A HERITAGE IMPACT ASSESSMENT STUDY FOR THE PROPOSED MEDUPI-BORUTHO 400kV TRANSMISSION LINE, LIMPOPO PROVINCE, SOUTH AFRICA.

PROJECTS & HERITAGE CONSULTANTS (PTY)LTD

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DECLARATION OF INDEPENDENCE

This report has been compiled by Nkosinathi Tomose, leading archaeologist and heritage consultant for NGT Project & Heritage Consultants. The views expressed in this report are entirely those of the author and no other interest was displayed during the decision making process for the project.

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EXECUTIVE SUMMARY

NGT Projects & Heritage Consultants (Pty) Ltd was been appointed by Baagi Environmental Consultancy as an independent and lead CRM firm to conduct an HIA (exclusive of Palaeontological desktop study) for the proposed development (of Medupi-Borutho Line Corridor) as part of specialists (inputs) impact assessment studies required to fulfil the EMP process and its requirements as well as acquisition of Environmental Permits. The appointment of NGT Projects & Heritage Consultants (as an independent CRM firm) is in terms of the NHRA, No. 25 of 1999 (as amended), the NEMA, No.107 of 1998 (as amended & the applicable 2010 Regulations), as well as other applicable legislations such as the MPRDA No. 28 of 2002. Nkosinathi Tomose, the lead archaeologist & heritage consultant of NGT Projects & Heritage Consultants, conducted the HIA study for the proposed 400kV Medupi-Borutho Power Line, spanning an area covering approximately 4 local municipalities (i.e. Mogalakwena Local Municipality, Aganang Local Municipality, Lephalale Local Municipality & Mokopane Local Municipality) in the Waterberg District Municipality, Limpopo Province, South Africa.

The following conclusions and recommendations are made about Medupi-Borutho Transmission Line Corridor based on existing literature about the project area, observations made during the physical survey of the proposed development area, assessment and evaluation methods using SAHRA minimum standards for evaluation and grading of archaeological (and other heritage) resources as well as the NHRA, No 25 of 1999 for the protection, conservation and management of the Nation Estate (Section 3 of the NHRA, No 25 of 1999), and assessment of associated impacts in term of the BAR Assessment Standards translated to suite the EMP requirement as proposed by the client (Baagi Environmental Consultancy):

The physical survey of the proposed project area, which took place between the 10th and 21st of January 2013, yielded a total of 45 heritage resources site (Figure 1 & Figure 80).

- 67% of these site were archaeological sites, 24% built environment and landscape sites, with burial grounds and graves sites constituting 9%.
- 2 more sites were included in the equation, namely 6a and 10a - this raised the number of sites to 47.
- Out of the 47 sites - 72% do not require further action in terms of heritage resources management, 11% of these sites will need to be collected from site, another 11% of these 47 sites require mapping and sampling and 3% are considered No-go-areas and should be avoided.

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- Based on the results of the assessment and evaluation of the identified resources and above recommendations. It is concluded that, from a cultural resources management point of view, that there are no objections to the project and no negative perceptions about the project, Medupi-Borutho Transmission Line Corridor EMP. The EMP can be approved provided that the above given heritage concerns are full attended to, addressed and adhered to in full by the developer.

* For detail conclusions and recommendations, read the conclusions and recommendations section of this report.

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ABBREVIATIONS

Acronyms	Description
AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
ARCH	Archaeological
BEL	Built Environment & Landscape
BGG	Burial Grounds & Graves
BGG?	Proven not to be Burial Ground & Grave
CRM	Cultural Resource Management
DEA	Department of Environmental Affairs
DoE	Department of Energy
EIA practitioner	Environmental Impact Assessment Practitioner
EIA	Environmental Impact Assessment
ESA	Early Stone Age
GIS	Geographic Information System
GPS	Global Positioning System
HIA	Heritage Impact Assessment
I&AP	Interested & Affected Party
K.y.a	Thousand years ago
LHRA	Limpopo Province Heritage Resources Authority
LSA	Late Stone Age
LIA	Late Iron Age
MSA	Middle Stone Age
MIA	Middle Iron Age
NERSA	National Energy Regulator of South Africa
NHRA	National Heritage Resources Act
NEMA	National Environmental Management Act
PHRA	Provincial Heritage Resources Authority
PSSA	Palaeontological Society of South Africa
ROD	Record of Decision
PDAFP	Proposed Development Area Footprint
SADC	Southern African Development Community
SAHRA	South African Heritage Resources Agency
SPV	Special Purpose Vehicle

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Z.C.C	Zion Christian Church

TERMS & DEFINITION

Archaeological resources

This includes:

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

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

Heritage resources

This means any place or object of cultural significance

1. INTRODUCTION

1.1. Project Background

1.1.1. Summary of the Proposed Project

This project is one of Eskom Power Transmission projects and it involves construction of power transmission lines between Medupi and Borutho Power Stations. The current study form part of specialists studies aimed at giving inputs in the EMP process and advising on some of the best suitable heritage mitigation measures for the identified heritage resources in terms known heritage resources management measures (Figure 1).

1.1.2. Proposed Project Aims

The aim of the Medupi-Borutho Project is undoubtedly to transmit power between Medupi and Borutho and the surrounding areas. During the EIA process the current (surveyed) alignment would have been selected as the best alternative out of a number of other proposed alternatives/routes. Therefore, the aim of the current study is to advise Eskom Transmission on the suitable and sustainable measures to use during the construction and operational phase of the project and it closure - it does this through a compilation of various impact assessment

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studies that feed into the EMP document as well as acquisition of environmental permits. This study aim to contribute to the development of such an EMP document as well as in the acquisition of environmental permits through the assessing and evaluation impacts that affect or have the potential to impact on the cultural environment. The proposed project consists of the following:

- A 400kV power line between Medupi and Borutho Power Stations
- A 10m Line Corridor Servitude
- No broader servitude buffer was allocated, but the specialist used at his own discretion of 60m buffer outside the 10m Line Corridor Servitude - this is a common buffer for transmission power in case there need to be deviation from the current proposed 10m Line Corridor Servitude as means of mitigating heritage resources
- The nature of tower structures is still to be determined
- Tower/pylon positions in the landscape were given to NGT Project & Heritage Consultants (November 2012)

1.1.3. Terms of Reference for the Appointment of Archaeologist and Heritage Specialist

Because of the nature and size of the proposed development - proposed 400kV power line and associated infrastructure exceeding a total area of 5000m^2, an EIA process for was conducted and its results resulted in the current EMP process. In terms of the EIA Regulations of June 2010 (Government Notice 543-546 published in terms of the NEMA, No 107 of 1998) the construction of the proposed facilities is listed as an activity that requires environmental authorisation. This is because the project comprises of development and construction of a 400kV power line, servitudes and other associated infrastructure such access roads – and it is a development that occupies an area of more than 20ha. Undertaking of an EMP process is therefore a requirement pass the EIA stages. The current process comprises of a EMP, application of Environmental Permits and it involves the identification and assessment of environmental impacts through specialist studies.

NGT Projects & Heritage Consultants (Pty) Ltd has been appointed by Baagi Environmental Consultancy as an independent and lead CRM firm to conduct an HIA (exclusive of Palaeontological desktop study) for the proposed development as part of specialists (inputs)

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impact assessment studies required to fulfil the EMP process and its requirements as well as Acquisition of Environmental Permits. Nkosinathi Tomose, the lead archaeologist & heritage consultant or NGT Projects & Heritage Consultants, conducted the HIA study for the proposed Medupi-Borutho Transmission Power Line in the Waterberg District Municipality, Limpopo Province, South Africa (Figure 1).

The appointment of NGT Projects & Heritage Consultants (as an independent CRM firm) is in terms of the NHRA, No. 25 of 1999 (as amended), the NEMA, No.107 of 1998 (as amended & the applicable 2010 Regulations), as well as other applicable legislations such as the MPRDA No. 28 of 2002.

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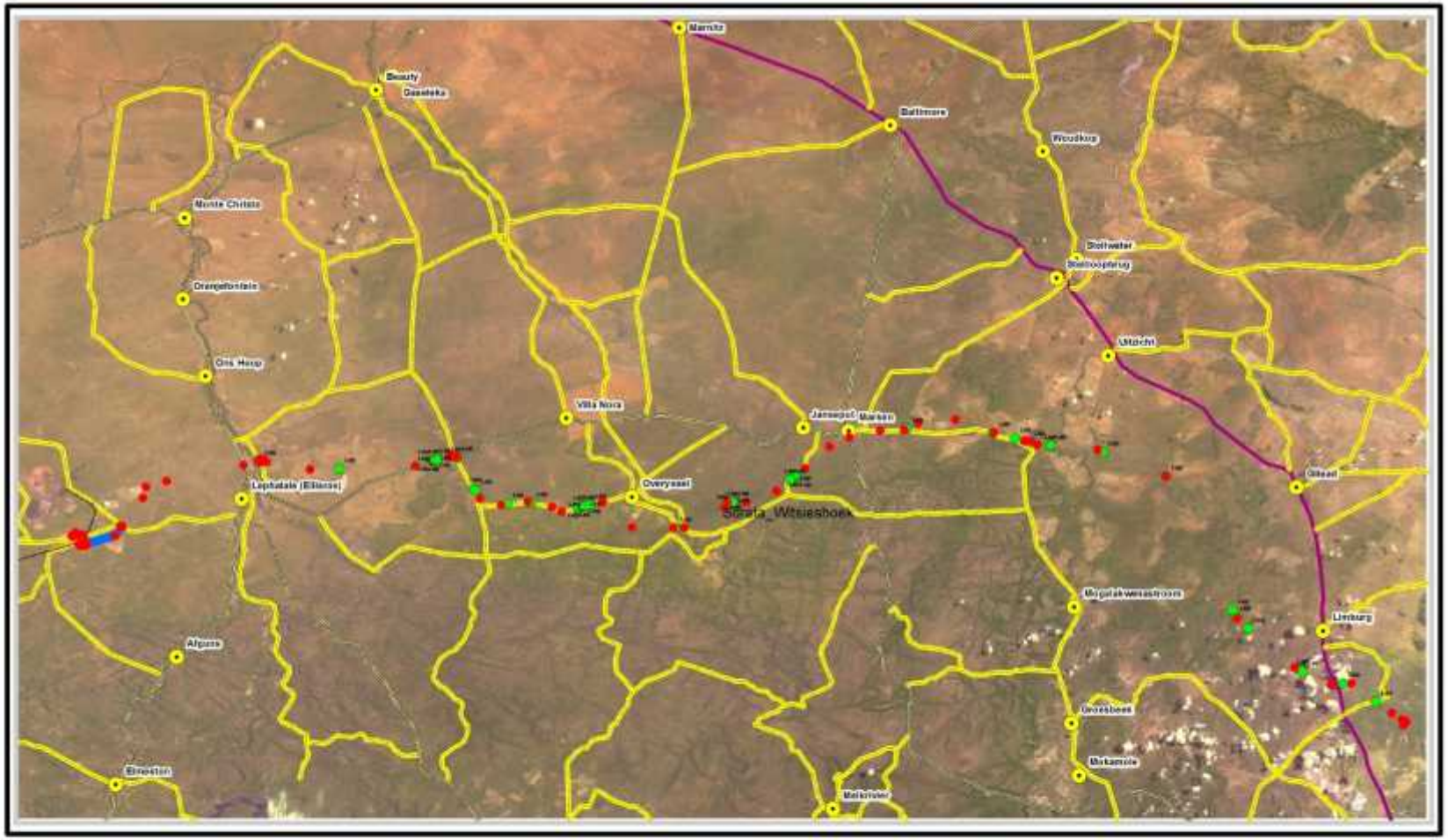

Legend

- Track for the alignment
- Pylon Positions
- Towns
- Heritage site
- Substations
- Railways
- Secondary Roads
- Main Roads
- National Roads

SITE PLAN: Spot Image Map of Medupi-Borutho Transmission Line Corridor

0 20 40 Kilometers

N

Figure 1- Location of the project area in Limpopo Province, South Africa. Red dots represent track of the alignment. Green heritage sites.

2. BACKGROUND OF THE STUDY AREA

2.1. Description of the affected environment

The area under consideration predominantly falls under the Waterberg District Municipality, in the Limpopo Province, South Africa. It is ensconced between the towns of : Steenbokpan (i.e. a village town) located west of Lephalale (former Elisras - Medupi located approximately 17.9km west of the town), Marken (i.e. a village town), Mokopane in the south-east (i.e. approximately 31km from Borutho) and the town of Polokwane in the east (i.e. the capital town of Limpopo - Borutho is approximately 48km) (Figure 3). The Transmission Line passes through some of the Limpopo Province major rivers, such as: Mokolo River (close to Lephalale), Phalala River (east of Mokolo and smaller Tambotie River), Sterk River (east of Phalala) and Mogalakwena River. Small tributaries are also found throughout the study area. The Transmission Line also passes through some of the major roads, such as: the N11 towards Polokwane (Borutho Section), the R572 is found in the north-west (close to the Medupi section), the 510 found east of Lephalale, and the R518 (Figure 1).

The Transmission Line will predominantly cover the farming/agricultural and rural landscape ensconced between the five towns mentioned above. The predominant form of farming in this region is game farming (Figure 2 & 3). There are, however, pockets of cattle ranchers (Figure 4), vegetable farmers (Figure 5). Most of the cattle subsistence farmers are found in areas close to rural villages, but it has to be noted that these are not only endemic to rural villages as they area also found ensconced between some of the game farms and in some cases farmers have came and cattle.

Figure 2 - Example of game farm fence. Also note the road along the fence

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Figure 3- Wildebeest in one of the game farms

Figure 4- Cattle ranching site

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Figure 5- Water melon farm

Both the farming/agricultural and rural landscape is characterised by mountainous, to semi-flat adulating lands covered mosaic of thick and short, semi-open and tall, thick and close bushveld and thornveld. Among some of the protected trees species observed include: Tambotie, Camel Thorn Tree, Sheppard Trees, Morula Tree etc. Pockets of Mopani Veld were also observed. It is also characterised by a variety of riverine vegetation in some of the water areas such as rivers, wetland and perennial water courses. Open sites of pebble beds from fluvial and alluvial process dating to geological times are also found throughout the study area.

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Figure 6- Example of vegetation cover.

Figure 7 - Example of vegetation cover - distant view.

Figure 8- Example of fluvial pebble bed site

The Waterberg District Municipality, including the mountainous area declared as the Waterberg Biosphere, has long history dating as far back as the 1800s and pre-historical

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records through archaeological material culture dating as far back as the 1st Millennium AD. For example, the area near Marken is known for pottery associated with the early BaPedi people in the region.

The above makes the affected geography to be interesting both in terms of the cultural landscape and physical geography. Therefore, one expects the landscape to bear testimony to some of the things known from a cultural perspective about the region (both culturally and physical/natural).

Eskom Power Stations of Medupi and Matimba form some of the major industries in the area and region (Figure 9). This is evident in the distribution of Eskom Transmission lines found throughout the study area and along the current proposed alignment corridor (Figure 10).

Figure 9-Construction activities at Medupi Power Station.@ Murimbika and Tomose, 2012.

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Figure 10 -Eskom transmission corridor.

2.2. Desktop Study: Archaeological and Heritage:

South Africa is rich in diverse forms and types of heritage, ranging from natural to cultural heritage. The natural includes among other things: Geological, Palaeontological, and the various plant and animal species that define the country. The cultural heritage, which dates as far back as 2.5 million years ago (m.y.a), includes - the different periods of Stone Age Archaeology, the Iron Age Archaeology, Historical and Industrial Archaeology, as well as the "Political/Historic" geographies of South Africa.

2.2.1. Stone Age Archaeology:

The Stone Age Archaeology of South Africa is divided into three categories, namely: the ESA, MSA and the LSA. These Stone Age industries are well documented throughout southern Africa regions including the Limpopo province where the current study is located. Below are detailed summaries of the traits that characterises each industry artefact and/or material culture as well as the types of industries dominant in the province.

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ESA – Early Stone Age:

The ESA is dated between 2.5m.y.a and 250 k.y.a (thousand years ago) – during this period predecessors of Homo Sapien Sapiens started making stone artefacts. The earliest known Stone Age industry is referred to as the Olduwan Industry. It derives its name from the first known Stone Age industry recorded in Olduvia Gorge, Tanzania north-east Africa. Stone artefacts associated with this industry are often described as crude and rudimentary in making – they define the earliest form of Stone Age technological innovation. The Olduwan is replaced, in the archaeological records, by the Acheulian Industry some 1.5 m.y.a. The Acheulian is characterised by large cutting tools (also referred to as bifaces) - hand axes and cleavers are the dominant forms of artefacts found in this industry.

In the Free State, the earliest known ESA industry is the Victoria West Stone Industry which also spreads to the Northern Cape where it becomes dominant. The Victoria West Stone Industry was first recorded and defined by R. A., Smith in 1915 and in the Free State region it is found along the Vaal River basin. Tools found in this industry included hand axes and what Smith refers to as 'Tortoise Cores' (Smith, 1920). This was probably Smith reference to the peculiar feature or morphology of Prepared Cores – where different pieces of where chipped off from a single piece of parent material to make way for the ultimate removal or shaping of a specific tool and most likely a well defined hand axe. A. H. J., Goodwin (1935) defines the Victoria West Industry with and without cores. Meaning that hand axes and cleavers could have been produced without necessarily having to prepare a parent material to a point to which a single definable tool could be produced. The absence of prepared cores in relation to hand axes and cleaver did not mean the end to this stone tool manufacturing techniques for it become a dominant and defining feature towards the end of the ESA into the MSA. What first became known as 'Tortoise Cores' was later defined as the transition marker between the ESA and the MSA. Therefore, the Prepared Cored of the Victoria West industry can be taken as the markers of transitional period in the Stone Age industry from Acheulian into the MSA, a second clearly defined phase in Stone Age technological innovation. Lycett (2009) sees the Victoria West as an evolutionary step towards the Levallois Prepared Core Technique which signifies the outwards spread of the Stone Age technology.

Stone artefacts dated to the above ESA industries are commonly found in open sites as secondary occurrences and/or scatters and not within their primary context. It is there argued here it is important during the survey to pay special attention to open air area that may potential yield some of these artefacts.

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In the QwaQwa area such tools have been identified and defined by--

MSA – Middle Stone Age:

The MSA stone artefact replace the dominant large and often imposing hand axes and cleavers that characterise the ESA. Such a distinction or transition in archaeological records has this far be dated to 250 k.y.a. During this period, smaller artefacts define the archaeological records and the most dominant ones are flake and blade industry. This period has been defined by some in archaeological circles as a period that signifies a secondary step towards the modern human behaviour through technology, physical appearance, art and symbolism (e.g. Binneman et al. 2011). This industry innovation is suggested to have been at its most highest during the last 120 k.y.a. With surface scatters of the flake and blade industries found throughout the southern Africa regions (Thompson & Maream, 2008). They often occur between surface and approximately 50-80cm below ground. Fossil bones may be associated with the MSA in some sites. The flakes and blade industries are often found in secondary context as surface scatters and occurrence like their predecessor industries. Malan (1949) defines the earliest MSA stone industry as the Mangosia and its distribution stretching across the Qriqualand in Northern Cape, Natal, the Cape Point, the Free State and the Limpopo Province our region of interest in this case. The Prepared Core Technique which had become the defining technological technique of the MSA is in this industry replaced by the Micro Lithics that become a dominant feature or trait in the LSA. They mostly occur as surface scatter. The MSA tools include flakes, blades and points. Their time sequence is often not known because they mostly occur in surface. Other industries within the MSA include:

- The Howieson's Poort which is known to have wide distribution throughout southern Africa
- The Orangia 128 to 75 k.y.a.
- Florisbad and Zeekoegat industries dated between 64 and 32 k.y.a

In the central provinces most of the MSA stone artefacts are made from the following materials: fine grain quartzite, quartz, silcrete, chalcedony and hornfels (Binneman et al. 2011, see also Binneman et al. 2010a). In the Limpopo Province one expect to find these tools in quartzite and quartz owing to the geology of the province. Like the ESA artefacts, the MSA stone artefacts occur in secondary context owing to a variety of reasons. One is due to natural events and/or activities such as erosion and being wash down by water and/or riverine activities, animal and human disturbances etc. It would, therefore, be in the best interest of

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the author (or archaeologist and/or heritage consultant) to pay special attention to exposed surfaces, disturbed pieces of land and along any gullies and hill foot slopes, drainage lines etc during the survey process.

LSA – Late Stone Age:

The LSA spans a period from 30 k.y.a to the historical time i.e. the last 500 years to 100 years ago. It is associated, in archaeological records, with the San hunter-gathers. This is particular important for the last 10 k.y.a whereby the San material culture dominates the archaeological records -mostly in rock shelters, caves as well as open air sites in both the interior and coastal regions. However, the San open air sites are not always easy to find because they are in most cases covered by the various forms and types of vegetation and the other contributing factor is the mobility nature of these people. They were not sedentary communities like their counter-parts - e.g. the Iron Age people/communities who needed to settled the land for ploughing, grazing etc. In the coastal regions, sand dunes sometimes become impediments in locating LSA sites. Owning to all these factors the preservation state of the LSA archaeology is often poor and not easily disenable (e.g. Deacon & Deacon 1999). Caves and rock shelters provide a more substantial preservation record of pre-colonial record of indigenous people's archaeology. This is in a form of stone artefacts, rock art and other material culture such as beads etc. The LSA archaeology was, however, not only dominated by the San hunter-gathers - in about 2 k.y.a the southern Africa landscape is known to have also been penetrated and occupied by the Khoekhoe pastoralists/herders who introduce sheep and cattle. The Limpopo Province is well known for sites that document the existence of Khoekhoe herders in South African landscape (e.g. Hall & Smith, 2000). Ceramic vessels are some of the material culture that signifies the Khoekhoe material culture in archaeological records – including the depiction of sheep and cattle often found in San hunter-gather rock art (ibid). Smith and Hall (2000) give detailed descriptions of potential relations that could have taken place between the San, the Khoekhoe and later the Iron Age farmers in Little Mock - an archaeological interaction sites located in the Limpopo Province near the Soutpansberg Mountain north east of the current study geography. In their study, Smith and Hall, argue that the material culture of the Khoekhoe herders included among other things the art of making rock art in form of geometrics, concentric circles etc. Binneman (et al. 2011) asserts that the diet of this new group of people would have also included muscle collected along the muddy river banks, coastal line and riverine and terrestrial foods. Other than the material culture such as artefacts found within the LSA industries, burials or human remains become dominant in the landscape. In the coast they are often

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found buried underneath middens (dumpsites) (e.g. Deacon & Deacon 1999). While in the interior and northern regions such as the Limpopo Province they are sporadic and can occur across various features in the landscape.

The LSA archaeology is therefore rich and varied consisting of stone artefacts, other forms of material cultures such as beads (ostrich egg shell beads are dominant), pottery, rock art in form of paintings and engravings with engraving dominating the central low land and the interior regions. Engravings are also found here within the Limpopo Province and spread across the Highveld and central regions such as the North West Province, the Free State Province and the Cape provinces such as the Northern Cape - better known to archaeologist as the "Mecca" of engravings sites in South Africa and most probable in southern Africa. Among stone tools found in this period include, continuation of bifaces (e.g. hand axes), but they now become supplemented by tanged barbed arrow heads made from the various materials found with the southern Africa regions. Dark or black fine grained chalcedony would have been the most preferred form of material in the Karoo (Northern Cape regions), the Free State Province and Lesotho (Humphrey, 1969). In the Limpopo Province one expect these to be in dolerite and fine grained quartzite.

In the Waterberg area the LSA is known to occur in the last 20 k.y.a. However, their record in this region of the Limpopo is vivid owing to focus on most archaeological research in the north and eastern regions of the province. Among some of the best known LSA material in the Waterberg is rock art - predominantly in form of rock paintings.

