x 20m in size.

Grading: The site is seen as having local heritage significance and rated as Grade 3B.

Management:

- Demarcate the site as a no go area, with a 20 meter buffer.
- The site must be monitored during construction

Figure 20 – Cemetery at HK7

4.1.8 Site HK 8

Coordinate: 27º 24’ 15,7” S 23º 25 44,2” E

Closest Pylon: 20 meters south of GM034-7

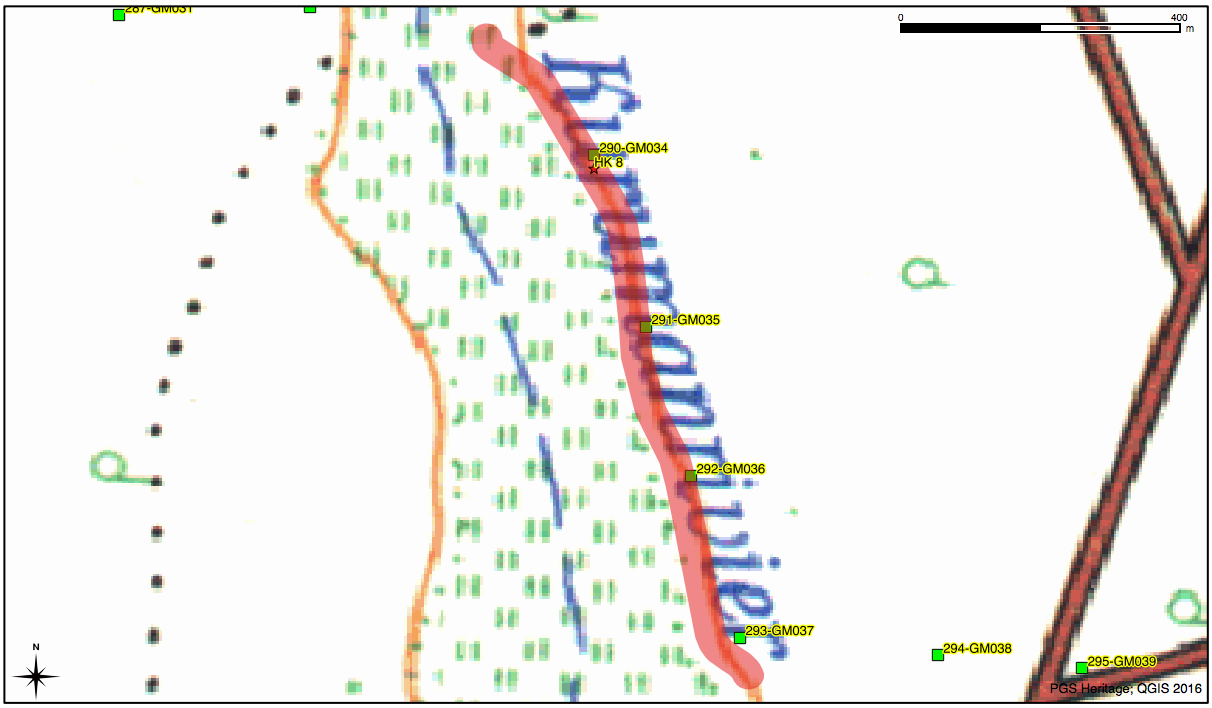

Figure 21 – Position of HK8 in relation to closest pylons (red shading shows 20 meter buffer)

The remains of an unused canal and irrigation system were identified at this location. The canal system was cemented with little bridges crossing over the canal. The canal followed the flow of the Kuruman River, but is in an unused state for some time. The proposed power line follows the canal system for some extent. Some of the bridges across the canal have inscribed dates on them. Most of these inscriptions are very weathered, but one dated to 05/09/1946.

Site size: Approximately 300m x 4m in size.

Grading: The site is generally protected under section 34 of the NHRA.

Management:

- Demarcate the site as a no go area, with a 20 meter buffer.
- The site must be monitored during construction

Figure 22 – Concrete furrow

Figure 23 – Small bridge with date of 1946

4.2 Moffat-Valley Alignment

The singe site MV01, identified in the section evaluated during the walkdown, will also be assessed according to the impact assessment rating scale as utilised for the Heritage Impact Assessment completed for this project in April 2015. Refer to the Report - 13167-46-Rep-001-AppD4HIA, part of the original BAR.