In the north and eastern regions of the Limpopo these are some of the well document LSA sites Salt Pan Shelter in the Soutpansberg Mountains, Little Muck in the Limpopo Shashe Confluence Area, the Makgabeng Plateau and the Blouberg Mountains (e.g. Hall & Smith, 2000; Blundell & Eastwood, 2001; Eastwood, 2003).

2.2.2. Iron Age Archaeology:

The Limpopo Province is probably one of the well researched and documented regions of South Africa in term of Iron Age archaeological research. Like the Stone Age archaeology, in the Limpopo Province (and few other South African province) this period in archaeological records is divided into three categories, namely the EIA (Early Iron Age), MIA (Middle Iron Age) and

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the LIA (Late Iron Age) (e.g. Huffman, 2005). While in regions such as the Free State Province there is no clearly defined MIA (e.g. Tomose, 2013).

The EIA communities first appear in southern African archaeological records in the 1st Millennium AD (Huffman 2007; van Schalkwyk, 2007). The eastern regions of the country were their preferred regions because of their rainfall patterns – summer rainfall climates conducive for ploughing and growing crops like maize, sorghum and millet. In the interior regions, the former Transvaal areas of Limpopo and Gauteng Province alike were preferred. The Limpopo Province provides a rich canvas of all three Iron Age periods- providing archaeologists' with a unique cultural landscape. In this region most of Iron Age sites occur near the flood plains, along and near some of the major rivers; however, some are known to occur in defensive slopes along some of the Limpopo hill slopes and/or mountainous areas (e.g. van Schalkwyk, 2007; Huffman 2007 also see Hall & Smith 2000).

Huffman (2007) and van Schalkwyk (2007) dates many of the Iron Age sites located north-east of the current study area towards and around the Soutpansberg Mountains early in the Iron Age period- when the Early Iron Age (EIA) proto-Bantu-speaking farming communities began arriving in this region, which was then occupied by hunter-gatherers (Hall & Smith, 2000). For example, van Schalkwyk (ibid) date early known Iron Age site to 200 AD. These EIA communities are grouped into what archaeologists referred to as the Kwale branch of the Urewe EIA Tradition (Huffman, 2007: 127-9). A distinction between the Iron Age and the LSA is drawn on the basis and on the fact that the Iron Age communities occupied the foot-hills and valley lands introducing sedentary settled life, domesticated livestock, crop production and the use of iron (Maggs 1984a; 1984b; Huffman 2007, van Schalkwyk, 2007). Stonewalls are one of major characteristic of the Iron Age people. However, they are not the only characteristic or feature. Huffman (1982), for example described cattle dug, both vitrified and unverified, as one of the Iron Age traits. He also includes pits and burials, with some located inside the cattle kraals (ibid). This would have varied from cultures to cultures and traditions to traditions. For example, alongside the Urewe Tradition is the second group called the Kalundu Tradition whose EIA archaeological sites have been recorded along the Limpopo region. These are therefore some of the important Iron Age traditions in the EIA.

The MIA in the province date between AD 900 and 1300. This period is concentrated in the Shashe-Limpopo basin where the first complex society in southern Africa developed. Like in the earlier periods, during this period sporadic settlements would have found along the Limpopo River to Botswana and some as far as the North West Province. Therefore, areas of the Waterberg District would have also been occupied. The complex society in the Limpopo

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Shashe basin is distinct from other settlements in the Iron Age in that it was "characterised by sacred leadership and distinct social classes, ...[creating] the first town, first king, first stone-walled palace and the capital of the first state" (Huffman, 2005: 7). Known capital that develop during the MIA is Schroda (AD 900-1000), K2 (1000-1220) and finally the well known and popularised site of Mapungubwe (AD 1220-1300). Mapungubwe discoveries have contributed to the Limpopo Province becoming known as the province were the famous golden rhino that was recovered from the late MIA early LIA settlement site of Mapungubwe in the Limpopo Shashe Confluence Area Valley (Murimbika & Tomose, 2012). This region is also known for the Late Iron Age Great Zimbabwe Culture sites such as Lephalale and Dzata (ibid). Lephalale and Dzata occur with the Kalundu Tradition, one of the LIA traditions that occurs in the region as suggested above (e.g. see Huffman, 2007).

In the Limpopo Province the Iron Age communities are also known to have also practice the tradition of making rock art, especially during the last period of the Iron Age i.e. the LSA. A period characterised by the different encounters between these communities and the colonial settlers. The Makgabeng Plateau located near the Blouberg Mountain range is known for its LIA rock art sites. Rock art depicting conflict scenes associated with the Malebogo Wars – war between Chief Malebogo of the Hananwa people and President Kruger of the ZAR. This occurred in the 1800s.

Other than rock art, stone walls and pottery – the material culture of the Iron Age communities also includes Iron Implements, traded beads, rainmaking site features, spear sharpening groves on rock surfaces, grinding stones etc (e.g. Huffman, 2007). In the vicinity of the study area iron or miners and traders, who frequented the region have left evidence of ore slug and smelters - the ore deposit in Thabazimbi would have attracted many LIA miners and traders.

2.2.3. Historical Archaeology:

The Historical archaeology is a period in archaeological records that refers to the last 500 years in archaeological records. This period encapsulates the Late Stone Age, Late Iron Age, and the period of European settlers and/or "colonist" in southern Africa. The archaeological records that characterises this period includes ruminants of Stone Age industries (and material culture), the Late Iron Age material culture (e.g. pottery/ceramics, iron age implements etc) and built environment (e.g. elaborate stone wall settlements etc) and the settlers material

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culture and built environment. In other regions of the country, settler towns become a dominant form of built environment and landscape features. However, in the Limpopo Province such complexity can be dated as far back as the MIA to LIA (e.g. Huffman, 2005). Some of the oldest settler towns that occur within along the study area include the village town of Steenbokpan, Elisras (i.e. modern day Lephalale) and Potgietersrus (i.e. modern day Mokopane). In this province, these earliest towns were established by the European settlers of Dutch descent – the Afrikaans communities after they Trekked from the then Cape Colony to avoid British Administration in the 1930s and 19840s. They fall within what was then called the Transvaal - direct translation for across the Vaal River. Therefore, some of the above towns such as Potgietersrus can attributed to the Great Trek movement. During the Great Trek these Afrikaans communities, commonly referred to as the Boers (farmers), who left the British Administration of the Cape Colony (i.e. a former Dutch colony in 1795 and again in 1806) established several republics north of the British Colonies - these republics included the Boer Republic of the Orange Free State (1845) and the Transvaal across the Vaal River were our study area is located. The Transvaal which had different autonomous and separate states which were later united to form what became known as the Zuid Afrikaanse Republiek (South African Republic) the ZAR (Celliers, 2010) .

Throughout the middle of the 1800 Century AD the Limpopo Province witnessed range of settlement patterns- the occupation and reoccupation of the region by the different culture groups that contributed to the contemporary peopling of the present day Limpopo Province (Tomose, 2012). There are various factors that contributed to this historical times settlement of the region. The first has to do with the availability of natural resources and the second is political driven. For example, the Great Trek is a political motivated movement of people that influence the peopling of Limpopo Province and our current study area. The attraction of people to natural resources available in this province date as far back as the 1st Millennium AD, to MIA and the LIA periods alike. During the historical times the availability of natural resources also played a pivotal role in the choice of settlement of people, based not only from a subsistence point of view but also driven by commerce or commercial gains resulting from the exploitation of available natural resources such as coal, iron ore and tin. The town of Thabazimbi, for example - located south of the current study area, is known to have developed from the exploitation of its rich haematite deposits (iron ore) during the early 1900s (Circa 1919). Iscor (Iron and Steel Corporation) in this region is synonymous with Thabazimbi. Mokopane (former Potgietersrus) on the other hand is synonymous with the Great Trek - located in the Makapans Poort (name attributed to one of the Ndebele Chief in the region Chief Mokopane/Makapan) and on the gap between the Waterberg Mountain Range and Strydom

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mountain, this town was chosen by one of the Great Trek leaders Mr Hendrick Potgieter in 1852 and it said to have acquired its name in honour of his son Pieter Johannes who was killed in action in a battle between the Ndebele Chief who had settled in the area i.e. Chief Mokopane and Hendrick Potgieter's people. This town and its surroundings is also known to have played a pivotal role during the South African Wars, commonly known as the Anglo-Boer War. A number of skirmishes are reported to have taken place in proximity of this town. Monuments dedicated to such event still stand and are recorded in some of the maps showing the town (e.g. Figure). The question that one would pose is how was the area occupied by the Ndebele, an area better known for the Sotho Tswana languages speakers - BaPedi.

The presence of the Ndebele people in this region of South Africa was partly influence by the mfecane processes, contributing to migrations and displacements of people in the region and throughout many parts of South Africa and southern Africa (Tomose, 2012). For example, in the region the mfecane processes can be linked to the Ndebele of Mzilikazi who later settled in Zimbabwe (ibid).

This like the mfecane, the interaction between the Trek Boer or Pioneers as the also known, the Sotho-Tswana people and the Ndebele also triggered wars in the region – wars between the African chiefdoms and the incoming settlers. One such example is the battle of Blouberg, also known as the Malebogo wars, between Chief Malebogo and President Kruger of the ZAR in the Blouberg Mountains and the Makgabeng Plateau (Smith pers.com 2006). Some of these colonial wars and battles lasted into the early 1900s like the First (mid 1860s) and Second (1899 -1902) South African Wars. The later effectively led to complete subjugation of African communities to settler administration starting as part of the ZAR of Transvaal, the Union of South Africa in 1910 following the annexing of the region by the British, the Nationalist South Africa (1982), the Apartheid South Africa as proclaimed in 1962 up to late 1980s until the Democratic South Africa resulting from first democratic elections in 1994.

Contrary to the development of the above discuss town, the town of Lephalale like Thabazimbi is associated to the development of commerce in the region. For example, in the 1880s gold was discovered near the town of Polokwane and this development led to influx of prospectors, miners and traders in the region. The Waterberg area was mostly settled by the farmers who worked to sustain the industrial processes culminating from discovered natural resources. But, it also became known as a trade post for traders. Coal is another resource that came to define this region - in 1941, for example, Iscor started exploration programmes around Lephalale to test the extent of coal deposits. Eventually Grootegeluk mine, which currently services Eskom Power Stations like Medupi and Matimba, was sunk to exploit the coal deposits.

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The first townships of Lephalale were proclaimed only in 1960. The town Elisras itself was laid out in December 1960 and was named after two of the pioneer families in the area - Ellis and Erasmus. In 2002 the name was changed to Lephalale. The name Lephalale is derived from the Lephalale River derived from Tswana verb, which means to flow or one, which overflows (Raper, 2004:86,204; van Schalkwyk, 2005b)

3. METHODOLOGY

3.1. Legislative Requirements

The NEMA, No. 107 of 1998 stipulated that for any development in South African to be granted permission to go ahead an assessment of the potential impacts of the proposed development on both the natural and cultural environment need to be conducted. As such, this HIA fulfils the requirements of NEMA (and the applicable 2010 EIA Regulations) and is conducted in-line with Section 38 (1) of the NHRA, No. 25 of 1999.

3.2. Methodology

This chapter outline the methodologies used in conducting this study. This HIA report was compiled by Nkosinathi Tomose, lead archaeologist and heritage consultant for NGT Projects & Heritage Consultants for the proposed Medupi-Borutho Transmission Line it forms part of specialists studies aimed at giving inputs into the EMP process for this line and Acquisition of Environmental Permits, Waterberg District Municipality, Limpopo Province, South Africa. It does this in order to adhere to the Terms of Reference provided by the client for the completion of this report. However, some areas of the report follow minimum standards for completion of professional HIA as stipulated in SAHRA minimum standard (2012) such as detailed account to the archaeological and historical background of the study area or region. This is also

3. 2.1. Step I – Literature Review (Desktop Phase):

- The background information search of the proposed area of development was conducted following the verbal confirmation that NGT Projects & Heritage Consultants would be appointed as an independent and professional CRM firm for

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the project in November 2012. The receipt of GIS data from the client also confirm NGT appointment and allowed for desktop study to commence.

- Sources used in this study included, but not limited to published academic papers and HIA studies conducted in and around the region where the current development will take place.
- There was limited use of archival maps - one historical map and one archaeological map and one general travel map showing the proposed area of development and its surround were assessed to aid information about the proposed area of development and its surrounding.
- This also included a review and assessment of relevant environmental and heritage legislations such as the NEMA (together with the 2010 EIA Regulations) and the NHRA.

3.2.2. Step II – Physical Survey:

The physical survey of the study area aimed to address the following main areas of concern raised by the client in the specialist Terms of Reference:

1. To "conduct an onsite verification “walk down” for the proposed line corridor, focusing on the proposed pylon positions within";

2. To "identify all objects, sites, occurrences and structures of an archaeological or historical nature (cultural heritage sites) located on the proposed line corridor, the pylon locations. Use will be made of annotated maps where appropriate"

In order to address these concerns by the client:-

- The physical survey of the proposed Medupi-Borutho Transmission Line was conducted by a qualified archaeologist and general heritage specialist from NGT Projects & Heritage Consultants between the 10 and 21 January 2013.
- The survey covered the servitude of the proposed Transmission line on foot and track logs of the "walk down" were recorded using Garmin GPSmap 62s.
- The objective of the survey was to locate and identify archaeological and heritage resources and/or sites and objects, occurrence within the proposed line corridor, and pylon positions. To record and map them using necessary and applicable tools and technology.

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- The physical survey was deemed necessary since the desktop phase of the project yielded archaeological resources and many other heritage/historic resources about the area between Medupi and Borutho, the Waterberg District Municipality and the Limpopo Province in general.
- The survey also paid special attention to disturbed and exposed layers of soils as such as eroded surfaces because these areas are more likely to exposed or yield archaeological and other heritage resources that may be buried underneath the soil and be brought to the earth surface by animal and human activities such as animal barrow pits and human excavated grounds. The edges/sides of dirty roads were also inspected for possible Stone Age scatters as well as exposed Iron Age implements and other resources.

- The following technological tools and platforms were deemed important for documenting and recording located and/or identified sites:
    - Garmin GPSmap 62s – to take Lat/Long coordinates of the identified sites and to take track logs of each of the 3 corridors.
    - Lenovo ThinkPad aided with Garmin Basecamp Software, Google Earth – to plot the propose corridors.
    - ArcGIS Software (ArcView Series 10) was used to plot all the identified heritage resources and to develop heritage maps in order to inform the heritage analysis of the 3 proposed corridors.
    - Maps provided by the client before the survey also proved invaluable
    - Shapefiles (KMZ files) provided by the client were used to map the corridors and sites located in each corridor servitude and immediately outside
    - Samsung camera – was use to take photos of the affected environment and the identified heritage sites.

3.2.3. Step III – Data Consolidation and Report Writing:

During field work and on the return from the field the following clients concerns were addressed:-

1. To "assess the significance of the cultural resources in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value"

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2. To "describe the possible impact of the proposed development on these cultural remains, according to a standard set of conventions;

3. To "propose suitable mitigation measures to minimize possible negative impacts on the culturalresources;

4. To "prepare an heritage resource management plan"

5. "Review applicable legislative requirements" - Section 3.1. of this Chapter (i.e. Chapter 3) addresses this concern as well as Section 5.5 of Chapter 5 discusses Sections of the NHRA, No. 25 triggered by the current study findings

6. To "……highlight assumptions, exclusions and key uncertainties". Chapter 4 (below) of this report address this concern.

- The final step involved the consolidation of the data collected using the various sources as described above.
- This involved the manipulation Shapefiles/KMZ files through ArcGIS
- Assessing the significance and potential impact of the identified sites, discussing the finds, report writing and making recommendation on the management and mitigation measures of the identified sites and resources as well as the impact and influence of these sites and resources on the proposed corridor.

3.3. Assessment of Site Significance in Terms of Heritage Resources Management Methodologies

The significance of heritage sites was based on four main criteria:

- Site integrity (i.e. primary vs. secondary context)
- Amount of deposit, range of features (e.g., stonewalling, stone tools and enclosures)
    - Density of scatter (dispersed scatter)
    - Low - <10/50m^2
    - Medium - 10-50/50m^2
    - High - >50/50m^2
- Uniqueness and
- Potential to answer present research questions.

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Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be expressed as follows:

- A - No further action necessary;
- B - Mapping of the site and controlled sampling required;
- C - No-go or relocate pylon position
- D - Preserve site, or extensive data collection and mapping of the site; and
- E - Preserve site
- Impacts on these sites by the development will be evaluated as follows:

Measure of Heritage Sites Significance

The following site significance classification minimum standards as prescribed by the SAHRA (2006) and approved by the ASAPA for the SADC region were used for the purpose of this report.

Table 1: 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 Significance	Conservation; Mitigation not advised
Local Significance (LS)	Grade 3B	High Significance	Mitigation (Part of site should be retained)
Generally Protected A (GP.A)	-	High / Medium Significance	Mitigation before destruction
Generally Protected B (GP.B)	-	Medium Significance	Recording before destruction
Generally Protected C (GP.A)	-	Low Significance	Destruction

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3.4. Methodology for Impact Assessment in terms of Environmental Impact Assessment Methodologies including Measures for Environmental Management Plan Consideration:

The Basic Assessment Methodology assists in evaluating the overall effect of a proposed activity on the environment. The determination of the effects of environmental impact on an environmental parameter is determined through a systematic analysis of the various components of the impact. This is undertaken using information that is available to the environmental practitioner through the process of the Basic Assessment & Environmental Impact Assessment. The impact evaluation of predicted impacts was undertaken through an assessment of the significance of the impacts. This is in line with specialist requirements as required by the client. For example, the request that:-

"The impact methodology [should] concentrate on addressing key issues. This methodology to be employed in the report thus results in a circular route, which allows for the evaluation of the efficiency of the process itself. The assessment of actions in each phase [that should] be conducted in the following order:

- Assessment of key issues;
- Analysis of the activities relating to the proposed line corridor, pylon locations;
- Assessment of the potential impacts arising from the activities, without mitigation, and
- Investigation of the relevant mitigation measures.

Because, "activities within the framework of the proposed line corridor give rise to certain impacts". The client recommended that, "for the purposes of assessing these impacts, the project has [to be] divided into two phases from which impact activities can be identified, namely:

- the Construction Phase
- and Operational Phase

The following Assessment Criteria is Used for Impact Assessment

An impact can be defined as any change in the physical-chemical, biological, cultural and/or socio-economic environmental system that can be attributed to human activities related to

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alternatives under study for meeting a project need.

The significance of the aspects/impacts of the process will be rated by using a matrix derived from Plomp (2004) and adapted to some extent to fit this process. These matrixes use the consequence and the likelihood of the different aspects and associated impacts to determine the significance of the impacts.

The significance of the impacts will be determined through a synthesis of the criteria below:

Probability: This describes the likelihood of the impact actually occurring

Improbable: The possibility of the impact occurring is very low, due to the circumstances, design or experience.

Probable: There is a probability that the impact will occur to the extent that provision must be made therefore.

Highly Probable: It is most likely that the impact will occur at some stage of the development.

Definite: The impact will take place regardless of any prevention plans and there can only be relied on mitigatory measures or contingency plans to contain the effect.

Duration: The lifetime of the impact

Short Term: The impact will either disappear with mitigation or will be mitigated through natural processes in a time span shorter than any of the phases.

Medium Term: The impact will last up to the end of the phases, where after it will be negated.

Long Term: The impact will last for the entire operational phase of the project but will

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be mitigated by direct human action or by natural processes thereafter.

Permanent: The impact is non-transitory. Mitigation either by man or natural processes will not occur in such a way or in such a time span that the impact can be considered transient.

Scale: The physical and spatial size of the impact

Local: The impacted area extends only as far as the activity, e.g. footprint

Site: The impact could affect the whole, or a measurable portion of the above mentioned properties. Regional: The impact could affect the area including the neighbouring residential areas.

Magnitude/ Severity: Does the impact destroy the environment, or alter its function

Low: The impact alters the affected environment in such a way that natural processes are not affected.

Medium: The affected environment is altered, but functions and processes continue in a modified way.

High: Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.

Significance: This is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required.

Negligible: The impact is non-existent or unsubstantial and is of no or little importance to any stakeholder and can be ignored.

Low: The impact is limited in extent, has low to medium intensity; whatever its

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probability of occurrence is, the impact will not have a material effect on the decision and is likely to require management intervention with increased costs.

Moderate: The impact is of importance to one or more stakeholders, and its intensity will be medium or high; therefore, the impact may materially affect the decision, and management intervention will be required.

High: The impact could render development options controversial or the project unacceptable if it cannot be reduced to acceptable levels; and/or the cost of management intervention will be a significant factor in mitigation.

The significance is calculated by combining the criteria in the following formula:

Sum (Duration, Scale, Magnitude) x Probability (Table -2)

S = Significance weighting; Sc = Scale; D = Duration; M = Magnitude; P = Probability

Table 2 -The significance weightings for each potential impact are as follows:

Aspec	Description	Weight
Probability	Improbable	1
	Probable	2
	Highly Probable	4
	Definite	5
Duration	Short term	1
	Medium term	3
	Long term	4
	Permanent	5
Scale	Local	1
	Site	2
	Regional	3
Magnitude/Severit	Low	2
	Medium	6
	High	8

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Significance	Sum (Duration, Scale, Magnitude) x Probability	
	Negligible	≤20
	Low	>20 ≤40
	Moderate	>40 ≤60
	High	>60

The significance of each activity was rated without mitigation measures (WOM) and with mitigation (WM) measures for both construction, operational and closure phases of the proposed development

To address the question of Heritage Management Plan the following table is used for Measures to be included in the EMP. This table is relevant in that it addresses key issues at the various stages of the project by also addresses how some of the key concerns that develop from a heritage point of view can be mitigated.

Table 3 -Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: Description of the objective, which is necessary in order to meet the overall goals; these take into account the findings of the environmental impact assessment specialist studies		
Project component/s	List of project components affecting the objective	
Potential Impact	Brief description of potential environmental impact if objective is not met	
Activity/risk source	Description of activities which could impact on achieving objective	
Mitigation: Target/Objective	Description of the target; include quantitative measures and/or dates of completion	
Mitigation: Action/control	Responsibility	Timeframe
List specific action(s) required to meet the mitigation target/objective described above	Who is responsible for the measures	Time periods for implementation of measures
Performance Indicator	Description of key indicator(s) that track progress/indicate the effectiveness of the management plan.	
Monitoring	Mechanisms for monitoring compliance; the key monitoring actions	

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	required to check whether the objectives are being achieved, taking into consideration responsibility, frequency, methods and reporting

4. ASSUMPTIONS, EXCLUSIONS AND UNCERTAINTIES

The following assumptions, exclusions and uncertainties exist in terms of the present study:

4.1. Assumptions -

- The current study is a Phase 1 Heritage Impact Assessment. As such, a historical and archival desktop study as well as a field survey were undertaken to identify tangible heritage resources located in and around the proposed development area footprint. The assumption is that a heritage social consultative process would have taken place with some of the locals or farm owners to uncertain known archaeological or heritage sites in their properties such as presence or existence of graves and cemeteries etc. However, there was no formal heritage social consultation that took place as part of the study - this is due to the fact that nature of the current study i.e. EMP rather than an EIA process or BAR does not allow for social consultation because the EIA process would have already covered this.
- The study assumes that the amount of heritage resources located in and around the propose line corridor represent the total amount of physical or tangible resources distributed in and around/along the propose line corridor servitude.

4.2. Exclusions -

The following exclusions or limitations have direct consequence to the study and its results-

- The proposed line corridor servitude cover many farms - as such there was no deeds search of individuals farms that the line corridor will pass/traverse between Medupi, Borutho and Witkop.
- The survey was conducted in January 2013, summer period - as such there was high level of vegetation cover for the archaeologist/heritage surveyor to pick up all the different archaeological and heritage features in the landscape such as unmarked graves, the different Stone Age, Iron Age and Historical Archaeology material culture

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and artefacts. This forms one major limitation in terms of observing and recording all forms of archaeological and heritage sites in and immediately outside or along the proposed development line corridor servitude.

- The fourth limitation of the project was the issue of access - portions of the proposed development line corridor servitude could not be access because of the nature of farming activities taking place on some of the properties. For example, Rhino Land and other few game farms could not be accessed because of the type of animals they had like Rhino, Buffalo or Big Five (i.e. Lion, Leopard, Elephant, Buffalo & Rhino).
- The survey took place during summer and the Limpopo Province is known to fall within the summer rainfall region of South Africa - the last few days of the corridor survey had to be conducted during rainy days and the last day was cancelled because there were floods and some of the mountainous areas could not be access as a result. The same is through for flat lands whereby the surveying archaeologist and other specialist could not cross over flooded rivers.

4.3. Uncertainties -

Heritage studies like most other specialist studies often experience many challenges during and after the physical survey of the proposed development area.

- From an archaeological and general heritage perspective - the assumption is often made that, the amount of identified archaeological and heritage resources during physical survey of the proposed development area represent some of the total amount of resources that exist in and around or along the development area.
- This is not often true because the nature of some the archaeological and heritage resources - some of this resources are subterranean in nature and as such, one cannot totally rule out their presence or existence along the line corridor even though they are not recorded and map as part of the current study. These resources may be exposed or brought to the surface of the earth during the construction phase of the project which will involve excavation for pylons and clearing of vegetation and top for access roads soil in some instances.
- This presents one of the major uncertainties regarding the 'holistic' management or archaeological and heritage resources along the proposed line corridor servitude.
- Archaeologist and heritage specialist alike refer to discovery of such resources as chance finds and to mitigate such uncertainty - it is always advised that should such chance finds be made of archaeological and heritage resources or site the ECO should

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report them to the nearest SAHRA office or museum or call an archaeologist and heritage specialist to investigate the finds make necessary recommendations.

- Some of the exclusion or limitation also cast a large uncertainty about the potential archaeological and heritage resources - for example, presence of significant resources on that land or properties that could not be accessed as a result of the above given reasons. However, this can be addressed by revisiting some of the properties or farms that could initially be surveyed or investigated

5. FINDINGS

The findings of this study are presented in three ways as per the search and other methodological methods used in conducting it. Such as desktop study, map and physical survey of the proposed Medupi-Borutho Transmission Line. Because there was no deeds search of the various properties and farms that the proposed Transmission Line is going to traverse - no deeds information is provided of the farms that the power line will pass.

5.1. Anticipated Heritage Resources and Sites within the proposed Medupi-Borutho Transmission Line, Limpopo Province–

Based on the known archaeological and historical events that took place within this region of the Limpopo Province and the western and central to northern Limpopo - the following archaeological and heritage resources sites are anticipated to occur within and immediately outside the propose Medupi-Borutho Transmission Line:

- Iron Age implements
- Iron ceramics
- Iron Age graves and burials
- Iron Age stone settlements and kraals
- Ash middens
- Historic monuments – some associated with the South African Wars (commonly known as the Anglo-Boer Wars)
- Historical cemeteries and graves
- Historic houses/buildings
- Farming heritage resources

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- Stone Age material culture mostly LSA, MSA, and even ESA

5.2. Results of Desktop Search-

The desktop search of the area revealed a number of things and activities that took place within the region - the literature review section above gives an accounts of this. Resources anticipated to be found mostly emanates from the findings of the Desktop Search.

5.3. Cadastral Search:

The following maps of the study area were used to assess the evolutions of the landscape in and around the area in which the proposed corridor will traverse:

The first map (Figure 11) is a recent map taken from the Lephalale Local Municipality Guide book. This map is important in this study in terms of giving a general indication of the location of some of the geographical features were have mentioned in the Description of Affected Landscape Section. It proved important in the sense that it also shows us some of the biodiversity protected areas such as the Waterberg Biosphere. Also important about this map is the clear of manmade features such as towns, roads, villages and south of the town of Mokopane a memorial dedicated to South Africa War (Anglo-Boer War) is depicted in the map (Figure 11, white arrow). This map gives such a good illustration of the activities and evolution of the landscape of the study area. However, it becomes more relevant only when it is compared to the other two maps.

The second map is an archaeological map showing areas with some of the mineral resources known to have been exploited by the Iron Age people during the pre-historic times up to historic times (from 1800s). From this map we learn that the area produced tin in the prehistoric times, the site of Rooiberg is an example of such mineral wealth exploitation. What is also important about this map is that, we also see the distribution of sites that contained copper, gold and the location of Salt pans especially in Botswana (Figure 12). All these resources would have played a vital role, in terms of trade, during the different periods of Iron Age up to historical times.

The third Map, that which depicts physical features of the Transvaal gives us a relative date of some of the oldest towns in the Limpopo Province -for example, the location of Mokopane

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indicated in the map as Piet Potgieter's Rust, Nylstrom further south and Polokwane indicated as Pietersburg. This towns are linked by the railway line and this means that the railway line predates the map. From this map we also see that the study area towards Mokopane is ensconced between the Soutpansberg and Waterberg escarpments within the Middle Veld and Low Veld (Figure 13).

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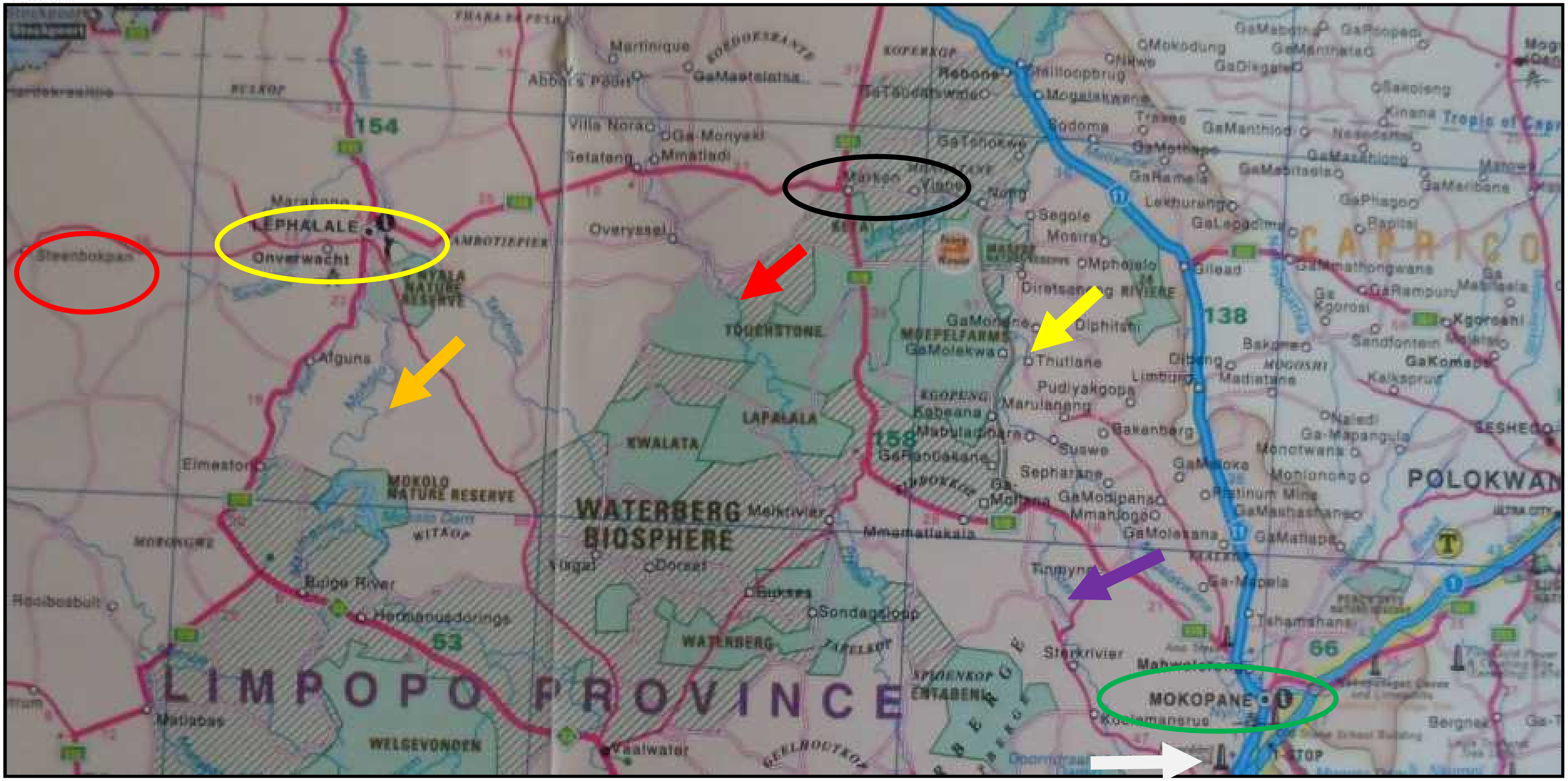

Figure 11- A general map showing the some of the natural and manmade features within the broader study area. Red circle village town of Steenbokpan; yellow circle Lephalale (former Elisras); black circle village town of Marken; and green circle Mokopane (former Potgietersrus). Orange arrow Mokolo Rive; red arrow Lephalale/Phalala River; yellow arrow Mogalakwena River; purple arrow Sterk River; and white arrow a South African War memorial (cultural heritage site).@ Lephalale Guide Book, 2011.

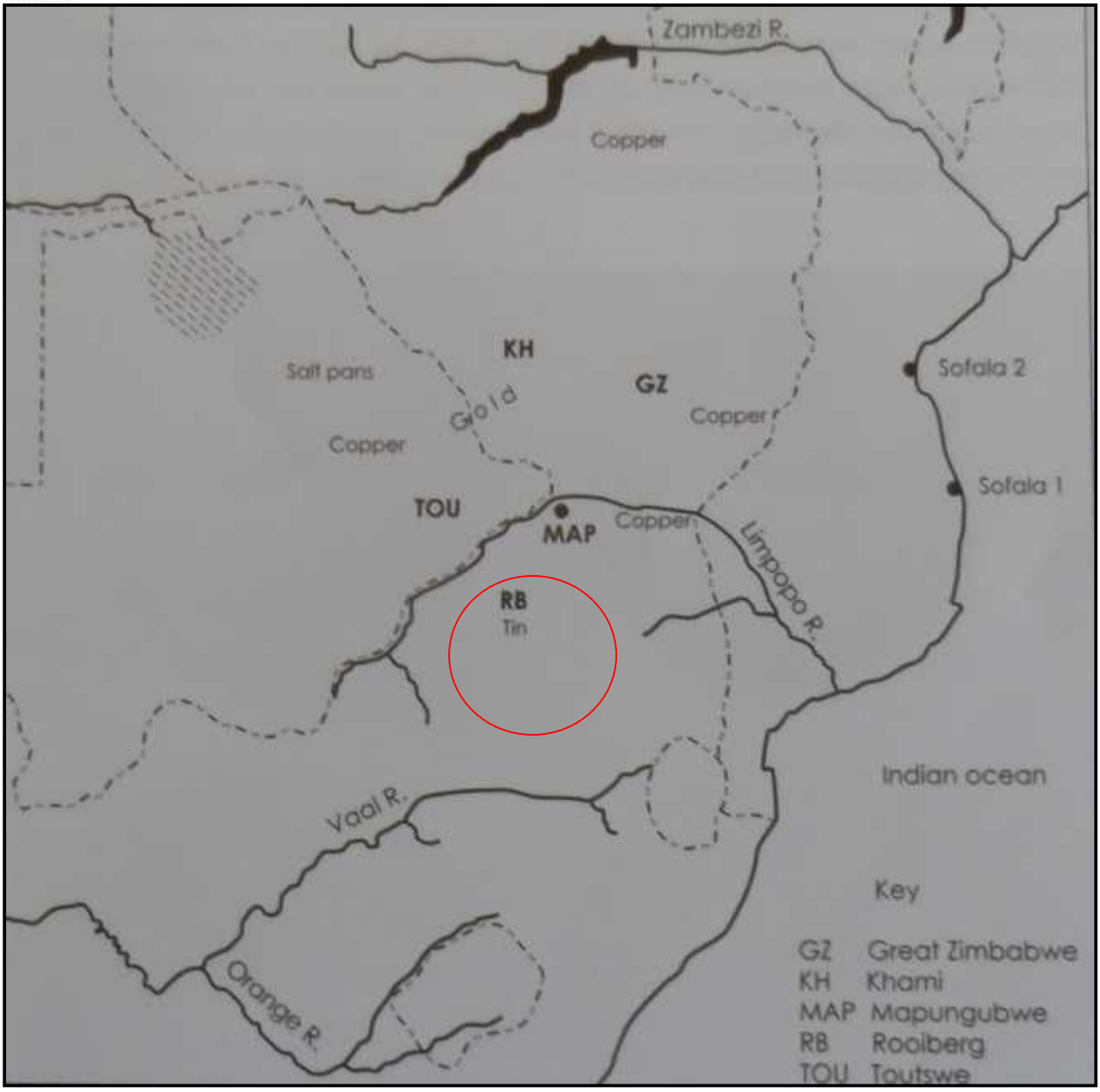

Figure 12- An archaeological map of southern Africa showing the location of important natural resources. The red circle show the proximity location of our study area for the Medupi-Borutho Transmission Line.@ Huffman, 2007:51.

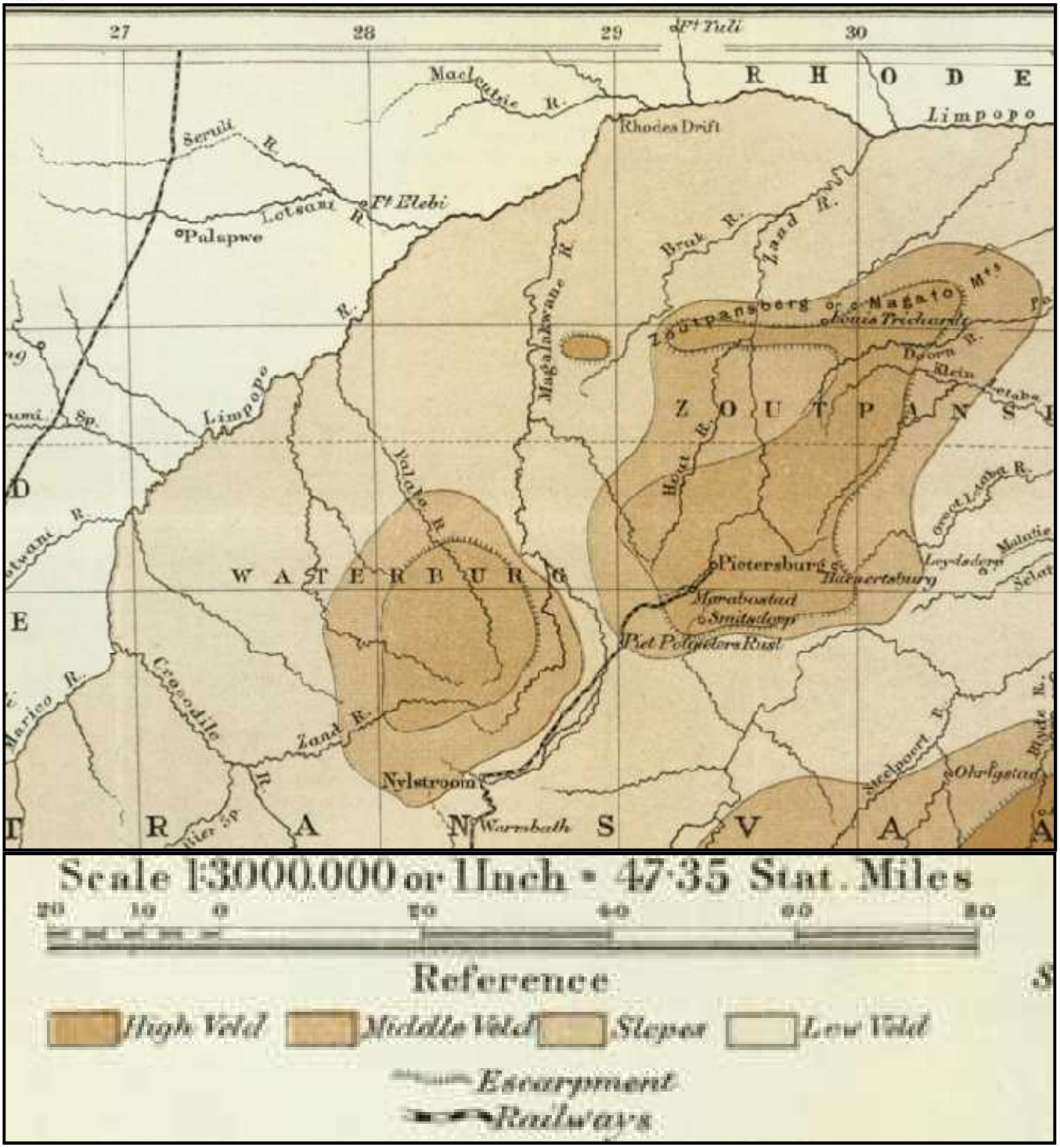

Figure 13-1905 Map illustrating the physical features of the Transvaal by Tudor G. Trevor, - F.G.S.A.R.S.M @ Trevor, 1906.

- 1:50,000 Topographic Map of the study area and its surrounding as presented in Figure 1. This map is also used to overlay heritage sites in the GIS Mapping system (Figure 1 & Figure 106)
- A 1:250,000 Map of Ladysmith (SH35-4, Series Z501) (Figure 2)
- A political map of the former Bantu Homesteads (Figure 3)
- A Military Map showing movement of Imperial Tropes in the Harrismith - Phuthaditjhaba area during the Second South African War (Figure 27).

These maps provide us with enough information about our study area. For example, we know that during the Second South African War there were various military activities taking places in and around our study area. Battle and skirmish site would have therefore been an issue of the day. The 1:250,000 Map of the study area does show or represent any sites resembling battle fields or skirmish sites. What would initial be considered to be representation of battle sites in maps such as the 1900s Major Jackson Series Military Maps is in this map use to show highest points of relief (Figure 2 - yellow circles). The Bantu Homestead political map becomes useful in terms of showing areas that were either demarcated as rural or urban towns.

5.4. Deeds Search:

No deeds search was conducted as part of the study.

5.5. Field Survey and Identified Archaeological/Heritage Resources:

The physical survey of the proposed Medupi-Borutho Transmission Line made a number of observations about the presence of archaeological and heritage resources sites within and immediate outside the alignment servitude as well as the general surrounding landscape as described in the 'affected environment' section above. A number of sites varying from archaeological to historic historical heritage sites were identified in alignment corridor. As a result of such observations the following sections of the NHRA, No. 25 of 1999 were triggered:

- Section 34 for the built environment and landscape features which include the historic buildings in this case
- Section 35 for archaeological resources - i.e. stone tools or artefacts, ash middens, kraal, grinding stones, digging stick support system etc
- And Section 36 for burial grounds and graves e.g. the cemeteries and/or burial sites

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Below is the description and evaluation of identified sites within and immediately around the proposed alignment corridor

Medupi-Borutho - Archaeological and Heritage Sites:

Site Name: MB-1

Type: Stone Age Scatter and Iron Age ruin

Density (Low): Approximately 2 artefacts and 3 disturbed stone circle

Location/GPS Coordinates: S23 37 20.0 E27 45 58.7

Approximate Age: Older than 60 years

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W181	4m	2m

Description:

The site consists of 2 MSA stone scatters (Figure 14) and 3 disturbed stone circles features (Figure 15). Both the MSA artefacts and the 3 disturbed circle feature are found on an exposed layer of natural gritty gravel (Figure 16).

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact Scale	Impact Significance	Heritage Significance	Certainty of	Duration	Mitigation

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					Impacts		
GP.C	-	Local	Negligible (WOM/WM)	Low	Highly probable	Short term: Construction phase	A

Nature of Activities:

1. Construction Phase: construction activities (& development of associated infrastructure) will directly impact on the identified site.

2. Operation Phase:

	WOM	WM
Probability	Highly probable (4)	Highly probable (4)
Duration	Short term(1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(16)Negligible	(16) Negligible
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No	

Mitigation: There no further mitigation measures proposed for this site for it is of low heritage significance. Site recording during the physical survey is deemed sufficient.

Cumulative impacts: cumulative impacts are predicated to result from the construction activities (& associated infrastructure development).

Residual Impacts:

- The project will positively contribute to the transmission of power loads from Medupi to

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Borutho.

- There are no negative impact regarding this site - it is of low heritage significance and its impact significance are negligible

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is of low heritage significance and the physical survey recording is deemed sufficient enough as a mitigation measure.

Project component/s -1	Construction phase of the project
Potential Impact	The site will directly be affected by construction activities and development of associated infrastructure
Project Component/s 2	Operational phase of the project
Potential Impact	There are no foreseen impacts on the resources associated with this phase
Activity/risk source	In the case that the site was deemed significant in term of its heritage value and fabric -risk source would be the exclusion of the above objectives from the overall EMP
Mitigation: Target/Objective	The recording of the site during the physical survey "walk down" is deemed sufficient enough as a mitigation measure

Mitigation: Action/control	Responsibility	Timeframe
N/A	N/A	N/A

Performance Indicator	The type of indicator used here are Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of EMP against their actual implementation.
Monitoring	There is no need to monitor the sites

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Figure 14 - Picture showing 2 MSA retouch flakes scatters.

Figure 15- Picture showing one of the circle structures

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Figure 16 - Picture showing the natural gravel grit where the MSA artefacts are found and the 3 circle structure

Site Name: MB-2

Type: LIA/Historic isolated grinding stone

Density (Low): 1x grinding stone

Location/GPS Coordinates: S23 37 47.6 E27 51 00.7

Approximate Age: Older than 60 years

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W155	207m	6m

Site Description:

This is not a site but an isolated grinding stone scatter. it is either sorghum or millet grindstone in the middle of the field (Figure 17) . There are no other structures or forms of material culture associated with it.

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Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact Scale	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.B	-	Local	Negligible (WOM/WM)	Medium significance	Highly probable (WOM)	Short term: Construction phase	B

Nature of Activities:

1. Construction Phase: Clearing of the servitude and development of associated infrastructure such as access roads.

2. Operation Phase: N/A

	WOM	WM
Probability	Highly probable (4)	Improbable (1)
Duration	Short term(1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(16)Negligible	(4) Negligible
Status (positive or negative)	Negative	Positive
Reversibility	Low	High
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation: Collection of the material (grinding stone) from the field and placing it at an accredited archaeological research institution such as the University of the Witwatersrand (Wits) Archaeology		

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Department. The material is relevant for teaching purposes.
Cumulative impacts: No cumulative impact are predicted once the material is collected
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho. • There are no negative impact regarding this scatter - it is of low heritage significance and its impact significance are negligible

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is of medium heritage significance and should be mitigated by means of collection before the construction phase.

Project component/s	Construction phase of the project
Potential Impact	In case the grinding stone is not collected and placed at an accredited research institution with developed archaeology department, the following impacts are predicted: destruction of material that could contribute to teaching purposes about the prehistory of South Africa.
Project component/s	Operational phase of the project
Potential Impact	N/A
Activity/risk source	Exclusion of the above objectives from the overall EMP
Mitigation: Target/Objective	The grinding stone should be collected before the commencement of construction activities on site.