4.2.1 Site MV01

Coordinate: 27° 35' 29.9"S 23° 27' 01.7"E

Closest Pylon: No pylons positions at this stage

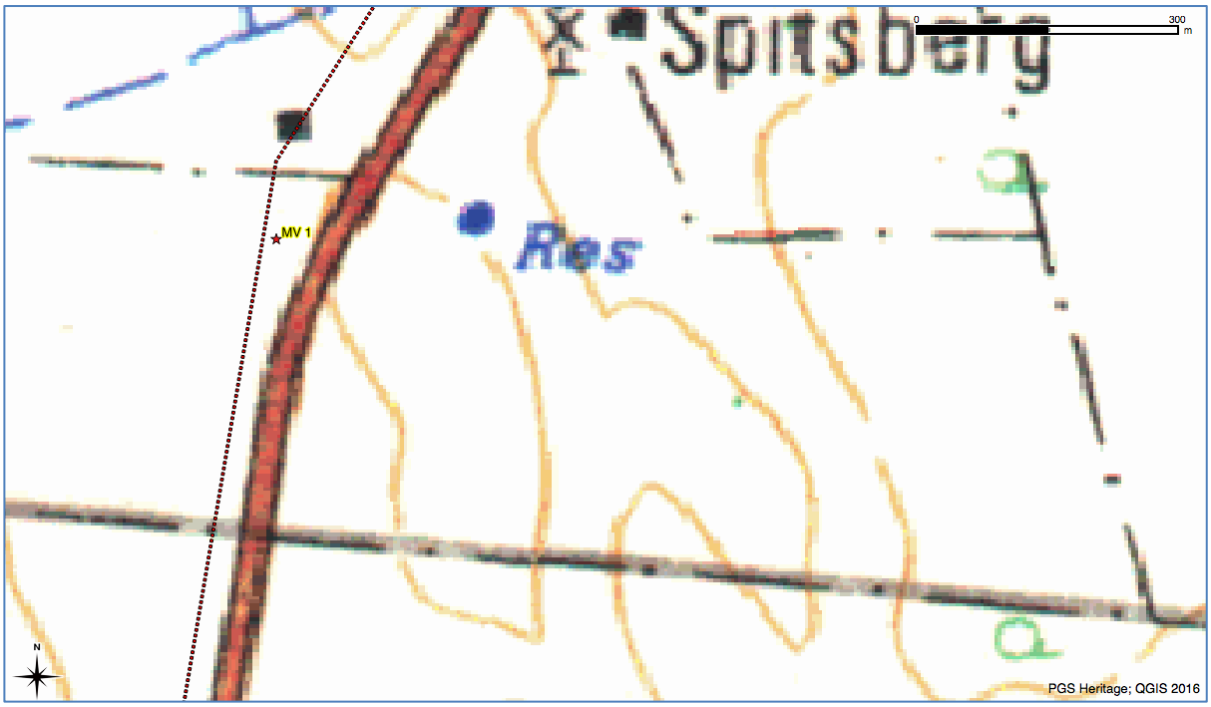

Figure 24 – Position of MV1 in relation to the powerline alignment

The site consist of two stone packed graves aligned east-west. No formal headstone or inscription are present.

Site size: Approximately 10x10m in size.

Grading: The site is seen as having local heritage significance and rated as Grade 3B.

Management:

- Demarcate the site as a no go area, with a 20 meter buffer.
- The site must be monitored during construction

Figure 25 – Graves at MV01

Figure 26 – Grave at MV01

Table 5 -Impact Rating table for MV01

Activity	Nature of Impact	Impact type	Extent	Duration	Potential Intensity	Likelihood	Rating	Mitigation	Interpretation
Impact on cemeteries and memorials	Direct Impact:	Existing	1	1	1	0,1	0 - LOW	Demarcate the site as a no go area, with a 20 meter buffer. The site must be monitored during construction	The identified cemeteries are currently only impacted by weather and general human activities
	Current impact on cemeteries and memorials	Cumulative	1	1	1	0,1	0 - LOW		Per-construction cumulative impacts seen as low
		Residual	1	1	1	0,1	0 - LOW		The development of mitigation measures during construction will have a positive impact at this stage