Mitigation: Action/control	Responsibility	Timeframe
Permit should be applied for with SAHRA APM Unit to collect the material by the involved archaeologist. The ECO should	Permit application with SAHRA APM Unit to collect the material - archaeologist.	Prior to the construction phase

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ensure that construction activities and machinery does not destruct the material before it is collected.	Collection of material - archaeologist or the ECO on behalf of the archarologist	
Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.	
Monitoring	The ECO should ensure that the material is collected before commencement of construction activities	

Figure 17 - Sorghum/millet grinding stone

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Figure 18 - position of the grinding stone in the field.

Site Name: MB-3

Type: MSA Site

Density (Medium): Large concentration of flakes, retouched flakes and cores

Location/GPS Coordinates: S23 37 17.3 E27 56 55.2

Approximate Age: 300-60k.y.a old

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W130	204m	1m

Site Description:

The site is medium size MSA site consisting of flakes and retouched flakes and cores. Its width measures approximately 18m and approximately length is 31m (Figure 19). The site is located approximately 81m from MB-4, another MSA site.

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Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.A	-	Site	High (WOM) & Low (WM)	High/Medium significance	Definite (WOM) & probable (WM)	Long-term: Construction & operation phase	B

Nature of Activities:

1. Construction Phase: Clearing of the line corridor servitude and development of associated infrastructure such as access roads.

2. Operation Phase: Traversing of the site by SPV during servitude maintenance.

	WOM	WM
Probability	Definite (5)	Probable (2)
Duration	Long term (4)	Long term (4)
Scale	Site (2)	Site (2)
Magnitude/Severity	High (8)	Medium (6)
Significance	(70)High	(24) Low
Status (positive or negative)	Negative	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation: The site requires mapping and controlled sampling before the project construction		

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phase. A permit should be applied for with SAHRA APM Unit for controlled sampling and mapping of the site. Following which a Phase 2 HIA report should be developed and submitted to the client for the attention of the ECO
Cumulative impacts: Cumulative impact are predicted to occur from the construction and operational activities of the transmission line.
Residual Impacts: The project will positively contribute to the transmission of power loads from Medupi to Borutho. • The site will be impacted negatively by both the construction and operation activities even when mitigated

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is of High/Medium heritage significance and it needs to be mitigated by means of detailed mapping and controlled sampling before the construction phase of the project.	
Project component/s	Construction phase of the project
Potential Impact	In case the site is not mitigated as proposed above, the following potential impacts are predicted: destruction of sites and loss of data that could potential address scientific research questions about the MSA industry in Waterberg region of the Limpopo Province.
Project component/s	Operational phase of the project
Potential Impact	Mitigation measures applied to the site before the construction phase will minimise any potential impact at this stage of the project.
Activity/risk source	Exclusion of the above objectives from the overall EMP
Mitigation: Target/Objective	The site should be mitigated by mean of detailed mapping and controlled sampling. This should be done before the construction phase of the project. The objective is to collect as much data about the site and to assess whether or not it can contribute to answering and addressing research questions about MSA archaeology in the

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	region - Waterberg region, Limpopo Province

Mitigation: Action/control	Responsibility	Timeframe
Permit should be applied for with SAHRA to conduct a detailed mapping and controlled sampling of the site. The permit should be applied for by the archaeologist under a supervision of a Principal Investigator in Stone Age Archaeology.	Archaeologist	Prior to the project construction phase

Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	Once the site has been mitigated there will be no need for further monitoring during both the construction and operational phase of the project.

Figure 19- Example of flakes and cores found at the site

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Site Name: MB-4

Type: MSA Site

Density (Medium): Large concentration of flakes, retouched flakes and cores

Location/GPS Coordinates: S23 37 16.2 E27 56 57.8

Approximate Age: 300-60k.y.a old

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W130	127m	7m

Site Description:

The site is medium size MSA site dominated by flakes, retouched flakes and cores (Figure 20). Parent material is found in association with the tool - some pebble boulder resembling typical hammer stone (Figure 21). It signifies a typical MSA industrial site. Some of the cores are prepared cores and some of the retouched flakes are elongated resembling typical MSA blades. Like MB-3, the site measures approximately 31m in length and 18m in width (Figure 22). It is located approximately 81m form MB-3, another MSA site.

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.A	-	Regional (WOM) & Site (WM)	High (WOM) & Low (WM)	High/Medium significance	Definite (WOM) & probable (WM)	Long-term: Construction & operation phase	D

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Nature of Activities:

1. Construction Phase: Clearing of the servitude and development of associated infrastructure such as access roads.

2. Operation Phase: Traversing of the site by special purpose vehicles and dozers during servitude maintenance.

	WOM	WM
Probability	Definite (5)	Probable (2)
Duration	Long term (4)	Long term (4)
Scale	Regional (3)	Site (2)
Magnitude/Severity	High (8)	Medium (6)
Significance	(75)High	(24) Low
Status (positive or negative)	Negative	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	

Mitigation: Either preserve the site in situ or conduct an extensive data collection and controlled mapping of the site before the project construction phase. A permit should be applied for with SAHRA for extensive data collection and mapping of the site. Following which a Phase 2 HIA report should be developed and submitted to the client for the attention of the ECO

Cumulative impacts: Cumulative impact are predicted to occur from the construction and operational activities of the transmission line.

Residual Impacts:

- The project will positively contribute to the transmission of power loads from Medupi to Borutho.
- The site will be impacted negatively by both the construction and operation activities even

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when mitigated

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is of High/Medium heritage significance and it needs to be mitigated by means of extensive data collection and controlled mapping before the construction phase of the project.	
Project component/s	Construction phase of the project
Potential Impact	In case the site is not mitigated as proposed above, the following impacts are predicted: destruction of sites and loss of data that could potential address scientific research questions about the MSA industry in Waterberg region of the Limpopo Province.
Project component/s	Operational phase of the project
Potential Impact	Mitigation measures applied to the site before the construction phase will minimise any potential impact at this stage of the project.
Activity/risk source	Exclusion of the above objectives from the overall EMP
Mitigation: Target/Objective	The site should be mitigated by mean of detailed mapping and controlled sampling. This should be done before the construction phase of the project. The objective is to collect as much data about the site and to assess whether or not it can contribute to answering and addressing research questions about MSA archaeology in the region - Waterberg region, Limpopo Province

Mitigation: Action/control	Responsibility	Timeframe
Permit should be applied for with SAHRA to conduct a detailed mapping and controlled sampling of the site. The permit should be applied for by the archaeologist under a supervision of a Principal Investigator in Stone Age Archaeology.	Archaeologist	Prior to the project construction phase

Performance	The type of indicator used here will be Actionable Indicators – this will

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Indicator	measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	Once the site has been mitigated there will be no need for further monitoring during both the construction and operational phase of the project.

Figure 20 - Example of flakes and cores found at the site

Figure 21- Example of core, retouched flake and harmer stone found at the site

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Figure 22- Picture showing the extent of the site

Site Name: MB-5

Type: MSA Site

Density (Medium): Flakes and cores

Location/GPS Coordinates: S23 37 15.5 E27 56 59.2

Approximate Age: 300-60k.y.a old

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W130	85m	15m

Site Description:

The site mainly consists of flakes and core and is located approximately 44m from MB-4 (Figure 23). No parent material was found at the site and an ephemeral drainage line passes through the site (Figure 24). In extent the site is of smaller size as compared to MB-3 and MB-4. It measures 10m in length and probably 6m in width (Figure 24).

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Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.A	-	Site	Low (WOM/WM)	High/Medium significance	Probable (WOM/MW)	Long-term: Construction & operation phase	B

Nature of Activities:

1. Construction Phase: Clearing of the servitude and development of associated infrastructure such as access roads.

2. Operation Phase: Traversing of the site by special purpose vehicles and dozers during servitude maintenance.

	WOM	WM
Probability	Probable (2)	Probable (2)
Duration	Long term (4)	Medium term (3)
Scale	Site (2)	Site (2)
Magnitude/Severity	Medium (6)	Medium (6)
Significance	(24)Low	(22) Low
Status (positive or negative)	Negative	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation: The site requires mapping and controlled sampling before the project construction		

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phase. A permit should be applied for with SAHRA for controlled sampling and mapping of the site. Following which a Phase 2 HIA report should be developed and submitted to the client for the attention of the ECO
Cumulative impacts: Cumulative impact are predicted to occur from the construction and operational activities of the transmission line.
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho. • The site will be impacted negatively by both the construction and operation activities even when mitigated

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is of High/Medium heritage significance and it needs to be mitigated by means of mapping and controlled sampling before the construction phase of the project.

Project component/s	Construction phase of the project
Potential Impact	In case the site is not mitigated as proposed above, the following impacts are predicted: destruction of sites and loss of data that could potential address scientific research questions about the MSA industry in Waterberg region of the Limpopo Province.
Project component/s	Operational phase of the project
Potential Impact	Mitigation measures applied to the site before the construction phase will minimise any potential impact at this stage of the project.
Activity/risk source	Exclusion of the above objectives from the overall EMP

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Mitigation: Target/Objective	The site should be mitigated by mean of detailed mapping and controlled sampling. This should be done before the construction phase of the project. The objective is to collect as much data about the site and to assess whether or not it can contribute to answering and addressing research questions about MSA archaeology in the region - Waterberg region, Limpopo Province

Mitigation: Action/control	Responsibility	Timeframe
Permit should be applied for with SAHRA to conduct a detailed mapping and controlled sampling of the site. The permit should be applied for by the archaeologist under a supervision of a Principal Investigator in Stone Age Archaeology.	Archaeologist	Prior to the project construction phase

Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	Once the site has been mitigated there will be no need for further monitoring during both the construction and operational phase of the project.

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Figure 23- Example of retouched flakes and core found at the site.

Figure 24 - Extent of the site. Note the drainage line as indicated by means of a yellow arrows.

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Site Name: MB-6

Type: MSA Site

Density (Medium): Flakes and cores

Location/GPS Coordinates: S23 37 14.7 E27 57 02.1

Approximate Age: 300-60k.y.a old

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W130	16m	12m

Site Description:

The site consists of flakes and core and is located approximately 30m from MB-6a (Figure 25). In extent the site measures approximately 25m in length and 12m in width.

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.A	-	Site	Low (WOM/WM)	High/Medium significance	Probable (WOM/MW)	Long-term: Construction & operation phase	B

Nature of Activities:

1. Construction Phase: Clearing of the servitude and development of associated infrastructure such as access roads.

2. Operation Phase: Traversing of the site by special purpose vehicles and dozers during servitude

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maintenance.		
	WOM	WM
Probability	Probable (2)	Probable (2)
Duration	Long term (4)	Medium term (3)
Scale	Site (2)	Site (2)
Magnitude/Severity	Medium (6)	Medium (6)
Significance	(24)Low	(22) Low
Status (positive or negative)	Negative	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation: The site requires mapping and controlled sampling before the project construction phase. A permit should be applied for with SAHRA for controlled sampling and mapping of the site. Following which a Phase 2 HIA report should be developed and submitted to the client for the attention of the ECO		
Cumulative impacts: Cumulative impact are predicted to occur from the construction and operational activities of the transmission line.		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho. • The site will be impacted negatively by both the construction and operation activities even when mitigated		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is of High/Medium heritage significance and it needs to be mitigated by means of mapping and controlled sampling before the construction phase of the project.

Project component/s	Construction phase of the project
Potential Impact	In case the site is not mitigated as proposed above, the following impacts are predicted: destruction of sites and loss of data that could potential address scientific research questions about the MSA industry in Waterberg region of the Limpopo Province.
Project component/s	Operational phase of the project
Potential Impact	Mitigation measures applied to the site before the construction phase will minimise any potential impact at this stage of the project.
Activity/risk source	Exclusion of the above objectives from the overall EMP
Mitigation: Target/Objective	The site should be mitigated by mean of detailed mapping and controlled sampling. This should be done before the construction phase of the project. The objective is to collect as much data about the site and to assess whether or not it can contribute to answering and addressing research questions about MSA archaeology in the region - Waterberg region, Limpopo Province

Mitigation: Action/control	Responsibility	Timeframe
Permit should be applied for with SAHRA to conduct a detailed mapping and controlled sampling of the site. The permit should be applied for by the archaeologist under a supervision of a Principal Investigator in Stone Age Archaeology.	Archaeologist	Prior to the project construction phase

Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	Once the site has been mitigated there will be no need for further monitoring during both the construction and operational phase of the project.

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Figure 25- Example of flakes and cores found at the site

Site Name: MB-6a

Type: MSA Site

Density (Medium): Flakes and cores

Location/GPS Coordinates: S23 37 13.9 E27 57 01.5

Approximate Age: 300-60k.y.a old

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W130	44m	47m

Site Description:

The site consists of flakes and core and is located approximately 30m from MB-6 (Figure 26). The site fall outside the development footprint.

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Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.B	-	Local	Negligible (WOM/WM)	Medium significance	Improbable (WOM/MW)	Short term	A

Nature of Activities:

1. Construction Phase: No direct impact predicted - the site fall outside the development footprint

2. Operation Phase: No direct impact predicted - the site fall outside the development footprint.

	WOM	WM
Probability	Improbable (1)	Improbable (1)
Duration	Short term (1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(4)Negligible	(4) Negligible
Status (positive or negative)	Negative	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation: No further action required - the site fall outside the development footprint.		
Cumulative impacts: The site can potentially be impacted through secondary impact as it falls outside the development footprint. Therefore, no direct cumulative impact are predicted.		

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Residual Impacts:

- The project will positively contribute to the transmission of power loads from Medupi to Borutho.
- The site will not directly be impacted because it falls outside development footprint. Therefore, there are no negative residual impacts predicated at this project stage (both operation & construction). Residual impact may develop with future expansion.

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is of Medium heritage significance - however, it falls outside the project foot print. There are not further actions proposed with regards to mitigating the site.

Project component/s	Construction phase of the project
Potential Impact	The site will not be directly affected by the proposed development - it falls outside the project footprint
Project component/s	Operational phase of the project
Potential Impact	The site will not be directly affected by the proposed development - it falls outside the project footprint
Activity/risk source	N/A
Mitigation: Target/Objective	There are not mitigation measures proposed for the site as it falls outside the project development footprint.

Mitigation: Action/control	Responsibility	Timeframe
There are not mitigation measures are proposed for the site as it falls outside the project development footprint.	N/A	N/A

Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with

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	the approval of the EMP against their actual implementation.
Monitoring	N/A

Figure 26 - Example of core found at the site

Site Name: MB-7

Type: MSA Site

Density (Medium): Flakes and cores

Location/GPS Coordinates: S23 37 13.3 E27 57 04.5

Approximate Age: 300-60k.y.a old

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W130	90m	32m

Site Description:

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The site consists of flakes and core (Figure 27). It is located approximately 28m from MB-7. The site fall outside the development footprint.

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.B	-	Local	Negligible	Medium significance	Improbable	Short term	A

Nature of Activities: 1. Construction Phase: No direct impact predicted - the site fall outside the development footprint 2. Operation Phase: No direct impact predicted - the site fall outside the development footprint.		
	WOM	WM
Probability	Improbable (1)	Improbable (1)
Duration	Short term (1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(4)Negligible	(4) Negligible
Status (positive or negative)	Negative	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation: No further action required - the site fall outside the development footprint.		
Cumulative impacts: The site can potentially be impacted through secondary impact as it falls		

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outside the development footprint. Therefore, no direct cumulative impact are predicted.
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho. • The site will not directly be impacted because it falls outside development footprint. Therefore, there are no negative residual impacts predicated at this project stage (both operation & construction). Residual impact may develop with future expansion.

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is of Medium heritage significance - however, it falls outside the project development foot print. There are not further actions proposed with regards to mitigating the site.			
Project component/s	Construction phase of the project		
Potential Impact	The site will not be directly affected by the proposed development - it falls outside the project footprint		
Project component/s	Operational phase of the project		
Potential Impact	The site will not be directly affected by the proposed development - it falls outside the project footprint		
Activity/risk source	N/A		
Mitigation: Target/Objective	There are not mitigation measures proposed for the site as it falls outside the project development footprint.		
Mitigation: Action/control		Responsibility	Timeframe
There are not mitigation measures are proposed for the site as it falls outside the project development footprint.		N/A	N/A
Performance	The type of indicator used here will be Actionable Indicators – this will		

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Indicator	measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	N/A

Figure 27- Example of cores found at the site

Site Name: MB-8

Type: MSA Occurrence

Density (Low): Flakes and cores

Location/GPS Coordinates: S23 37 13.3 E27 57 04.5

Approximate Age: 300-60k.y.a old

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W130	84m	29m

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Site Description:

The site consists of flakes and core (Figure 28). It is located approximately 28m from MB-8. The site fall outside the development footprint.

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.B	-	Local	Negligible	Medium significance	Improbable	Short term	A

Nature of Activities:

1. Construction Phase: No direct impact predicted - the site fall immediately outside the development footprint

2. Operation Phase: No direct impact predicted - the site fall immediately outside the development footprint.

	WOM	WM
Probability	Improbable (1)	Improbable (1)
Duration	Short term (1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(4)Negligible	(4) Negligible
Status (positive or negative)	Negative	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	No

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Can impacts be mitigated?	Yes
Mitigation: No further action required - the site fall outside the development footprint.	
Cumulative impacts: The site can potentially be impacted through secondary impact as it falls outside the development footprint. Therefore, no direct cumulative impact are predicted.	
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho. • The site will not directly be impacted because it falls outside the development footprint. Therefore, there are no negative residual impacts predicated at this project stage (both operation & construction). Residual impact may develop with future expansion.	

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is of Medium heritage significance - however, it falls outside the project footprint. There are not further actions proposed with regards to mitigating the site.

Project component/s	Construction phase of the project		
Potential Impact	The site will not be directly affected by the proposed development - it falls outside the project footprint		
Project component/s	Operational phase of the project		
Potential Impact	The site will not be directly affected by the proposed development - it falls outside the project footprint		
Activity/risk source	N/A		
Mitigation: Target/Objective	There are not mitigation measures proposed for the Occurrence as it falls outside the project development footprint.		
Mitigation: Action/control		Responsibility	Timeframe

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There are not mitigation measures are proposed for the site as it falls outside the project development footprint.	N/A	N/A
Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.	
Monitoring	N/A	

Figure 28-- Example of cores found at the site

Site Name:	MB-9
Type:	MSA occurrence
Density (Low):	Flakes and cores
Location/GPS Coordinates:	S23 37 14.2 E27 57 05.7
Approximate Age:	Older than 60 years
Applicable NHRA Section:	Section 35

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Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W130	102m	8m

Site Description:

The site is an MSA occurrence of flakes and cores (Figure 29).

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.B	-	Local	Negligible	Medium	Probable	Short-term	A

Nature of Activities:

1. Construction Phase: No direct impact predicted - the site fall immediately outside the development footprint

2. Operation Phase: No direct impact predicted - the site fall immediately outside the development footprint.

	WOM	WM
Probability	Probable (2)	Probable (2)
Duration	Short term (1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(8)Negligible	(8) Negligible
Status (positive or negative)	Positive	Positive

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Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes, but no further action is require regarding this site	
Mitigation: No further action required		
Cumulative impacts: No cumulative impacts predicated		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho. • No negative residual impacts predicted, this is not a site but a scatter or isolated potshard		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The scatter or isolated potshard is insignificant and no further action is required

Project component/s	Construction phase of the project	
Potential Impact	This is insignificant scatter and there are no potential impacts predicted	
Project component/s	Operational phase of the project	
Potential Impact	This is insignificant scatter and there are no potential impacts predicted	
Activity/risk source	N/A	
Mitigation: Target/Objective	There are no mitigation measures proposed for the scatter - it is of low heritage significance	
Mitigation: Action/control	Responsibility	Timeframe

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There are no mitigation measures proposed for the scatter - it is of low heritage significance	N/A	N/A
Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.	
Monitoring	N/A	

Figure 29- Example of cores found at the site

Site Name:	MB-9a (referred to 9a because there was duplication of site numbers - the site is located a distance from MB-9)
Type:	LIA potshards/Occurrence
Density (Low):	Potshard/Occurrence
Location/GPS Coordinates:	S23 37 11.5 E27 57 16.1
Approximate Age:	Older than 60 years

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Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W129	43m	27m

Site Description:

The site consists of flakes and core (Figure 30). Cores are the dominant form of material culture at the site.

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.B	-	Local	Negligible	Medium significance	Improbable	Short term	A

Nature of Activities:

1. Construction Phase: No direct impact predicted - the site fall outside the development footprint

2. Operation Phase: No direct impact predicted - the site fall outside the development footprint.

	WOM	WM
Probability	Improbable (1)	Improbable (1)
Duration	Short term (1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(4)Negligible	(4) Negligible

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Status (positive or negative)	Negative	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation: No further action required - the site fall outside the development footprint.		
Cumulative impacts: The site can potentially be impacted through secondary impact as it falls outside the development footprint. Therefore, no direct cumulative impact are predicted.		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho. • The site will not directly be impacted because it falls outside development footprint. Therefore, there are no negative residual impacts predicated at this project stage (both operation & construction). Residual impact may develop with future expansion.		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is of Medium heritage significance - however, it falls outside the project development foot print. There are not further actions proposed with regards to mitigating the site.

Project component/s	Construction phase of the project
Potential Impact	The site will not be directly affected by the proposed development - it falls outside the project footprint
Project component/s	Operational phase of the project
Potential Impact	The site will not be directly affected by the proposed development - it falls outside the project footprint
Activity/risk source	N/A

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Mitigation: Target/Objective	There are not mitigation measures proposed for the site as it falls outside the project development footprint.		
Mitigation: Action/control		Responsibility	Timeframe
There are not mitigation measures are proposed for the site as it falls outside the project development footprint.		N/A	N/A
Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.		
Monitoring	N/A		

Figure 30 - Example of core found at the site

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Site Name: MB-10

Type: LIA potshard scatter

Density (Low): potshard scatter

Location/GPS Coordinates: S23 37 04.8 E27 58 28.0

Approximate Age: Older than 60 years

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W122	77m	4m

Site Description:

This is not a site rather a LIA isolated potshard or scatter found in the middle of a temporary pan (Figure 31). The scatter is located approximately 52m from MB-10a and fall directly within the propose corridor line servitude.

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.C	-	Local	Negligible	Low	Highly probable	Short term	A

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Nature of Activities:

1. Construction Phase: The scatter will be affected, but is of low significance

2. Operation Phase: It will probably be already affected by construction or natural activities

	WOM	WM
Probability	Highly probable (4)	Highly probable (4)
Duration	Short term (1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(16)Negligible	(16) Negligible
Status (positive or negative)	Positive	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No	
Mitigation: No further action required - insignificant scatter/isolated potshard		

Cumulative impacts: No cumulative impacts predicated

Residual Impacts:

- The project will positively contribute to the transmission of power loads from Medupi to Borutho.
- No negative residual impacts predicted, this is not a site but a scatter or isolated potshard

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The scatter or isolated potshard is insignificant and no further action is required

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Project component/s	Construction phase of the project
Potential Impact	This is insignificant scatter - it will be impacted, but there are no further actions proposed to mitigate it
Project component/s	Operational phase of the project
Potential Impact	This is insignificant scatter and there are no potential impacts predicted for it during project operational phase
Activity/risk source	N/A
Mitigation: Target/Objective	There are no mitigation measures proposed for the scatter - it is of low heritage significance .

Mitigation: Action/control	Responsibility	Timeframe
There are no mitigation measures proposed for the scatter - it is of low heritage significance.	N/A	N/A

Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	N/A

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Figure 31 -- Potshard, base of a pot -found in the middle of a temporary pan

Site Name: MB-10a

Type: LIA potshards/Occurrence

Density (Low): Potshard/Occurrence

Location/GPS Coordinates: S23 37 06.3 E27 58 28.9

Approximate Age: Older than 60 years

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W122	130m	5m

Site Description:

This is not a site rather an LIA potshard occurrence. Like MB-10, these shards are found in the middle of a temporary pan (Figure 32). The shards were predominantly sides of a different pots with one rim (Figure 32 - in the middle of red circle). Because there were diagnostic

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features that could yield more information about the pottery tradition, except for the rim, the occurrence heritage significance was deemed low. In total there were approximately 15 pieces/fragment of pottery collected together for purposes of photography.

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.C	-	Local	Negligible	Low significance	Highly probable	Short term	A

Nature of Activities: 1. Construction Phase: The pottery will be affected, but it is of negligible impact significance 2. Operation Phase: It will probably be already affected by construction or natural activities		
	WOM	WM
Probability	Highly probable (4)	Highly probable (4)
Duration	Short term (1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(16)Negligible	(16) Negligible
Status (positive or negative)	Positive	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No	
Mitigation: No further action is required even though the occurrence fall within the proposed		

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development footprint. It is of low heritage significance and negligible impact significance.
Cumulative impacts: No cumulative impacts predicated
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho. • No negative residual impacts predicted

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The occurrence or pottery fragments are insignificant and no further action is required to mitigate them

Project component/s	Construction phase of the project
Potential Impact	This is an occurrence of low heritage significance and there are no significant potential impacts predicted (negligible)
Project component/s	Operational phase of the project
Potential Impact	This is an occurrence of low heritage significance and has negligible impact significance - the construction or natural activities would have already impacted on it.
Activity/risk source	N/A
Mitigation: Target/Objective	There are no mitigation measures proposed for the occurrence - it is of low heritage significance and has negligible impact significance.

Mitigation: Action/control	Responsibility	Timeframe
There are no mitigation measures proposed for the occurrence - it is of low heritage significance and has negligible impact significance.	N/A	N/A

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Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	N/A

Figure 32 - Potshard pieces - collected together for purposes of photography. Note the rim in the middle of a red circle.

Site Name:	MB-11
Type:	Built environment & landscape site
Density (Low):	Approximately 3 structures
Location/GPS Coordinates:	S23 39 03.1 E27 59 35.1
Approximate Age:	Older than 60 years
Applicable NHRA Section:	Section 34
Nearest Pylon Position:	

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Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W111	99m	11m

Site Description:

The site consists of 3 structures- ruins of a labours quarter/storage facility (Figure 33), a reservoir and a cattle drinking pond (Figure 34). The site is located near what looks to have been farm industry site. Based on the type of brick use to construct what looks to have been labours quarter or storage faculty - the site looks to be over 60 years old. However, it has to be emphasis that this is a ruin that is not either structural sound or aesthetic appealing. The site fall immediately outside the 10m line corridor buffer.

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.C	-	Local	Negligible	Low significance	Probable	Short term	A

Nature of Activities:

1. Construction Phase: The pottery will be affected, but it is of negligible impact significance

2. Operation Phase: It will probably be already affected by construction or natural activities

	WOM	WM
Probability	Probable (2)	Probable (2)
Duration	Short term (1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)

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Significance	(8)Negligible	(8) Negligible
Status (positive or negative)	Positive	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes- but the site does not require mitigation.	
Mitigation: No further action required - the site is of low heritage significance with negligible impact significance and falls immediately outside the development footprint (i.e. 10m line corridor buffer) .		
Cumulative impacts: The site can potentially be impacted through secondary impact as it falls immediately outside the development footprint(i.e. 10m line corridor buffer).		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho. • The site will not directly be impacted because it falls immediately outside development footprint (i.e. 10m line corridor buffer). There are no negative residual impacts predicated - the site is ruins of low heritage significance		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is of low heritage significance and it falls immediately outside the project foot print (i.e. 10m line corridor buffer). There are not further actions proposed with regards to mitigating the site.

Project component/s	Construction phase of the project
Potential Impact	The site will not be directly affected by the proposed development - it falls immediately outside the project footprint (i.e. 10m line corridor buffer)
Project component/s	Operational phase of the project

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Potential Impact	The site will not be directly affected by the proposed development - it falls immediately outside the project footprint (i.e. 10m line corridor buffer)
Activity/risk source	N/A
Mitigation: Target/Objective	There are not mitigation measures proposed for the site as it falls outside of the project development footprint.

Mitigation: Action/control	Responsibility	Timeframe
There are not mitigation measures are proposed for the site as it falls outside of the project development footprint.	N/A	N/A

Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	N/A

Figure 33 - House ruins

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Figure 34 - Cattle drinking pond (left) and small reservoir (right).

Site Name: MB-12

Type: Built environment & landscape site

Density (Low): Approximately 4 structures

Location/GPS Coordinates: S23 39 11.1 E27 59 39.2

Approximate Age: Less than 60 years old

Applicable NHRA Section: Section 34

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W111	175m	1m

Site Description:

The site consists of 4 structures- farm labours house and a reservoir (Figure 35), a cattle loading ramp and fence, and a storage shed (recent in age) (Figure 36). The site looks to be farm industry site -cattle ranching.

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Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
Not a historic site	-	Local	Negligible	-	Improbable	Short term	A

Nature of Activities:

1. Construction Phase: The site will be affected, but it is not a heritage site and is of negligible impact significance

2. Operation Phase: The site will be affected, but it is not a heritage site and is of negligible impact significance

	WOM	WM
Probability	Probable (2)	Probable (2)
Duration	Short term (1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(8)Negligible	(8) Negligible
Status (positive or negative)	Positive	Positive
Reversibility	Highly	Highly
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes- but it is not heritage sites and it does not require mitigation.	
Mitigation: No further action required - the site is not a heritage site and has negligible impact		

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significance even though it falls directly within the line corridor servitude.
Cumulative impacts: Construction and operational phase of the project will cumulatively impact on the site
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is not a heritage site - it is less than 60 years in age.

Project component/s	Construction phase of the project
Potential Impact	The site will be directly affected by the proposed development - it falls within the project footprint (i.e. 10m line corridor buffer), but is not a heritage site
Project component/s	Operational phase of the project
Potential Impact	The site will be directly affected by the proposed development - it falls within the project footprint (i.e. 10m line corridor buffer), but is not a heritage site
Activity/risk source	N/A
Mitigation: Target/Objective	There are not mitigation measures proposed for the site - it is not a heritage or historic site

Mitigation: Action/control	Responsibility	Timeframe
There are not mitigation measures proposed for the site - it is not a heritage or historic site	N/A	N/A

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Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	N/A

Figure 35 - Farm labourers house and reservoir

Figure 36 - Cattle loading ramp and fence. Steel and corrugated IRB iron sheet shed

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Site Name: MB-13

Type: Built environment & landscape site

Density (Low): Approximately 4 structure

Location/GPS Coordinates: S23 40 01.2 E28 01 40.8

Approximate Age: Less than 60 years old

Applicable NHRA Section: Section 34

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W264	45m	40m

Site Description:

The site consists of approximately 4 structures- a derelict farm house fenced off using mesh and barb wire (Figure 37), 2 x cattle drinking ponds and a reservoir (Figure 38).

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
Not a historic site	-	Local	Negligible	-	Improbable	Short term	A

Nature of Activities:

1. Construction Phase: The site will not be directly affected it falls outside the development footprint. It is not a heritage site and is of negligible impact significance

2. Operation Phase: The site will not be directly affected it falls outside the development footprint.

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It is not a heritage site and is of negligible impact significance		
	WOM	WM
Probability	Probable (2)	Probable (2)
Duration	Short term (1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(8)Negligible	(8) Negligible
Status (positive or negative)	Positive	Positive
Reversibility	Highly	Highly
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	The site is not heritage sites and it does not require mitigation.	
Mitigation: No further action required - the site is not a heritage site and has negligible impact significance. It also falls outside the project development footprint		
Cumulative impacts: Construction and operational phase of the project will cumulatively impact on the site		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is not a heritage site - it is less than 60 years in age and fall outside.

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Project component/s	Construction phase of the project
Potential Impact	The site will not be directly affected by the proposed development - it falls outside the development footprint (i.e. 10m line corridor buffer), but is not a heritage site
Project component/s	Operational phase of the project
Potential Impact	The site will not be directly affected by the proposed development - it falls outside the development footprint (i.e. 10m line corridor buffer), but is not a heritage site
Activity/risk source	N/A
Mitigation: Target/Objective	There are not mitigation measures proposed for the site - it is not a heritage or historic site and fall outside development footprint

Mitigation: Action/control	Responsibility	Timeframe
There are not mitigation measures proposed for the site - it is not a heritage or historic site and fall outside development footprint	N/A	N/A

Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	N/A

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Figure 37 - Farm labourers house fence off

Figure 38 - 2x cattle drinking ponds and a reservoir

Site Name:	MB-14
Type:	Built environment & landscape site
Density (Low):	Approximately 3 structure

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Location/GPS Coordinates: S23 39 57.2 E28 03 11.9

Approximate Age: Less than 60 years old

Applicable NHRA Section: Section 34

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W272	116m	11 m

Site Description:

The site consists of approximately 3 farm labours houses.

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
Not a historic site	-	Local	Negligible	-	Improbable	Short term	A

Nature of Activities:

1. Construction Phase: The site will not be directly affected it falls outside the development footprint. It is not a heritage site and is of negligible impact significance

2. Operation Phase: The site will not be directly affected it falls outside the development footprint. It is not a heritage site and is of negligible impact significance

	WOM	WM
Probability	Probable (2)	Probable (2)
Duration	Short term (1)	Short term (1)

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Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(8)Negligible	(8) Negligible
Status (positive or negative)	Positive	Positive
Reversibility	Highly	Highly
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	The site is not heritage sites and it does not require mitigation.	
Mitigation: No further action required - the site is not a heritage site and has negligible impact significance. It also falls outside the project development footprint		
Cumulative impacts: Construction and operational phase of the project will cumulatively impact on the site		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is not a heritage site - it is less than 60 years in age and fall outside development footprint.

Project component/s	Construction phase of the project
Potential Impact	The site will not be directly affected by the proposed development - it falls outside the development footprint (i.e. 10m line corridor buffer), but is not a heritage site
Project component/s	Operational phase of the project

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Potential Impact	The site will not be directly affected by the proposed development - it falls outside the development footprint (i.e. 10m line corridor buffer), but is not a heritage site
Activity/risk source	N/A
Mitigation: Target/Objective	There are not mitigation measures proposed for the site - it is not a heritage or historic site and fall outside development footprint

Mitigation: Action/control	Responsibility	Timeframe
There are not mitigation measures proposed for the site - it is not a heritage or historic site and fall outside development footprint	N/A	N/A

Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	N/A

Site Name: MB-15

Type: MSA Site

Density (Medium): Cores and hammer stones

Location/GPS Coordinates: S23 40 16.5 E28 06 09.3

Approximate Age: 300-60k.y.a old

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W285	55m	11m

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Site Description:

The site is approximately 40m^2 pebble site. It predominately consists of cores and hammer stone. Cores are the dominant form of material culture (Figure 39). The existence of pebble is a result of geological alluvial processes because site is not located very far from Klipriver. The pebble starts from W285.

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.A	-	Local	Negligible (WOM/WM)	High/Medium significance	Improbable (WOM/MW)	Long-term: Construction & operation phase	A

Nature of Activities:

1. Construction Phase: The site will not be directly affected it falls outside the development footprint.

2. Operation Phase: The site will not be directly affected it falls outside the development footprint.

	WOM	WM
Probability	Probable (2)	Probable (2)
Duration	Medium term (3)	Medium term (3)
Scale	Local (2)	Local (2)
Magnitude/Severity	Low (2)	Low (2)
Impact Significance	(14)Negligible	(14) Negligible
Status (positive or negative)	Positive	Positive

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Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes - but the site does not require mitigation it falls outside the proposed 10m buffer line corridor	
Mitigation: No further action required. It also falls outside the project development footprint		
Cumulative impacts: Construction and operational phase of the project will cumulatively impact on the site		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is of High/Medium heritage significance but it fall outside the proposed development footprint.

Project component/s	Construction phase of the project
Potential Impact	The site will not be directly affected by the proposed development - it falls outside the development footprint (i.e. 10m line corridor buffer)
Project component/s	Operational phase of the project
Potential Impact	The site will not be directly affected by the proposed development - it falls outside the development footprint (i.e. 10m line corridor buffer)
Activity/risk source	N/A
Mitigation: Target/Objective	The site will not be directly affected by the proposed development - it falls outside the development footprint (i.e. 10m line corridor buffer)

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Mitigation: Action/control	Responsibility	Timeframe
The site will not be directly affected by the proposed development - it falls outside the development footprint (i.e. 10m line corridor buffer)	N/A	N/A

Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	N/A

Figure 39 - Example of cores found at the site

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Site Name: MB-16

Type: MSA Site

Density (Medium): Retouched flakes and cobbles

Location/GPS Coordinates: S23 40 15.7 E28 06 12.6

Approximate Age: 300-60k.y.a old

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W285	150m	10.5m

Site Description:

The site is approximately 40 + m^2 pebble and cobble site. It contain retouched flakes in term of the MSA material culture (Figure 40). In extent it continue to the banks of Klipriver.

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.C	-	Local	Negligible (WOM/WM)	Low significance	Improbable (WOM/MW)	Long-term: Construction & operation phase	A

Nature of Activities:

1. Construction Phase: The site will not be directly affected it falls immediately outside the development footprint.

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2. Operation Phase: The site will not be directly affected it falls immediately outside the development footprint.		
	WOM	WM
Probability	Probable (2)	Probable (2)
Duration	Medium term (3)	Medium term (3)
Scale	Local (2)	Local (2)
Magnitude/Severity	Low (2)	Low (2)
Impact Significance	(14)Negligible	(14) Negligible
Status (positive or negative)	Positive	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes - but the site does not require mitigation it falls outside the proposed 10m buffer line corridor	
Mitigation: No further action required. It also falls outside the project development footprint		
Cumulative impacts: Construction and operational phase of the project will cumulatively impact on the site		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is of low heritage significance - but it fall outside the proposed development footprint.

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Project component/s	Construction phase of the project
Potential Impact	The site will not be directly affected by the proposed development - it falls outside the development footprint (i.e. 10m line corridor buffer)
Project component/s	Operational phase of the project
Potential Impact	The site will not be directly affected by the proposed development - it falls outside the development footprint (i.e. 10m line corridor buffer)
Activity/risk source	N/A
Mitigation: Target/Objective	The site will not be directly affected by the proposed development - it falls outside the development footprint (i.e. 10m line corridor buffer)

Mitigation: Action/control	Responsibility	Timeframe
The site will not be directly affected by the proposed development - it falls outside the development footprint (i.e. 10m line corridor buffer)	N/A	N/A

Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	N/A

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Figure 40 - Example of retouched flakes found at the site.

Site Name: MB-17

Type: MSA Site

Density (Low): Isolate Core/Scatter

Location/GPS Coordinates: S23 40 11.9 E28 06 23.5

Approximate Age: 300-60k.y.a old

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W284	158m	30m

Site Description:

This is not a site rather a scatter of an isolated core found on the edges of a drainage channel feeding to the banks of the Klipriver (Figure 41). By the look of things it may have been washed down to its current position.

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Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.C	-	Local	Negligible (WOM/WM)	Low significance	Improbable (WOM/MW)	Short-term	A

Nature of Activities:

1. Construction Phase: The site will not be directly affected by the project- it falls immediately outside the development footprint.

2. Operation Phase: The site will not be directly affected b y the project - it falls immediately outside the development footprint.

	WOM	WM
Probability	Improbable (1)	Improbable (1)
Duration	Medium term (3)	Medium term (3)
Scale	Local (2)	Local (2)
Magnitude/Severity	Low (2)	Low (2)
Impact Significance	(7)Negligible	(7) Negligible
Status (positive or negative)	Positive	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No

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Can impacts be mitigated?	Yes - but the site does not require mitigation it falls outside the proposed 10m buffer line corridor
Mitigation: No further action required - the site is not a heritage site rather a scatter and has negligible impact significance. It also falls outside the project development footprint	
Cumulative impacts: Construction and operational phase of the project will cumulatively impact on the site	
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.	

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. This is not a site rather an isolated MSA core scatter of low heritage significance and fall outside the proposed development footprint.

Project component/s	Construction phase of the project	
Potential Impact	The scatter will not be directly affected by the proposed development - it falls outside the development footprint (i.e. 10m line corridor buffer), but is not a heritage site	
Project component/s	Operational phase of the project	
Potential Impact	The scatter will not be directly affected by the proposed development - it falls outside the development footprint (i.e. 10m line corridor buffer), but is not a heritage site	
Activity/risk source	N/A	
Mitigation: Target/Objective	There are not mitigation measures proposed for the scatter- it is not a heritage or historic site and fall outside development footprint	
Mitigation: Action/control	Responsibility	Timeframe

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There are not mitigation measures proposed for the site - it is not a heritage or historic site and fall outside development footprint	N/A	N/A
Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.	
Monitoring	N/A	

Figure 41- Isolated core.

Site Name:	MB-18
Type:	LIA/Historic grinding stone and grinder
Density (Low):	3 x pieces of a grinding stone and 1x grinder
Location/GPS Coordinates:	S23 40 11.5 E28 06 30.8

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Approximate Age: Older than 60 years

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W283	53m	9m

Site Description:

The sites consist of 3 pieces of a grinding stone and a grinder (Figure 42). There were no structures or other forms of material culture associated with them.

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact Scale	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.B	-	Local	Negligible (WOM/WM)	Medium	Highly probable (WOM)	Short term: Construction phase	B

Nature of Activities:

1. Construction Phase: Clearing of the servitude and development of associated infrastructure such as access roads.

2. Operation Phase: N/A

	WOM	WM
Probability	Highly probable (4)	Improbable (1)
Duration	Short term(1)	Short term (1)

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Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(16)Negligible	(4) Negligible
Status (positive or negative)	Negative	Positive
Reversibility	Low	High
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation: Collection of the materials (grinding stone pieces & the grinder) from the field and placing them at an accredited archaeological research institution such as the University of the Witwatersrand (Wits) Archaeology Department. The reason is that material is relevant for teaching purposes.		
Cumulative impacts: No cumulative impact are predicted once the material is collected		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho. • There are no negative impact regarding this scatter - it is of low heritage significance and its impact significance are negligible		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is of medium heritage significance and it needs to be mitigated by means of collection before the construction phase.

Project component/s	Construction phase of the project
Potential Impact	In case the grinding stone pieces and the grinder are not collected and placed at an accredited research institution with developed archaeology department, the following impacts are predicted:

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	destruction of materials that could contribute to teaching purposes about the prehistory of South Africa.
Project component/s	Operational phase of the project
Potential Impact	N/A
Activity/risk source	Exclusion of the above objectives from the overall EMP
Mitigation: Target/Objective	The grinding stone pieces and the grinder should be collected before the commencement of construction activities on site.

Mitigation: Action/control	Responsibility	Timeframe
Permit should be applied for to collect the material with SAHRA APM Unit by the involved archaeologist. The ECO should ensure that construction activities and machinery does not destruct the material before it is collected.	Permit application with SAHRA to collect the material - archaeologist. Collection of material - archaeologist or the ECO	Prior to the construction phase

Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	The ECO should ensure that the material is collected before commencement of construction activities

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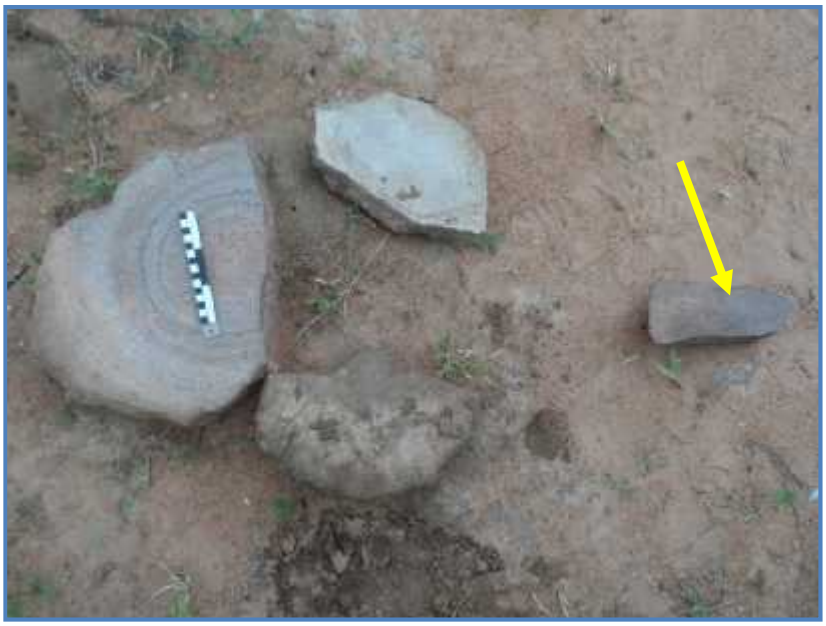

Figure 42- Pieces of a grinding stone and a grinder(yellow arrow)

Site Name:	MB-19 & 19a (1 site)
Type:	Historical ash Midden
Density (Medium):	Approximately 15m or less ash midden
Location/GPS Coordinates:	19- S23 40 10.7 E28 06 33.6 (4m from the centre of the line corridor) 19a - S23 40 10.4 E28 06 34.0 (2m from the centre of the line corridor 10m)
Approximate Age:	+/- 60 years old
Applicable NHRA Section:	Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W283	44m (19a) and 30m (19)	2m(19a) and 4m (19)

Site Description:

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The sites is thin layered historic ash midden covering a length of approximately 15m. No cultural materials were observed from the ashes. Ashes because the these a small concentration of ash heaps that form a single ash dump (Figure 43).

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact Scale	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.C	-	Local	Negligible (WOM/WM)	Low significance	Highly probable (WOM)	Short term: Construction phase	A

Nature of Activities:

1. Construction Phase: Clearing of the servitude and development of associated infrastructure such as access roads.

2. Operation Phase: N/A

	WOM	WM
Probability	Highly probable (4)	Highly probable (4)
Duration	Short term(1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(16)Negligible	(16) Negligible
Status (positive or negative)	Negative	Positive
Reversibility	Low	Low

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Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes, but this does not require any impact mitigation	
Mitigation: The site did not display any form of material culture in it. It is a thin layer of ash and as such no further action is required to mitigate it.		
Cumulative impacts: Cumulative impacts to the site are predicated during the construction and operational phase of the project		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho. • There are no negative impact regarding this site - it is of low heritage significance and its impact significance are negligible		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is of thin layer of ash midden and has low heritage significance and there is no need to mitigate it.

Project component/s	Construction phase of the project
Potential Impact	The site will be impacted by servitude clearing, but is of low heritage significance to mitigate it.
Project component/s	Operational phase of the project
Potential Impact	The site will be impacted by servitude clearing, but is of low heritage significance to mitigate it.
Activity/risk source	Exclusion of the above objectives from the overall EMP
Mitigation:	The site will be impacted by servitude clearing, but is a thin layer of

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Target/Objective	ash that has low heritage significance to mitigate it.	
Mitigation: Action/control	Responsibility	Timeframe
The site will be impacted by servitude clearing, but is a thin layer of ash that has low heritage significance to mitigate it.	N/A	N/A
Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.	
Monitoring	N/A	

Figure 43- Ash midden - thin layer

Site Name:	MB-20 (including sites MB-2a, MB-20b & MB20c)
Type:	LIA/Historic burnt daga floors pieces; daga floors and cement floors.
Density (Medium):	2 x pieces of the burnt daga floors pieces

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Location/GPS Coordinates: MB-20 S23 40 10.2 E28 06 34.8

MB-20a S23 40 10.8 E28 06 34.8

MB-20b S23 40 10.3 E28 06 34.8

MB-20c S23 40 10.1 E28 06 34.6

Approximate Age: +/- 60 years

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W283	69m (MB20); 65m (MB20a); 65m (MB-20b); 64m (20c)	4m (MB20); 14m (MB20a); 2m (MB-20b); 6m (20c)

Site Description:

The sites covers approximately 20m in length and approximately 5m in width. The site consists of starts from MB-20 and end at MB20c. It consists of 2 pieces of burnt daga floor (Figure 44), daga floors with glass and rusted metal pieces (Figure 45) and ruminants of cement floor (Figure 46). Beside the burnt data floor pieces, the site look very recent.