5 ASSUMPTIONS AND LIMITATIONS

Not detracting in any way from the comprehensiveness of the fieldwork undertaken, it is necessary to realise that the heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the area. Various factors account for this, including the subterranean nature of some archaeological sites and the current dense vegetation cover in some areas. As such, should any heritage features and/or objects not included in the present inventory be located or observed, a heritage specialist must immediately be contacted. Such observed or located heritage features and/or objects may not be disturbed or removed in any way until such time as the heritage specialist has been able to make an assessment as to the significance of the site (or material) in question. This applies to graves and cemeteries as well. In the event that any graves or burial places are located during the development the procedures and requirements pertaining to graves and burials will apply as set out below.

6 ASSESSMENT AND RECOMMENDATIONS

A heritage map is provided in **Annexure A**

During the survey a total of 8 heritage resources were identified on the Hotazel-Mothibistat alignment and 1 heritage resources on the surveyed section of the Moffat-Valley alignment.

The overall management of heritage resources must lean towards the conservation of the resource in situ and as such to the demarcation of such sites as “no-go” areas during construction.

However, where the cost implication and socio-economic implications outweigh such an option, the next option would be mitigating the impact on the resource by means of the documentation of the site through sampling / surface collections, and in some cases controlled excavations, to collect a representative sample for further study of the site.

All other identified heritage resources must be demarcated as no-go areas during construction, and monitored during and upon completion of construction for damage.

Table 6 lists the sites and associated pylon numbers and management recommendations.

Table 6 - Management measures for heritage resources – Hotazel-Mothibistat alignment

Site Number	Description	Coordinates	Management Measures
Hotazel Mothibistat 66kV alignment			
HK1	Graves	27º 13’ 35,0” S 23º 02’ 08.0” E	• Demarcate the site as a no go area, with a 20 meter buffer. • The site must be monitored during construction
HK2	Graves	27º 13’ 34,8” S 23º 02’ 09,4” E	• Demarcate the site as a no go area, with a 20 meter buffer. • The site must be monitored during construction
HK3	Single grave	27º 13’ 34,2” S23º 02’ 11,0” E	• Demarcate the site as a no go area, with a 20 meter buffer. • The site must be monitored during construction
HK4	Stone Age site	-27° 17' 44.6" S 23° 06' 25.3" E	• Demarcate the site as a no go area, with a 20 meter buffer. • The site must be monitored during construction
HK5	Grave	27º 20’ 37.8” S 23º 12’ 12,4” E	• Demarcate the site as a no go area, with a 20 meter buffer. • The site must be monitored during construction
HK6	Graves	27º 21’ 22,5” S 23º 14’ 34,2” E	• Demarcate the site as a no go area, with a 20 meter buffer. • The site must be monitored during construction
HK7	Cemetery	27º 24’ 11,1” S 23º 25’ 15,8” E	• Demarcate the site as a no go area, with a 20 meter buffer. • The site must be monitored during construction
HK8	Historic furrow	27º 24’ 15,7” S	• Demarcate the site as a no go area, with a 20

Site Number	Description	Coordinates	Management Measures
Hotazel Mothibistat 66kV alignment			
		23º 25 44,2" E	meter buffer. • The site must be monitored during construction

Table 7 - Management measures for heritage resources – Moffat-Valley alignment

Site Number	Description	Coordinates	Management Measures
Moffat- Valley66kV alignment			
MV1	Graves	27° 35' 29.9" 23°S 27' 01.7""E	• Demarcate the site as a no go area, with a 20 meter buffer. • The site must be monitored during construction