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact Scale	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.C	-	Local	Negligible (WOM/WM)	Low	Highly probable (WOM)	Short term: Construction phase	A

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Nature of Activities:

1. Construction Phase: Clearing of the servitude and development of associated infrastructure such as access roads.

2. Operation Phase: N/A

	WOM	WM
Probability	Highly probable (4)	Highly probable (4)
Duration	Short term(1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(16)Negligible	(16) Negligible
Status (positive or negative)	Negative	Positive
Reversibility	Low	High
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	

Mitigation: The predominance of site of recent with exception to the burnt daga floor pieces. Based on the possible age of the site and what is contained at the site there are no proposed mitigation measures for this site.

Cumulative impacts: predicted during construction phase of the project.

Residual Impacts:

- The project will positively contribute to the transmission of power loads from Medupi to Borutho.

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is of low heritage significance and there are no mitigation measures proposed for it.

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Project component/s	Construction phase of the project
Potential Impact	Portions of the site will be directly impacted by construction activities such as clearing of the servitude, but it is of low heritage significance.
Project component/s	Operational phase of the project
Potential Impact	N/A
Activity/risk source	N/A
Mitigation: Target/Objective	The site is of low heritage significance and there are no mitigation measures proposed for it.

Mitigation: Action/control	Responsibility	Timeframe
The site is of low heritage significance and there are no mitigation measures proposed for it.	N/A	N/A

Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	N/A

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Figure 44 - Pieces of burnt daga floor

Figure 45 - Daga floor with glass and rusted metal

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Figure 46- Daga floor with ruminant of cement (yellow arrow).

Site Name: MB-21

Type: Historical ash Midden

Density (Medium): Ash midden

Location/GPS Coordinates: S23 40 09.6 E28 06 36.0

Approximate Age: +/- 60 years old

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W283	104m	13m

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Site Description:

The sites is a thick layer of ash midden containing pieces of glass and metal objects (Figure 47). Based on the material contained in the midden, the midden look to be recent in age - less that 60 years. It has directly potential association with site MB-22.

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact Scale	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.C	-	Local	Negligible (WOM/WM)	Low significance	Improbable (WOM)	Short term: Construction phase	A

Nature of Activities:

1. Construction Phase: Clearing of the servitude and development of associated infrastructure such as access roads.

2. Operation Phase: N/A

	WOM	WM
Probability	Improbable (1)	Improbable (1)
Duration	Short term(1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(4)Negligible	(4)Negligible
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low

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Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes, but the site does not require any impact mitigation - it fall outside the line corridor	
Mitigation: The site fall outside the line corridor. There are not mitigation measures proposed for it.		
Cumulative impacts: Cumulative may result from secondary impacts.		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho. • There are no negative impact regarding this site - it is of low heritage significance and its impact significance are negligible and it fall outside the line corridor		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site a thick layered ash midden, but it is recent in age. This has contributed to be graded to site of low heritage significance and there is no need to mitigate it.

Project component/s	Construction phase of the project	
Potential Impact	The site will not be directly impacted project - it fall outside the 10m line corridor servitude.	
Project component/s	Operational phase of the project	
Potential Impact	The site will not be directly impacted project - it fall outside the 10m line corridor servitude.	
Activity/risk source	N/A	
Mitigation: Target/Objective	The site will not be directly impacted project - it fall outside the 10m line corridor servitude.	
Mitigation: Action/control	Responsibility	Timeframe

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The site will not be directly impacted project - it fall outside the 10m line corridor servitude.	N/A	N/A
Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.	
Monitoring	N/A	

Figure 47- Thick layered ash midden

Site Name:	MB-22
Type:	Built Environment & Landscape
Density (Low):	2 x structures
Location/GPS Coordinates:	S23 40 09.5 E28 06 37.1
Approximate Age:	Less than 60 years old
Applicable NHRA Section:	Section 34
Nearest Pylon Position:	

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Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W283	135m	7m

Site Description:

The sites is a built environment and landscape site consisting of 2x recent structure ruins. One of the ruins was built using red refractory bricks and the other is built using mud/daga (Figure 48). The structures direct potential association with MB-21. Both structure ruins are less than 60 years old.

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact Scale	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.C	-	Local	Negligible (WOM/WM)	Low significance	Probable (WOM)	Short term: Construction phase	A

Nature of Activities:

1. Construction Phase: Clearing of the servitude and development of associated infrastructure such as access roads.

2. Operation Phase: N/A

	WOM	WM
Probability	Probable (2)	Probable (2)
Duration	Short term(1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)

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Significance	(8)Negligible	(8)Negligible
Status (positive or negative)	Positive	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No	
Mitigation: N/A		
Cumulative impacts: N/A		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site consists of 2x recent structures and it is of low significance

Project component/s	Construction phase of the project
Potential Impact	The site will probably not be directly impacted project - it fall immediately outside the 10m line corridor servitude.
Project component/s	Operational phase of the project
Potential Impact	The site will probably not be directly impacted project - it fall immediately outside the 10m line corridor servitude.
Activity/risk source	N/A
Mitigation: Target/Objective	The site will probably not be directly impacted project - it fall immediately outside the 10m line corridor servitude.

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Mitigation: Action/control	Responsibility	Timeframe
The site will probably not be directly impacted project - it fall immediately outside the 10m line corridor servitude.	N/A	N/A
Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.	
Monitoring	N/A	

Figure 48- Pictures showing the two structures forming site MB-22. Left is a red refractory brick and right mud bricks.

Site Name:	MB-23
Type:	Built Environment & Landscape
Density (Low):	Farmstead
Location/GPS Coordinates:	S23 40 04.6 E28 06 55.9
Approximate Age:	Less than 60 years old
Applicable NHRA Section:	Section 34

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Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W281	32m	28m

Site Description:

The sites is a farmstead located outside the propose development line corridor. It consists of approximately 4 structure - one of which is the main farm house and the rest are outbuildings or storage facilities (Figure 49).

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact Scale	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.C	-	Local	Negligible (WOM/WM)	Low significance	Improbable (WOM)	Long term: Construction phase & operational phase	A

Nature of Activities:

1. Construction Phase: The site will not be directly affected by construction activities

2. Operation Phase: The site will be visually impaired or dwarfed by the Transmission tower (W281)

	WOM	WM
Probability	Improbable (1)	Improbable (1)
Duration	Short term(1)	Short term (1)

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Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(4)Negligible	(4)Negligible
Status (positive or negative)	Positive	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	The	
Mitigation: The only applicable and proposed mitigation is in terms of visual impact of the house - this is proposed in "kind". To possible move the pylon position by approximately 60m south-west of its current position. However, since the site is not a cultural historic site the visual impact fall outside the bounds of this HIA study, but it is worth noting.		
Cumulative impacts: N/A		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho. • Negative residual impact is dwarfing or visual impact to the farm house		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is a farmstead consisting of approximately 4 structures including the main farm house.

Project component/s	Construction phase of the project
Potential Impact	The site will probably not be directly impacted by the project - it fall outside the 10m line corridor servitude.
Project component/s	Operational phase of the project

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Potential Impact	The site will not be directly physically and directly impacted by the project - it falls outside the 10m line corridor servitude. However, the transmission lines and the tower (W281) will visual impair the site.
Activity/risk source	N/A
Mitigation: Target/Objective	The site will probably not be directly impacted by the project - it fall outside the 10m line corridor servitude. Since it is not a cultural or historical site - the visual impact is outside the bounds of this HIA study, but is worth noting.

Mitigation: Action/control	Responsibility	Timeframe
The site will probably not be directly impacted by the project - it fall outside the 10m line corridor servitude.	N/A	N/A

Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	N/A

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Figure 49 -Farmstead

Site Name: MB-24

Type: Built Environment & Landscape

Density (Low): 2 x cattle feeding lots and drinking ponds

Location/GPS Coordinates: S23 41 33.0 E28 12 20.9

Approximate Age: Less than 60 years old

Applicable NHRA Section: Section 34

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W316	92m	17m

Site Description:

The sites is a built environment and landscape site consisting of 2x cattle feeding lots and drinking ponds (Figure 50).

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact Scale	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.C	-	Local	Negligible (WOM/WM)	Low significance	Improbable (WOM)	Short term: Construction phase	A

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Nature of Activities:

1. Construction Phase: Clearing of the servitude and development of associated infrastructure such as access roads.

2. Operation Phase: N/A

	WOM	WM
Probability	Improbable (1)	Improbable (1)
Duration	Short term(1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(4) Negligible	(4) Negligible
Status (positive or negative)	Positive	Positive
Reversibility	Low	Highly
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	The site is not a heritage or historical site	
Mitigation: N/A		
Cumulative impacts: N/A		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site consists of 2x cattle feeding lots and drinking ponds of low significance - they are recent in age.

Project component/s	Construction phase of the project
Potential Impact	The site will not be directly impacted by the project - it fall outside the 10m line corridor servitude.
Project component/s	Operational phase of the project
Potential Impact	The site will not be directly impacted by the project - it fall outside the 10m line corridor servitude.
Activity/risk source	N/A
Mitigation: Target/Objective	The site will not be directly impacted by the project - it falls outside the 10m line corridor servitude.

Mitigation: Action/control	Responsibility	Timeframe
The site will not be directly impacted project - it falls outside the 10m line corridor servitude.	N/A	N/A

Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	N/A

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Figure 50- cattle feeding lots and drinking ponds

Site Name: MB-25

Type: MSA flakes and retouched flakes

Density (Low): 4 x flakes and retouched flakes/scatter

Location/GPS Coordinates: S23 40 08.1 E28 15 32.8

Approximate Age: 300-60k.y.a old

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W332	154m	3m

Site Description:

The site is a scatter of MSA flakes and retouched flakes located on a mountainous and thickly vegetated area (Figure 51).

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Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact Scale	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.C	-	Local	Negligible (WOM/WM)	Low significance	Highly probable	Short term: Construction phase	A

Nature of Activities:

1. Construction Phase: Clearing of the servitude and development of associated infrastructure such as access road will directly impact on the site.

2. Operation Phase: N/A

	WOM	WM
Probability	Highly probable (4)	Highly probable (4)
Duration	Short term(1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(16) Negligible	(16) Negligible
Status (positive or negative)	Positive	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes- but no further mitigation is required	
Mitigation: No further action is required. Recording of the site during the survey was sufficient		

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Cumulative impacts: N/A
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site consists of 4x MSA flakes and retouched flakes. But it is of low heritage significance with negligible impact significance.

Project component/s	Construction phase of the project		
Potential Impact	The site will be directly impacted by the project		
Project component/s	Operational phase of the project		
Potential Impact	The site will be directly impacted by the project		
Activity/risk source	N/A		
Mitigation: Target/Objective	No further action is required. Recording of the site during the survey was sufficient		
Mitigation: Action/control		Responsibility	Timeframe
No further action is required. Recording of the site during the survey was sufficient.		N/A	N/A
Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.		
Monitoring	N/A		

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Figure 51 - Flakes and retouched flakes.

Site Name: MB-26

Type: Scatter of MSA flakes and retouched flakes

Density (Low): Less than 10 flakes observed

Location/GPS Coordinates: S23 38 06.7 E28 20 09.7

Approximate Age: 300-60k.y.a old

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W354	159m	3m

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Site Description:

The site is an MSA scatter of flakes and retouched flakes (Figure 52). It is located in low lying area in the middle of bushes - Mopani Veld.

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact Scale	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.C	-	Local	Negligible	Low significance	Highly probable	Short term: Construction phase	A

Nature of Activities:

1. Construction Phase: Clearing of the servitude and development of associated infrastructure such as access road will directly impact on the site.

2. Operation Phase: Traversing of the site by special purpose vehicle

	WOM	WM
Probability	Highly probable (4)	Highly probable (4)
Duration	Short term (1)	Short term (1)
Scale	Site (2)	Local (1)
Magnitude/Severity	Local (1)	Low (2)
Significance	(16) Negligible	(16) Negligible
Status (positive or negative)	Positive	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No

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Can impacts be mitigated?	Yes -but the site is of low significance
Mitigation: No further action necessary	
Cumulative impacts: • There are no cumulative impacts predicted for this site	
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.	

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is a scatter of MSA flakes and retouched flakes, has negligible impact significance (WOM/WM) and is of low heritage significance. No further action is requires.

Project component/s	Construction phase of the project		
Potential Impact	Direct impact from servitude clearance		
Project component/s	Operational phase of the project		
Potential Impact	N/A		
Activity/risk source	N/A		
Mitigation: Target/Objective	N/A		
Mitigation: Action/control	Responsibility	Timeframe	
N/A	N/A	N/A	
Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.		

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Monitoring	N/A

Figure 52- Retouched flakes found at the site

Site Name:	MB-27
Type:	MSA flakes and retouched flakes
Density (Medium):	Over 38+ flakes and retouched flakes and cores observed
Location/GPS Coordinates:	S23 38 13.8 E28 19 59.9 (MB-27)
	S23 38 16.3 E28 19 57.7 (MB-27a)
	S23 38 17.3 E28 19 55.2 (Mb-27b)
Approximate Age:	300-60k.y.a old
Applicable NHRA Section:	Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W355	143m (MB-27)	9m
W356	198m (MB-27a); 127m (MB-27b)	9m(MB-27a); 13m(MB-27b)

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Site Description:

The site consists of MSA flakes and retouched flakes (Figure 52) and cores (Figure 53). It is located in low lying area in the middle of bushes - Mopani Veld. The site covers approximately 157 in length and 40m^2 or more in extent in extent. Three GPS position where taken from start, middle, to end of the site.

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact Scale	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.B	-	Local	Moderate (WOM)/ Low (WM)	Medium significance	Highly probable	Short term: Construction phase	B

Nature of Activities:

1. Construction Phase: Clearing of the servitude and development of associated infrastructure such as access road will directly impact on the site.

2. Operation Phase: Traversing of the site by special purpose vehicle

	WOM	WM
Probability	Highly probable (4)	Highly probable (4)
Duration	Medium (3)	Medium (3)
Scale	Site (2)	Local (1)
Magnitude/Severity	Medium (6)	Low (2)
Significance	(44) Moderate	(24) Low
Status (positive or negative)	Negative	Positive

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Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation: Mapping of the site and controlled sampling required		
Cumulative impacts: • Predicted during the construction and operational phases of the project. • During operational phase through traversing by special purpose vehicles		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho. • The site will be altered through servitude clearance leaving a lasting negative residual impact.		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site measures approximately 40m^2, has moderate impact significance (WOM) and is of medium heritage significance. It requires mapping and sampling.

Project component/s	Construction phase of the project
Potential Impact	Direct impact from servitude clearing (rence)
Project component/s	Operational phase of the project
Potential Impact	Traversing by special purpose vehicles during servitude maintenance
Activity/risk source	No complying with the above recommendation as set in the objective of mapping and sampling the site
Mitigation: Target/Objective	Mapping and sampling the site before construction phase

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Mitigation: Action/control	Responsibility	Timeframe
Ensure that the site is mapped and sampled before the commencement of construction activities. A phase 2 report should be produced as a result of such work.	ECO to ensure that the site is not disturbed or destructed before mapping and sampling. Mapping and sampling of the site by a profession archaeologist	Before construction phase
Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.	
Monitoring	The ECO will ensure that the site in not destructed nor disturbed before it is full mapped and sampled.	

Figure 53- Flakes and retouched flakes.

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Figure 54- Example of cores found at the site

Site Name: MB-28

Type: LIA/Historic isolated grinding stone

Density (Low): 1x grinding stone

Location/GPS Coordinates: S23 38 29.5 E28 19 39.8

Approximate Age: Older than 60 years

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W357	34m	13m

Site Description:

This is not a site rather a scatter - an isolated piece of a grindstone in the middle of the field (Figure 55). There are no structures or other forms of material culture associated with it.

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Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact Scale	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GPB	-	Local	Negligible (WOM/WM)	Low Medium	Highly probable (WOM)	Short term: Construction phase	B

Nature of Activities:

1. Construction Phase: The grinding stone piece will be affected during clearing of the servitude and development of associated infrastructure such as access roads.

2. Operation Phase: N/A

	WOM	WM
Probability	Highly probable (4)	Improbable (1)
Duration	Short term(1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(16)Negligible	(4) Negligible
Status (positive or negative)	Negative	Positive
Reversibility	Low	High
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation: The piece of the grinding stone should be collected and placed at an accredited archaeological research institution such as the University of the Witwatersrand (Wits) Archaeology		

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Department. The material is relevant for teaching purposes.
Cumulative impacts: No cumulative impact are predicted once the material is collected
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is scatter of an isolated piece of a grinding stone, it is of medium heritage significance, with negligible impact significance. However, it need to be collected for teaching purposes before the construction phase.

Project component/s	Construction phase of the project	
Potential Impact	In case the piece of the grinding stone is not collected and placed at an accredited research institution with developed archaeology department, the following impacts are predicted: destruction of material that could contribute to teaching purposes about the prehistory of South Africa.	
Project component/s	Operational phase of the project	
Potential Impact	N/A	
Activity/risk source	Exclusion of the above objectives from the overall EMP	
Mitigation: Target/Objective	The grinding stone should be collected before the commencement of construction activities on site.	
Mitigation: Action/control	Responsibility	Timeframe
Permit should be applied for with SAHRA APM Unit to collect the material with before project construction phase. The ECO should ensure that construction activities	Permit application with SAHRA APM Unit is to be applied for by the archaeologist. Collection of material - by the	Prior to the construction phase of the project

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and machinery does not destruct the material before it is collected.	archaeologist or the ECO on behalf of the archaeologist	
Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.	
Monitoring	The ECO should ensure that the material is collected before commencement of construction activities on the proposed line corridor.	

Figure 55 - Broken piece of a grinding stone

Site Name:	MB-29
Type:	Isolated hand axe
Density (Low):	1 x tool
Location/GPS Coordinates:	S23 38 30.5 E28 19 38.8
Approximate Age:	1.5 m.ya-300k.y.a old
Applicable NHRA Section:	Section 35

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Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W357	74m	6m

Site Description:

The is not a site, rather an isolate scatter of hand axe (Figure 56). The hand axe occurs in the Acheulian to MSA period. It is approximately 9cm in length.

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact Scale	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.C	-	Local	Negligible	Low significance	Highly probable	Short term: Construction phase	A

Nature of Activities:

1. Construction Phase: Clearing of the servitude and development of associated infrastructure such as access road will directly impact on the site.

2. Operation Phase: N/A

	WOM	WM
Probability	Highly probable (4)	Highly probable (4)
Duration	Short term (1)	Short term (1)
Scale	Site (2)	Local (1)
Magnitude/Severity	Local (1)	Low (2)

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Significance	(16) Negligible	(16) Negligible
Status (positive or negative)	Positive	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes -but the site is of low significance	
Mitigation: No further action necessary		
Cumulative impacts: • There are no cumulative impacts predicted for this site		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is an isolated scatter of Acheulian -MSA period hand axe, it has negligible impact significance (WOM/WM) and is of low heritage significance. No further action is requires.

Project component/s	Construction phase of the project
Potential Impact	Direct impact from servitude clearance
Project component/s	Operational phase of the project
Potential Impact	N/A
Activity/risk source	N/A
Mitigation: Target/Objective	N/A

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Mitigation: Action/control	Responsibility	Timeframe
N/A	N/A	N?A
Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.	
Monitoring	N/A	

Figure 56- Hand axe

Site Name:	MB-30
Type:	Stone walled kraal
Density (Low):	Approximately 4 medium sized enclosures
Approximate Age:	Older than 60 years
Applicable NHRA Section:	Section 35
Location/GPS Coordinates:	S23 39 53.0 E28 16 03.4 (MB-30)

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S23 39 54.5 E28 16 02.4 (MB-3a)

S23 39 54.9 E28 16 01.3 (MB-30b)

Approximate Age: Older than 60 years

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W338	58m (MB-30); 37m (MB-30a);67m (MB30b)	57m (MB-30); 10m (MB-30a); 2m (MB-30b)

Site Description:

The consists of approximately 4 medium sized stone wall enclosures. These enclosures are not in pristine or good state of preservation. From the faded wall foundations of what looks to have been a bigger enclosure - the site resemble a typical egg friend shape - typical of Sotho-Tswana stone walling.

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.B	3A	Local	Negligible	Medium significance	Highly probable (WOM)	Short-term : Construction phase	C

Nature of Activities:

1. Construction Phase: The kraal might possible be affected during clearing of the servitude and development of associated infrastructure such as access roads.

2. Operation Phase: It might also be affected during servitude maintenance

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	WOM	WM
Probability	Highly probable (4)	Improbable (1)
Duration	Short term(1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(16)Negligible	(4) Negligible
Status (positive or negative)	Negative	Positive
Reversibility	Low	High
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation: The site should be avoided and be treated as a no-go area to avoid an potential impacts during the servitude clearance.		
Cumulative impacts: Cumulative impacts are predicted to arise from construction and operational activities such as servitude maintenance.		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site consist of 3 stone wall kraals of medium size (+/- 13m^2 each). It is of medium heritage significance with negligible impact significance, but should be avoided by all means.

Project component/s	Construction phase of the project

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Potential Impact	In case the kraals are not avoided the following impacts are predicted: destruction of the kraals and loss of a heritage/historic resource.
Project component/s	Operational phase of the project
Potential Impact	In case the kraals are not avoided the following impacts are predicted: destruction of the kraals and loss of a heritage/historic resource.
Activity/risk source	Exclusion of the above objectives from the overall EMP
Mitigation: Target/Objective	The kraal should be avoided and be treated as a no-go area during the construction phase of the project as well as during servitude maintenance

Mitigation: Action/control	Responsibility	Timeframe
To ensure that the above mitigation objective are met. There should be monitoring of the site at all times during the construction phase of the project and during servitude maintenance.	ECO	During the construction phase of the project

Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	The ECO should ensure that construction activities and machinery avoid the site by all means. He/she should do physical monitoring of the site.

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Figure 57 - Kraal No.1

Figure 58- Kraal No.2

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Figure 59- Kraal No.3

Site Name: MB-31

Type: Built environment & landscape site

Density (Low): Approximately 15+ structures

Location/GPS Coordinates: S23 35 14.3 E28 27 03.2

Approximate Age: Less than 60 years old

Applicable NHRA Section: Section 34

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W399	73m	3m

Site Description:

The site covers a total area of approximately 60m^2. The total number of observed structures and features amounted to 15 and they include dilapidated mound house structures/ruins. Amongst the ruin was a rondaval and few rectangular structures (Figure 60). Associated with structure are decorative features around the houses/ruin made of calcrete (Figure 61 -62). In

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the property industrial shed foundations are found as well as pole structures that look to have been either used for creeper plants or drying of some sort (Figure 63).

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
Not a historic site	-	Local	Negligible	-	Improbable	Short term	A

Nature of Activities:

1. Construction Phase: The site will be affected, but it is not a heritage site and is of negligible impact significance

2. Operation Phase: The site will be affected, but it is not a heritage site and is of negligible impact significance

	WOM	WM
Probability	Probable (2)	Probable (2)
Duration	Short term (1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(8)Negligible	(8) Negligible
Status (positive or negative)	Positive	Positive
Reversibility	Highly	Highly
Irreplaceable loss of resources?	No	No

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Can impacts be mitigated?	Yes- but it is not heritage sites and it does not require mitigation.
Mitigation: No further action required - the site is not a heritage site and has negligible impact significance even though it falls directly within the line corridor servitude.	
Cumulative impacts: Construction and operational phase of the project will cumulatively impact on the site	
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.	

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is not a heritage site - it is less than 60 years in age.

Project component/s	Construction phase of the project		
Potential Impact	The site will be directly affected by the proposed development - it falls within the project footprint (i.e. 10m line corridor buffer), but is not a heritage site		
Project component/s	Operational phase of the project		
Potential Impact	The site will be directly affected by the proposed development - it falls within the project footprint (i.e. 10m line corridor buffer), but is not a heritage site		
Activity/risk source	N/A		
Mitigation: Target/Objective	There are no mitigation measures proposed for the site - it is not a heritage or historic site		
Mitigation: Action/control		Responsibility	Timeframe

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There are no mitigation measures proposed for the site - it is not a heritage or historic site	N/A	N/A
Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.	
Monitoring	N/A	

Figure 60 - House ruins (rectangular structures left) and rondaval (right)

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Figure 61 - Decorative feature made from calcrete

Figure 62- Round decorative feature made from calcrete. Can easily be mistaken for graves, but they are not graves.

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Figure 63 - Shed foundation and pole structure either to hag stuff or support plant life

Site Name: MB-32

Type: Built environment & landscape site

Density (Low): Approximately 3 structures

Location/GPS Coordinates: S23 35 29.4 E28 32 31.0

Approximate Age: Less than 60 years old

Applicable NHRA Section: Section 34

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W431	65m	23m

Site Description:

The site consists of 3 structure foundations- 2 x rondaval foundations and 1 x rectangular/square foundation (Figure 35)

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

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Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.C	-	Local	Negligible	Low	Improbable	Short term	A

Nature of Activities:

1. Construction Phase: The site will not be affected, it falls outside project footprint.

2. Operation Phase: The site will not be affected, it falls outside project footprint.

	WOM	WM
Probability	Probable (2)	Probable (2)
Duration	Short term (1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(8)Negligible	(8) Negligible
Status (positive or negative)	Positive	Positive
Reversibility	Highly	Highly
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes- No further action proposed the site fall outside the development footprint	

Mitigation: No further action required - the site will not be affected, it falls outside project footprint.

Cumulative impacts: Construction and operational phase of the project will cumulatively impact on the site

Residual Impacts:

- The project will positively contribute to the transmission of power loads from Medupi to

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Borutho.

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site will not be affected, it falls outside project footprint. No further action proposed regarding its mitigations

Project component/s	Construction phase of the project
Potential Impact	The site will not be affected, it falls outside project footprint. (i.e. 10m line corridor buffer)
Project component/s	Operational phase of the project
Potential Impact	The site will not be affected, it falls outside project footprint. (i.e. 10m line corridor buffer)
Activity/risk source	N/A
Mitigation: Target/Objective	No further action necessary

Mitigation: Action/control	Responsibility	Timeframe
There are not mitigation measures proposed for the site	N/A	N/A

Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	N/A

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Figure 64- structure foundations - rondaval (left) and rectangular/square foundation (right)

Site Name: MB-33

Type: LSA digging stick suspension stone

Density (Low): 1 x suspension stone

Location/GPS Coordinates: S23 35 52.0 E28 33 54.5

Approximate Age: Older than 60 years

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W426	211m	5m

Site Description:

The sites consist of a single digging stick suspension stone. It can therefore not be referred to as a site rather an isolate scatter of digging stick suspension tool in the middle of plough fields (Figure

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Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact Scale	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.B	-	Local	Negligible (WOM/WM)	Medium	Highly probable (WOM)	Short term: Construction phase	B

Nature of Activities:

1. Construction Phase: Clearing of the servitude and development of associated infrastructure such as access roads.

2. Operation Phase: N/A

	WOM	WM
Probability	Highly probable (4)	Improbable (1)
Duration	Short term(1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(16)Negligible	(4) Negligible
Status (positive or negative)	Negative	Positive
Reversibility	Low	High
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation: Because of rarity of such LSA material and the fact that it was in plough fields which could increase the susceptibility of this material being further displaced. It was collected by the		

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archaeologist who is in a process to apply for a rescue permit with SAHRA APM Unit to place the material at Wits Archaeology Department for teaching and display purposes.
Cumulative impacts: No cumulative impact are predicted once the material is collected
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho. • There are no negative impact regarding this scatter - it is of low heritage significance and its impact significance are negligible

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is of medium heritage significance and it needs to be mitigated by means of collection before the construction phase.

Project component/s	Construction phase of the project
Potential Impact	In case the case the digging stick suspension stone was not collected it was going to get displace because it is in the middle of plough fields.
Project component/s	Operational phase of the project
Potential Impact	N/A
Activity/risk source	Exclusion of the above objectives from the overall EMP
Mitigation: Target/Objective	Because of rarity of such LSA material and the fact that it was in plough fields which could increase the susceptibility of this material being further displaced.

Mitigation: Action/control	Responsibility	Timeframe
A rescue permit in retrospect will be applied for with SAHRA APM Unit to place	Permit application with SAHRA to collect the material -	Prior to the construction phase

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the material at Wits Archaeology Department for teaching and display purposes.	archaeologist.	
Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.	
Monitoring	N/A	

Figure 65 - digging stick suspension stone

Site Name:	MB-34
Type:	MSA Site
Density (Medium):	Retouched flakes and cobbles
Location/GPS Coordinates:	S23 36 05.0 E28 34 55.2
Approximate Age:	300-60k.y.a old
Applicable NHRA Section:	Section 35
Nearest Pylon Position:	

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Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W438	62m	18m

Site Description:

The site is approximately 30m^2 pebble and cobble site on a fluvial drainage system. It contain retouched flakes in term of the MSA material culture (Figure 66).

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.C	-	Local	Negligible (WOM/WM)	Low significance	Improbable (WOM/MW)	Long-term: Construction & operation phase	A

Nature of Activities:

1. Construction Phase: The site will not be directly affected it falls outside the development footprint

2. Operation Phase: The site will not be directly affected it falls outside the development footprint.

	WOM	WM
Probability	Improbable (1)	Improbable (1)
Duration	Medium term (3)	Medium term (3)
Scale	Local (2)	Local (2)
Magnitude/Severity	Low (2)	Low (2)
Impact Significance	(7)Negligible	(7) Negligible

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Status (positive or negative)	Positive	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes - but the site does not require mitigation it falls outside the proposed 10m buffer line corridor	
Mitigation: No further action required		
Cumulative impacts: Construction and operational phase of the project will cumulatively impact on the site		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is of low heritage significance and it fall outside the proposed development footprint.

Project component/s	Construction phase of the project
Potential Impact	The site will not be directly affected by the proposed development - it falls outside the development footprint (i.e. 10m line corridor buffer)
Project component/s	Operational phase of the project
Potential Impact	The site will not be directly affected by the proposed development - it falls outside the development footprint (i.e. 10m line corridor buffer)
Activity/risk source	N/A
Mitigation: Target/Objective	The site will not be directly affected by the proposed development - it falls outside the development footprint (i.e. 10m line corridor buffer)

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Mitigation: Action/control	Responsibility	Timeframe
The site will not be directly affected by the proposed development - it falls outside the development footprint (i.e. 10m line corridor buffer)	N/A	N/A

Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	N/A

Figure 66- Retouched flakes

Site Name:	MB-35
Type:	MSA Site
Density (Medium):	Retouched flakes and cobbles
Location/GPS Coordinates:	S23 36 19.3 E28 36 09.4
Approximate Age:	300-60k.y.a old

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Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W451	141m	26m

Site Description:

The site is located on the banks of Sterk River. Artefacts include cores and lots of flakes and retouched flakes (Figure 67).

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.B	-	Local	Negligible (WOM/WM)	Medium significance	Improbable (WOM/MW)	Long-term: Construction & operation phase	A

Nature of Activities:

1. Construction Phase: The site will not be directly affected it falls outside the development footprint

2. Operation Phase: The site will not be directly affected it falls outside the development footprint.

	WOM	WM
Probability	Improbable (1)	Improbable (1)
Duration	Medium term (3)	Medium term (3)
Scale	Local (2)	Local (2)

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Magnitude/Severity	Low (2)	Low (2)
Impact Significance	(7)Negligible	(7) Negligible
Status (positive or negative)	Positive	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes - but the site does not require mitigation it falls outside the proposed 10m buffer line corridor	
Mitigation: No further action required		
Cumulative impacts: Construction and operational phase of the project will cumulatively impact on the site		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is of low heritage significance and it fall outside the proposed development footprint.

Project component/s	Construction phase of the project
Potential Impact	The site will not be directly affected by the proposed development - it falls outside the development footprint (i.e. 10m line corridor buffer)
Project component/s	Operational phase of the project
Potential Impact	The site will not be directly affected by the proposed development - it falls outside the development footprint (i.e. 10m line corridor buffer)

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Activity/risk source	N/A		
Mitigation: Target/Objective	The site will not be directly affected by the proposed development - it falls outside the development footprint (i.e. 10m line corridor buffer)		
Mitigation: Action/control		Responsibility	Timeframe
The site will not be directly affected by the proposed development - it falls outside the development footprint (i.e. 10m line corridor buffer)		N/A	N/A
Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.		
Monitoring	N/A		

Figure 67 - Example of cores and retouched flakes found at the site

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Site Name: MB-36

Type: Potential grave

Density (Low): 1 structure

Location/GPS Coordinates: S23 36 20.5 E28 36 09.4

Approximate Age: +/- 60 years old

Applicable NHRA Section: Section 35?

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W451	142m	12m

Site Description:

The site consists of a single rectangular structure measuring approximately 1,5m in length and 0.5m in width. It is located near agave plants. The size of the structure resembles that size of a grave - however, the arrangement of stone and the fact that the soil in the middle is virgin soil and does not show any form of disturbance or alteration grave is ruled out (Figure 68)

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
Not a historic site	-	Local	Negligible	-	Improbable	Short term	A

Nature of Activities:

1. Construction Phase: The site will not be affected, development footprint (i.e. 10m line corridor buffer) and is also not a heritage site and is of negligible impact significance

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2. Operation Phase: The site will not be affected, development footprint (i.e. 10m line corridor buffer) and is also not a heritage site and is of negligible impact significance		
	WOM	WM
Probability	Probable (2)	Probable (2)
Duration	Short term (1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(8)Negligible	(8) Negligible
Status (positive or negative)	Positive	Positive
Reversibility	Highly	Highly
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes- but it is not heritage sites and it does not require mitigation.	
Mitigation: No further action required - the site is not a heritage site and has negligible impact significance		
Cumulative impacts: Construction and operational phase of the project will cumulatively impact on the site		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is not a heritage site - it is less than 60 years in age.

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Project component/s	Construction phase of the project
Potential Impact	The site will be directly affected by the proposed development - it falls within the project footprint (i.e. 10m line corridor buffer), but is not a heritage site
Project component/s	Operational phase of the project
Potential Impact	The site will not be directly affected by the proposed development
Activity/risk source	N/A
Mitigation: Target/Objective	There are not mitigation measures proposed for the site - it is not a heritage or historic site

Mitigation: Action/control	Responsibility	Timeframe
There are not mitigation measures proposed for the site - it is not a heritage or historic site	N/A	N/A

Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	N/A

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Figure 68-Structure found at the site

Site Name: MB-37

Type: LIA/Historic isolated grinding stone

Density (Low): 1x grinding stone

Location/GPS Coordinates: S23 36 44.2 E28 39 30.9

Approximate Age: Older than 60 years

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W471	86m	7m

Site Description:

This is not a site rather a scatter - an isolated piece of a grindstone in the middle of the field (Figure 55). There are no structures or other forms of material culture associated with it.

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Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact Scale	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GPB	-	Local	Negligible (WOM/WM)	Low Medium	Highly probable (WOM)	Short term: Construction phase	B

Nature of Activities:

1. Construction Phase: The grinding stone piece will be affected during clearing of the servitude and development of associated infrastructure such as access roads.

2. Operation Phase: N/A

	WOM	WM
Probability	Highly probable (4)	Improbable (1)
Duration	Short term(1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(16)Negligible	(4) Negligible
Status (positive or negative)	Negative	Positive
Reversibility	Low	High
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation: The piece of the grinding stone should be collected and placed at an accredited archaeological research institution such as the University of the Witwatersrand (Wits) Archaeology		

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Department. The material is relevant for teaching purposes.
Cumulative impacts: No cumulative impact are predicted once the material is collected
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is scatter of an isolated piece of a grinding stone, it is of medium heritage significance, with negligible impact significance. However, it need to be collected for teaching purposes before the construction phase.

Project component/s	Construction phase of the project	
Potential Impact	In case the piece of the grinding stone is not collected and placed at an accredited research institution with developed archaeology department, the following impacts are predicted: destruction of material that could contribute to teaching purposes about the prehistory of South Africa.	
Project component/s	Operational phase of the project	
Potential Impact	N/A	
Activity/risk source	Exclusion of the above objectives from the overall EMP	
Mitigation: Target/Objective	The grinding stone should be collected before the commencement of construction activities on site.	
Mitigation: Action/control	Responsibility	Timeframe
Permit should be applied for with SAHRA APM Unit to collect the material with before project construction phase. The ECO should ensure that construction activities	Permit application with SAHRA APM Unit is to be applied for by the archaeologist. Collection of material - by the	Prior to the construction phase of the project

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and machinery does not destruct the material before it is collected.	archaeologist or the ECO on behalf of the archaeologist	
Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.	
Monitoring	The ECO should ensure that the material is collected before commencement of construction activities on the proposed line corridor.	

Figure 69 - Piece of a grading stone

Site Name:	MB-38
Type:	Built environment & landscape site
Density (Low):	Dam
Location/GPS Coordinates:	S23 36 20.5 E28 36 09.4
Approximate Age:	Less than 60 years old
Applicable NHRA Section:	Section 34
Nearest Pylon Position:	

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Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W518	31m	4m

Site Description:

The site is a farm dam. The dam is made of soil with stone cladding and stone wall in some areas (Figure 70). It measure approximately 60m in diameter and is no longer in use. A pan has formed adjacent to it (Figure 71).

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
Not a historic site	-	Local	Negligible	-	Improbable	Short term	A

Nature of Activities:

1. Construction Phase: The site will be affected, but it is not a heritage site and is of negligible impact significance

2. Operation Phase: The site will be affected, but it is not a heritage site and is of negligible impact significance

	WOM	WM
Probability	Probable (2)	Probable (2)
Duration	Short term (1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(8)Negligible	(8) Negligible

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Status (positive or negative)	Positive	Positive
Reversibility	Highly	Highly
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes- but it is not heritage sites and it does not require mitigation.	
Mitigation: No further action required - the site is not a heritage site and has negligible impact significance		
Cumulative impacts: Construction and operational phase of the project will cumulatively impact on the site		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is not a heritage site - it is less than 60 years in age.

Project component/s	Construction phase of the project
Potential Impact	The site will be directly affected by the proposed development - it falls within the project footprint (i.e. 10m line corridor buffer), but is not a heritage site
Project component/s	Operational phase of the project
Potential Impact	The site will not be directly affected by the proposed development
Activity/risk source	N/A

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Mitigation: Target/Objective	There are not mitigation measures proposed for the site - it is not a heritage or historic site		
Mitigation: Action/control		Responsibility	Timeframe
There are not mitigation measures proposed for the site - it is not a heritage or historic site		N/A	N/A
Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.		
Monitoring	N/A		

Figure 70 - Dam. Note the stone cladding to support the soil layer of the dam

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Figure 71 - A pan that has naturally formed near the dam

Site Name: MB-39

Type: Potential grave

Density (Low): 1 structure

Location/GPS Coordinates: S23 52 36.0 E28 56 51.1

Approximate Age: - 60 years old

Applicable NHRA Section: Section 36?

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W561	20m	8m

Site Description:

The site consists of a single oblong structure measuring approximately 3m in length and about 2.5m in width (Figure 72). It is located near located near a drainage channel.

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Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
Not a historic site	-	Local	Negligible	-	Improbable	Short term	A

Nature of Activities:

1. Construction Phase: The site will not be affected, development footprint (i.e. 10m line corridor buffer) and is also not a heritage site and is of negligible impact significance

2. Operation Phase: The site will not be affected, development footprint (i.e. 10m line corridor buffer) and is also not a heritage site and is of negligible impact significance

	WOM	WM
Probability	Probable (2)	Probable (2)
Duration	Short term (1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(8)Negligible	(8) Negligible
Status (positive or negative)	Positive	Positive
Reversibility	Highly	Highly
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes- but it is not heritage sites and it does not require mitigation.	
Mitigation: No further action required - the site is not a heritage site and has negligible impact		

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significance
Cumulative impacts: Construction and operational phase of the project will cumulatively impact on the site
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is not a heritage site - it is less than 60 years in age.

Project component/s	Construction phase of the project
Potential Impact	The site will not be affected, development footprint (i.e. 10m line corridor buffer) and is also not a heritage site and is of negligible impact significance
Project component/s	Operational phase of the project
Potential Impact	The site will not be directly affected by the proposed development
Activity/risk source	N/A
Mitigation: Target/Objective	There are not mitigation measures proposed for the site - it is not a heritage or historic site

Mitigation: Action/control	Responsibility	Timeframe
There are not mitigation measures proposed for the site - it is not a heritage or historic site	N/A	N/A

Performance	The type of indicator used here will be Actionable Indicators – this will

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Indicator	measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	N/A

Figure 72- Stone structure near a drainage channel

Site Name:	MB-40
Type:	Built environment & landscape site
Density (Low):	1 structure (tin house structure)
Location/GPS Coordinates:	S23 51 28.1 E28 54 44.5
Approximate Age:	Less than 60 years old
Applicable NHRA Section:	Section 34
Nearest Pylon Position:	

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Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W552	91m	3m

Site Description:

The site consists is a yard that measures approximately 350m2. Inside the yard is a shack uses as house of worship by the Z.C.C congregation (Figure 73).

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
Not a historic site	-	Local	Negligible	High significance- in terms of place of worship	Improbable	Short term	A

Nature of Activities:

1. Construction Phase: The site will be affected, but it is not a heritage site and is of negligible impact significance

2. Operation Phase: The site will be affected, but it is not a heritage site and is of negligible impact significance

	WOM	WM
Probability	Probable (2)	Probable (2)
Duration	Short term (1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(8)Negligible	(8) Negligible

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Status (positive or negative)	Positive	Positive
Reversibility	Highly	Highly
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes- but it is not heritage sites and it does not require mitigation.	
Mitigation: From a tangle heritage point of view, no further action required - the site is not a heritage site and has negligible impact significance. However, from a spiritual point of view because it is a place of worship by the Z.C.C church a consultative process is advised.		
Cumulative impacts: Construction and operational phase of the project will cumulatively impact on the site if it continue being used as a place of worship.		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is not a heritage site in terms of tangible heritage it is less than 60 years in age.

Project component/s	Construction phase of the project
Potential Impact	The site will be directly affected by the proposed development - it falls within the project footprint (i.e. 10m line corridor buffer), but is not a heritage site
Project component/s	Operational phase of the project
Potential Impact	The site will not be directly affected by the proposed development
Activity/risk source	N/A

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Mitigation: Target/Objective	There are not mitigation measures proposed for the site - it is not a heritage or historic site		
Mitigation: Action/control		Responsibility	Timeframe
There are not mitigation measures proposed for the site - it is not a heritage or historic site		N/A	N/A
Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.		
Monitoring	N/A		

Figure 73- Z.C.C church site

Site Name:	MB-41
Type:	Small heaps of calcrete stones mounds
Density (High):	Approximately 200 mounds
Location/GPS Coordinates:	S23 50 35.4 E28 52 05.7
Approximate Age:	+/- 60 years old

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Applicable NHRA Section: Section 36?

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W547	65m	39m

Site Description:

The site consists of approximately 200 mounds of calcrete (Figure 74). The mounds are sparsely distributed. From a distance they resemble grave mounds, but in actual fact they are not

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
Not a heritage site	-	Local	Negligible	-	Improbable	Short term	A

Nature of Activities:

1. Construction Phase: The site will be not be affected - it is not a heritage site and it falls outside the project development foot print.

2. Operation Phase: The site will be not be affected - it is not a heritage site and it falls outside the project development foot print.

	WOM	WM
Probability	Improbable (1)	Improbable (1)
Duration	Short term (1)	Short term (1)
Scale	Local (1)	Local (1)

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Magnitude/Severity	Low (2)	Low (2)
Significance	(4)Negligible	(4) Negligible
Status (positive or negative)	Positive	Positive
Reversibility	Highly	Highly
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	N/A	
Mitigation: No further action required - the site is not a heritage site and has negligible impact significance		
Cumulative impacts: Construction and operational phase of the project will cumulatively impact on the site		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is not a heritage site and falls outside the development footprint.

Project component/s	Construction phase of the project
Potential Impact	N/A
Project component/s	Operational phase of the project
Potential Impact	N/A
Activity/risk source	N/A

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Mitigation: Target/Objective	N/A		
Mitigation: Action/control		Responsibility	Timeframe
N/A		N/A	N/A
Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.		
Monitoring	N/A		

Figure 74- Calcrete mounds

Site Name:	MB-42
Type:	Stone walled complex
Density (Medium):	Approximately 4 structures
Approximate Age:	Older than 60 years
Applicable NHRA Section:	Section 35
Location/GPS Coordinates:	S23 50 43.2 E28 52 10.9

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Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W546	236m	117m

Site Description:

The consists of approximately 4 stone wall enclosures - a big kraal measuring approximately 80+m^2 and smaller enclosures, some located within the big kraal. The kraal look to have been destructed form previous Eskom transmission line activities including clearing of the servitude corridor roads (e.g. Figure 77). Some of the remaining walls of the kraal are in good state of preservation (e.g. Figure 75). Other sections of the kraal have perished with stone pushed aside to make road for servitude access and Eskom SPVs. In the big enclosure the are features that resemble graves (e.g. Figure 76).

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.B	3A	Local	Negligible	Medium significance	Probable (WOM)	Short-term : Construction phase	C

Nature of Activities:

1. Construction Phase: The site is less likely to be destructed further. There is already existing servitude line corridor and SPV access roads that cuts through it.

2. Operation Phase: The site is less likely to be destructed further. There is already existing servitude line corridor and SPV access road that cuts through it.

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	WOM	WM
Probability	Probable (1)	Improbable (1)
Duration	Medium term(2)	Short term (1)
Scale	Local (1)	Site (2)
Magnitude/Severity	Low (2)	Low (2)
Significance	(5)Negligible	(5) Negligible
Status (positive or negative)	Negative	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation: Portion of the site have already been completely destructed - the only mitigation at this point would be to avoid the site. Especially areas that are still intact and treat it/them as not-go areas. But, most of these section fall outs the current proposed line corridor servitude.		
Cumulative impacts: Cumulative impacts are predicted to arise from construction activities such as expansion of servitude lines		
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho. • Negative residual impacts have resulted from previous construction and operational activities		

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site consist of approximately 4 stone wall enclosures. It has been disturbed from previous Eskom activities as such portion of it have completely be destroyed. The site is now of medium heritage significance with negligible impact significance. The remaining portions of the site should be treated as no go areas or completely avoided.

Project component/s	Construction phase of the project
Potential Impact	In the case the above objectives are not met, the following potential impacts may occur: complete destruction of the remaining portions of the site and loss of heritage/historic resource.
Project component/s	Operational phase of the project
Potential Impact	In the case the above objectives are not met, the following potential impacts may occur: complete destruction of the remaining portions of the site and loss of heritage/historic resource.
Activity/risk source	Exclusion of the above objectives from the overall EMP
Mitigation: Target/Objective	The site should be avoided and be treated as a no-go area during the construction phase of the project as well as during servitude maintenance

Mitigation: Action/control	Responsibility	Timeframe
To ensure that the above mitigation objective are met. There should be monitoring of the site at all times during the construction phase of the project and during servitude maintenance.	ECO	During the construction phase of the project

Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	The ECO should ensure that construction activities and machinery avoid the site by all means. He/she should do physical monitoring of the site.