6.1 Heritage Management Plan for EMP implementation

NO.	MITIGATION MEASURES	PHASE	TIMEFRAME	RESPONSIBLE PARTY FOR IMPLEMENTATION	MONITORING PARTY (FREQUENCY)	TARGET	PERFORMANCE INDICATORS (MONITORING TOOL)	COST
Possible finds								
A	Implement chance find procedures in case where possible heritage finds area made	Construction	During construction	Applicant ECO Heritage Specialist	ECO (weekly)	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 36 and 38 of NHRA	ECO Monthly Checklist/Report	**Possibly R50 000**
Known sites								
HK1-8	• Demarcate the site as a no go area, with a 20 meter buffer. • The site must be monitored during construction	Construction	During construction	Applicant ECO	Applicant ECO	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 36 and 38 of NHRA	ECO Monthly Checklist/Report	**Less than R10 000**
MV1	• Demarcate the site as a no go area, with a 20 meter buffer. • The site must be monitored during construction	Construction	During construction	Applicant ECO	Applicant ECO	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 36 and 38 of NHRA	ECO Monthly Checklist/Report	**Less than R10 000**

NO.	MITIGATION MEASURES	PHASE	TIMEFRAME	RESPONSIBLE PARTY FOR IMPLEMENTATIO N	MONITORING PARTY (FREQUENCY)	TARGET	PERFORMANCE INDICATORS (MONITORING TOOL)	COST
Palaeontological Monitoring								
	Palaeontologist must train the ECO to identify possible palaeontological finds and where any identified during construction the site must be demarcated and a palaeontologist appointed to evaluate and mitigate where required	Construction	Extent of construction in certain areas as identified	Applicant ECO	Bi-weekly	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 36 and 38 of NHRA	ECO Monthly Checklist/Report	**R 100 000**

7 IMPACT MANAGEMENT

7.1 Construction phase

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

It is possible that cultural material will be exposed during operations and may be recoverable, but this is the high-cost front of the operation, and so any delays should be minimised. Development surrounding infrastructure and construction of facilities results in significant disturbance, but construction trenches do offer a window into the past and it thus may be possible to rescue some of the data and materials. It is also possible that substantial alterations will be implemented during this phase of the project and these must be catered for. Temporary infrastructure is often changed or added to the subsequent history of the project. In general these are low impact developments as they are superficial, resulting in little alteration of the land surface, but still need to be catered for.

During the construction phase, it is important to recognize any significant material being unearthed, making the correct judgment on which actions should be taken. A responsible archaeologist must be appointed for this commission. This person does not have to be a permanent employee, but needs to sit in at relevant meetings, for example when changes in design are discussed, and notify SAHRA of these changes. This archaeological monitoring and feedback strategy should be incorporated into the Environmental Management Plan (EMPr) of the project.

Should an archaeological site or cultural material be discovered during construction (or operation), such as stone walling, stone artefacts, burials or grave sites, the project needs to be able to call on a qualified expert to make a decision on what is required and if it is necessary to carry out emergency recovery. SAHRA would need to be informed and may give advice on procedure. The developers therefore should have some sort of contingency plan so that operations could move elsewhere temporarily while the material and data are recovered.

The purpose of an archaeological monitoring programme is to provide general information to the developer with regards to management recommendations and cost estimates for the archaeological component, a specialist sub-section of the Environmental Impact Assessment (EIA) process, for the project.

Such a monitoring programme is planned for observation and investigation during any operation carried out for non-archaeological reasons. This will be within a specified area or site on land where there is a possibility that archaeological/palaeontological deposits may be disturbed or destroyed. Its main purpose is:

- To allow, within the resources available, the preservation by record of archaeological /palaeontological deposits, the presence and nature of which could not be established (or established with sufficient accuracy) in advance of development or other potentially disruptive works;
- To provide an opportunity, if needed, for the monitoring archaeologist/palaeontologist to signal to all interested parties, before the destruction of the material in question, that an archaeological/palaeontological find has been made for which the resources allocated to the monitoring programme itself are not sufficient to support treatment to a satisfactory and proper standard; and
- A monitoring programme is not intended to reduce the requirement for excavation or preservation of known or inferred deposits, and it is intended to guide, not replace, any requirement for contingent excavation or preservation of possible deposits.

In essence, the objective of a monitoring programme is to establish and make available information about the archaeological/palaeontological resource existing on a site.

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7.2 Timeframes

It must be kept in mind that mitigation and monitoring of heritage resources during construction activity will require permitting for collection or excavation of heritage resources and lead times must be worked into the construction time frames. **Table 8** gives guidelines for lead times on permitting.

Table 8 - Lead times for permitting and mobilisation

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

8 REFERENCES

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