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Figure 75- Remaining walls of the big kraal

Figure 76-Potential grave

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Figure 77- Existing Eskom servitude road

Site Name: MB-43

Type: Built environment & landscape site

Density (Low): 1 x rondaval structures and court-yard walls

Location/GPS Coordinates: S23 46 56.7 E28 47 50.7

Approximate Age: +/- 60 years old

Applicable NHRA Section: Section 34

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W476	64m	20m

Site Description:

The site consist of a rondaval structure and court-yard walls (Lelapa in Sotho-Tswana) (Figure 78). It is found amongst trees and a search for other site features such as potential grave did not yield positive results. Informal interaction with Mr. Zachariah Pila one of the local man whom we can across while conducting the "walk down" near this site yielded positive result

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regarding the location of graves associated with this house. The discovery of MB-44 our next site.

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
GP.C	-	Local	Negligible	Low	Improbable	Short term	A

Nature of Activities: 1. Construction Phase: The site will not be directly affected - it fall outside the project footprint 2. Operation Phase: The site will not be directly affected - it fall outside the project footprint		
	WOM	WM
Probability	Improbable (1)	Improbable (1)
Duration	Short term (1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(8)Negligible	(8) Negligible
Status (positive or negative)	Positive	Positive
Reversibility	Highly	Highly
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes- but no further actions i required regarding this site	
Mitigation: No further action required		
Cumulative impacts: Construction and operational phase of the project will cumulatively impact on		

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the site
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site is of low heritage significance with negligible impact significance. No further action is required regarding possible mitigation of this site.

Project component/s	Construction phase of the project
Potential Impact	The site will not be directly affected by the proposed development - it falls outside the project footprint (i.e. 10m line corridor buffer)
Project component/s	Operational phase of the project
Potential Impact	The site will not be directly affected by the proposed development - it falls outside the project footprint (i.e. 10m line corridor buffer)
Activity/risk source	N/A
Mitigation: Target/Objective	There are no mitigation measures proposed for the site - it falls outside the project footprint

Mitigation: Action/control	Responsibility	Timeframe
No further action is necessary in terms of mitigating the site	N/A	N/A

Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.
Monitoring	N/A

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Figure 78- Site structural features - rondaval (left) and court-yard walls an entrance (right)

Site Name: MB-44

Type: Cemetery

Density (Medium): Approximately 35 graves

Approximate Age: Older than 60 years

Applicable NHRA Section: Section 35

Location/GPS Coordinates: S23 46 46.9 E28 47 42.8

Applicable NHRA Section: Section 35

Nearest Pylon Position:

Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters
W477	98m	58m

Site Description:

The site is a none municipal formalised cemetery located on foot slope of a hill. It contain approximately 35+ graves -mostly with granite headstones and dressings (Figure 79).

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According to Mr. Zachariah Pila (one of the local man whom we can across while conducting the "walk down") the graves are associated with among other homesteads -MB43. The cemetery is secure area fenced off from the rest of its surrounding.

Nature of Impacts, Assessments & Predictions in terms of Standard Heritage & Basic Assessment (i.e. adopted from Standard Environmentally Basic Assessment Guidelines):

Field Rating	Grade	Impact	Impact Significance	Heritage Significance	Certainty of Impacts	Duration	Mitigation
Local significance	3A	Local	Negligible	High significance	Probable (WOM)	Short-term	C

Nature of Activities:

1. Construction Phase: : The site will not be directly affected - it fall outside the project footprint

2. Operation Phase: The site will not be directly affected - it fall outside the project footprint

	WOM	WM
Probability	Improbable (1)	Improbable (1)
Duration	Short term (1)	Short term (1)
Scale	Local (1)	Local (1)
Magnitude/Severity	Low (2)	Low (2)
Significance	(4)Negligible	(4) Negligible
Status (positive or negative)	Positive	Positive
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes -but no further action is required site is outside development footprint	

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Mitigation: Avoid the site and treat it as no go area
Cumulative impacts: No cumulative impacts are predicted
Residual Impacts: • The project will positively contribute to the transmission of power loads from Medupi to Borutho.

Measures for inclusion in the draft Environmental Management Plan:

OBJECTIVE: The overall goal is to identify, manage and conserve heritage resources within and immediately outside the proposed development area footprint i.e. the proposed 10m line corridor servitude and the 60m buffer within the corridor. The site consist of approximately 35 graves, it is of high heritage significance with negligible impact significance because it falls outside the project development footprint. As such no further action is proposed in terms of mitigation the site.

Project component/s	Construction phase of the project
Potential Impact	The site is located outside the development footprint and will not be impacted
Project component/s	Operational phase of the project
Potential Impact	The site is located outside the development footprint and will not be impacted
Activity/risk source	Exclusion of the above objectives from the overall EMP
Mitigation: Target/Objective	The site should be avoided and be treated as a no-go area

Mitigation: Action/control	Responsibility	Timeframe
The site should be avoided and be treated	N/A	N/A

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as a no-go area		
Performance Indicator	The type of indicator used here will be Actionable Indicators – this will measure action/progress in terms of completion of the above objectives with the approval of the EMP against their actual implementation.	
Monitoring	The ECO should ensure that construction activities and machinery avoid the site by all means. He/she should do physical monitoring of the site.	

Figure 79 - Cemetery- note the fence and the granite headstones and dressing as grave markers

6. DISCUSSION OF RESULTS:

Site yielded by the survey:-

The physical survey of the proposed Medupi-Borutho-Witkop Transmission Line, referred to as Medupi-Borutho Transmission Line in this document, yielded a total of 45 independent sites (Figure 80 -green dots). Appendix 1 gives a detailed list of the identifies sites: from site type, site names, nearest pylon position or pylon number, distance of site location in relation to pylon position, distance of site location in relation to line corridor centre line, proposed heritage management action for each of the identified sites and GPS coordinates for each site (i.e. the 45 independent sites) including sub-sites. The 45 sites constitute a combination of

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archaeological (ARCH), built environment and landscape (BEL), and burial ground and graves (BGG).

Sites in terms of site type distribution:-

In term of Site Type distribution out of the 45 identified independent sites: 30 sites are archaeological and make up 67% of the total site distribution; they are follow by 11 sites that are built environment and landscape, which make up 24% of the total site distribution; burial ground and graves (even though some sites were not confirmed as such) make up the rest of the percentage (9%) in terms of site distribution. In terms of archaeological sites - most or predominance of sites were MSA sites; for example, MB-1, MB-3, MB-4, MB-5 and MB-6 etc (e.g. Figure 19, 20, 21). Only 1 site could be attribute to LSA , and that is site MB-33 - the digging stick weight suspension or support stone (Figure 65). There was a limited number of ESA sites, either early or late ESA. The only site that can be attributes to the ESA industry in MB-29 (Figure 56). Iron Age sites were less than anticipated - only 8 sites could be confidently attributed to the LIA period and they include the following sites: MB-2, MB-10, MB-10a, MB-18, MB-28, MB-30, MB-38 and MB-43. These sites were dominated by grinding stones and stone walling (e.g. Figures- 17, 31, 32, 42, 44, 57 & 75). Not many historical built environment and landscape sites were identified - most of the identified sites were much recent and did not fulfil the 60 year old criteria to be recognised as heritage resources sites. The same is true for burial ground and graves sites - only 1 cemetery was yielded by the current study of the line servitude (i.e. MB-44, Figure 79).

Site in terms of their heritage significance (and value) and impact mitigation:-

Out of the total number of sites including sub-sites - 8 sites were not considered as heritage sites in terms of their field grading and assessment. These sites include: MB-12, MB-13, MB-14, MB-31, MB-36, MB-38, MB-39, and MB-40. This has direct consequence for the management of heritage resources sites within the proposed development line corridor and its immediate surrounding landscape. As such, below are numbers calculating sites in terms of heritage management action or requirement. Out of 47 sites (inclusive of sub-sites MB-6a and MB-10a) that were assessed in terms of heritage management/mitigation measures the following number were yielded: 34 sites do not require further attention in terms of their management and they make-up 72% of this total count. 11% (5 in total) of these sites will

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require to be collected prior to the construction phase of the project in an attempt to mitigate their potential impact. These sites include: MB-2, MB-18, MB-28, MB-33, and MB-37. In order to conduct this (i.e. site material collection) a rescue permit will need to be applied for with SAHRA APM Unit by the involved archaeologist - he needs to also arrange for a repository centre of institution with a museum or research institution that has developed and fully functional archaeology department.

Another 11% of the 27 sites will require a Phase II intervention before the construction activities. The Phase II intervention require is DETAILED MAPPING OF THE SITES AND CONTROLLED SAMPLING. Sites that will require this intervention, because of their heritage status and value as graded during fieldwork and based on the limited archaeological literature about such sites and resources in the current study region, include: MB-3, MB-4, MB-5, MB-6 and MB-27. In order to conduct such study (i.e. mapping and sampling) a rescue permit will need to be applied for with SAHRA APM Unit by the involved archaeologist under a supervision of Principal Investigator in Stone Age Archaeology. These sites are all MSA sites and contain some of the most fascinating artefacts which could yield more information or provide insight about the archaeology of the region especially towards Lephalale where most of these sites are located. Site MB-6 is of particular interest in that it is also located in close proximity to W130 i.e. 16m from the pylon position and 12m from line corridor centre line. Following the propose mapping and controlled sampling of this site (MB-6) -the pylon position might require shifting, approximately 30m toward MB-9 which is a site of low heritage significance and does require any action. However, this will only be determined by Phase II intervention of this site. Other sites that are located in close proximity to pylon positions include: MB-1 (4m from W181), MB-7a (9m from W355), and MB7b (13m from W355). However, these sites do not pose any negative challenges for the project because they are of low heritage significance and do not require any form of action or intervention.

In terms of site avoidance or No-Go-Areas - only 6% out the 27 sites will require a TOTAL AVOIDANCE, because of their heritage status or fabric, and they include: MB-30 (i.e. stone wall site), MB-42 (i.e. stone wall site) and MB-44 (i.e. cemetery).

The rest of the site are predominantly distributed in and around the line corridor servitude. Some do intervention, but the rest are located outside the line corridor servitude 10m buffered centre lined.

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It has to be noted that the above sites only represent the total number of heritage sites (in their variety of forms and nature) that were only yielded by the physical survey and not the total number of heritage sites that might exist along the line corridor. Some archaeological and heritage resources such as unmarked graves are subterranean in nature and might have been missed by the current study. The developer should take note of this. In cases such resources are unearthed during the excavation processes for pylon positions or ground clearance for servitude line, they should be treated as chance finds. Refer to Appendix 2 "Heritage Management Plan Inputs Medupi-Borutho Transmission Line Corridor" for the management of chance finds.

7. CONCLUSIONS

From a cultural resources management point of view, there are no objections to the project and no negative perceptions about the project, Medupi-Borutho EMP. The EMP can be approved provided that the above given heritage concerns are full attended to and addressed in full by the developer. For example, the issue of conducting rescue collection for material deemed worthy to be used for educational purposes such as - MB-2, MB-18, MB-28, MB-33, and MB-37. To conduct full mapping and sampling of sites such as - MB-3, MB-4, MB-5, MB-6 and MB-27. And avoid the following sites during the project construction phase as well as servitude maintenance of the operational phase: MB-30 (i.e. stone wall site), MB-42 (i.e. stone wall site) and MB-44 (i.e. cemetery).

8. RECOMMENDATIONS

Based on the above discussion about the nature and status of heritage resources yielded during the physical survey of Medupi-Borutho line corridor and conclusions made above regarding sites that need special attention for the EMP to be approved and endorsed by relevant heritage authorities such as LHRA and SAHRA the following recommendations are made about the project:

- The developer should attend to and address all concerns regarding the management of heritage resources deemed worthy of protection and conservation during the construction and operational phase of this project - including its closure thereof.

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- It is recommended that a rescue permit should be applied for with SAHRA APM Unit to collect material from the following sites: MB-2, MB-18, MB-28, MB-33, and MB-37. These resources should be placed at an a research or heritage conservation institution with full developed and functional archaeology department or unit in the case of a museum.
- That the following five sites fully mapped and sampled before the commencement of operational activities for the project: MB-3, MB-4, MB-5, MB-6 and MB-27.
- That the following sites MB-30 (i.e. stone wall site), MB-42 (i.e. stone wall site) and MB-44 (i.e. cemetery) will be avoided at all times during the construction phase of the project and that this will continue to the operational phase of the project - during servitude maintenance

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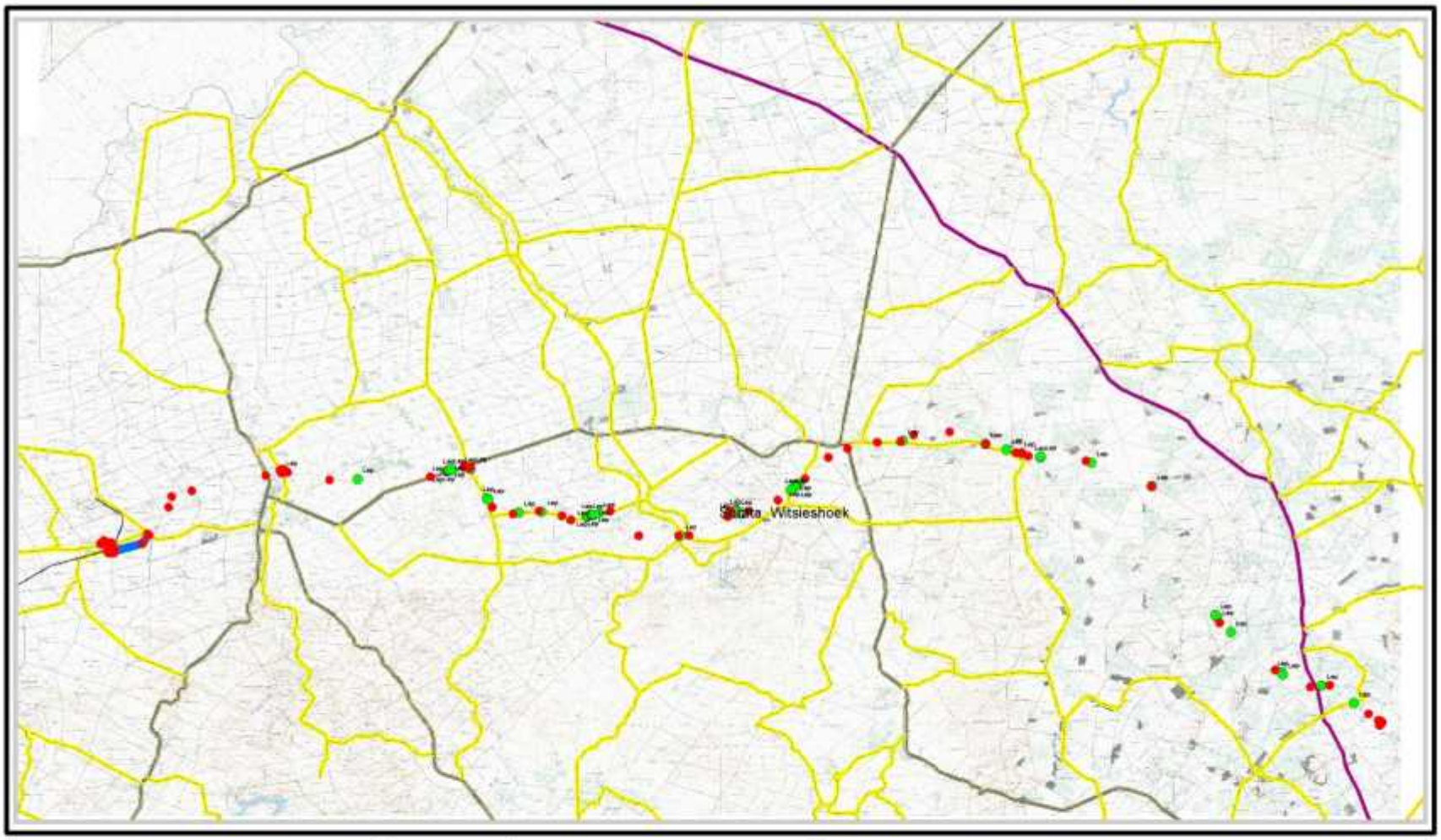
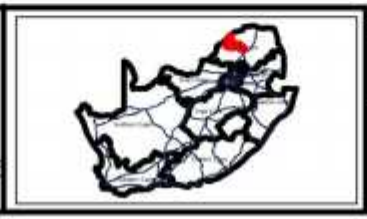


Legend

- Track for the alignment
- Pylon Positions
- Heritage Sites
- Substations
- Railways
- Secondary Roads
- Main Roads
- National Roads



SITE PLAN: **Topographic Map of** Medupi-Borutho Transmission Line Corridor

0 20 40 Kilometers

N

Figure 80 - Distribution of heritage sites within and along the proposed Medupi-Burutho Transmission Line Corridor. Red dots on the map mark the position of the alignment track or track of the alignment and green dots heritage resources identified during the physical survey of the line corridor.

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10. APPENDIXES

10.1.APPENDIX 1: SITE DATABASE MEDUPI-BORUTHO TRANSMISSION LINE CORRIDOR EMP, LIMPOPO PROVINCE, SOUTH AFRICA

Site Type	Site name	Pylon No.	Distance from the pylon in meters	Distance from the servitude centre line in meters	Proposed heritage management action for site	GPS Coordinates
ARCH	MB-1	W181	4m	2m	A-No Further Action Necessary	S23 37 20.0 E27 45 58.7
ARCH	MB-2	W155	207m	6m	B- Collection of Material	S23 37 47.6 E27 51 00.7
ARCH	MB-3	W130	204m	1m	B-Mapping & Controlled Sampling required	S23 37 17.3 E27 56 55.2
ARCH	MB-4	W130	127m	7m	B- Mapping & Controlled Sampling required	S23 37 16.2 E27 56 57.8
ARCH	MB-5	W130	85m	15m	B- Mapping & Controlled Sampling required	S23 37 15.5 E27 56 59.2
ARCH	MB-6	W130	16m	12m	B- Mapping & Controlled Sampling required	S23 37 14.7 E27 57 02.1
	MB-6a	W130	44m	47m	A- No Further Action Necessary	S23 37 13.9 E27 57 01.5
ARCH	Mb-7	W130	90m	32m	A -No Further Action Necessary	S23 37 13.3 E27 57 04.5
ARCH	Mb-8	W130	84m	29m	A- No Further Action Necessary	S23 37 13.3 E27 57 04.5
ARCH	Mb-9	W130	102m	8m	A- No Further Action Necessary	S23 37 14.2 E27 57 05.7
ARCH	Mb-9a	W129	43m	27m	A- No Further Action Necessary	S23 37 11.5 E27 57 16.1
ARCH	Mb-10	W122	77m	4m	A- No Further Action Necessary	S23 37 04.8 E27 58 28.0
ARCH	Mb-10a	W122	130m	5m	A- No Further Action Necessary	S23 37 06.3 E27 58 28.9
BEL	Mb-11	W111	99m	11m	A- No Further Action Necessary	S23 39 03.1 E27 59 35.1
BEL	Mb-12	W111	175m	1m	Not a Heritage Resource/Site (A-F.A.N)	S23 39 11.1 E27 59 39.2
BEL	Mb-13	W264	45m	40m	Not a Heritage Resource/Site (A-F.A.N)	S23 40 01.2 E28 01 40.8
BEL	Mb-14	W272	116m	11 m	Not a Heritage Resource/Site (A-F.A.N)	S23 39 57.2 E28 03 11.9
ARCH	Mb-15	W285	55m	11m	A- No Further Action Necessary	S23 40 16.5 E28 06 09.3
ARCH	Mb-16	W285	150m	10.5m	A- No Further Action Necessary	S23 40 15.7 E28 06 12.6
ARCH	Mb-17	W284	158m	30m	A- No Further Action Necessary	S23 40 11.9 E28 06 23.5
ARCH	Mb-18	W283	53m	9m	B- Collection of Material	S23 40 11.5 E28 06 30.8
ARCH	MB-19 & 19a	W283	44m (19a) and 30m (19)	2m(19a) and 4m (19)	A- No Further Action Necessary	19- S23 40 10.7 E28 06 33.6; 19- S23 40 10.7 E28 06 33.6
ARCH	MB-20 (incl. MB-2a, MB-20b & MB20c)	W283	69m (MB20); 65m (MB20a); 65m (MB-20b); 64m (20c)	4m (MB20); 14m (MB20a); 2m (MB-20b); 6m (20c)	A- No Further Action Necessary	MB-20 S23 40 10.2 E28 06 34.8;MB-20a S23 40 10.8 E28 06 34.8; MB-20b S23 40 10.3 E28 06 34.8; MB-20c S23 40

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						10.1 E28 06 34.6
ARCH	MB-21	W283	104m	13m	A- No Further Action Necessary	S23 40 09.6 E28 06 36.0
BEL	MB-22	W283	135m	7m	A- No Further Action Necessary	S23 40 09.5 E28 06 37.1
BEL	MB-23	W281	32m	28m	A- No Further Action Necessary	S23 40 04.6 E28 06 55.9
BEL	MB-24	W316	92m	17m	A- No Further Action Necessary	S23 41 33.0 E28 12 20.9
ARCH	MB-25	W332	154m	3m	A- No Further Action Necessary	S23 40 08.1 E28 15 32.8
ARCH	MB-26	W354	159m	3m	A- No Further Action Necessary	S23 38 06.7 E28 20 09.7
ARCH	MB-27	W355	143m (MB-27)	9m	B- Mapping & Controlled Sampling required	S23 38 13.8 E28 19 59.9 (MB-27); S23 38 16.3 E28 19 57.7 (MB-27a); S23 38 17.3 E28 19 55.2 (Mb-27b)
		198m (MB-27a); 127m (MB-27b)	9m(MB-27a); 13m(MB-27b)	198m (MB-27a); 127m (MB-27b)		
ARCH	MB-28	W357	34m	13m	B- Collection of Material	S23 38 29.5 E28 19 39.8
ARCH	MB-29	W357	74m	6m	A- No Further Action Necessary	S23 38 30.5 E28 19 38.8
ARCH	MB-30	W338	58m (MB-30); 37m (MB-30a);67m (MB30b)	57m (MB-30); 10m (MB-30a); 2m (MB-30b)	C-No-go Area, Avoid site & ECO Monitor	S23 39 53.0 E28 16 03.4 (MB-30);S23 39 54.5 E28 16 02.4 (MB-3a);S23 39 54.9 E28 16 01.3 (MB-30b)
BEL	MB-31	W399	73m	3m	Not a Heritage Resource/Site (A-F.A.N)	S23 35 14.3 E28 27 03.2
BEL	MB-32	W431	65m	23m	A- No Further Action Necessary	S23 35 29.4 E28 32 31.0
ARCH	MB-33	W426	211m	5m	B- Collection of Material	S23 35 52.0 E28 33 54.5
ARCH	MB-34	W438	62m	18m	A- No Further Action Necessary	S23 36 05.0 E28 34 55.2
ARCH	MB-35	W451	141m	26m	A- No Further Action Necessary	S23 36 19.3 E28 36 09.4
BGG?	MB-36	W451	142m	12m	Not a Heritage Resource/Site (A-F.A.N)	S23 36 20.5 E28 36 09.4
ARCH	MB-37	W471	86m	7m	B- Collection of Material	S23 36 44.2 E28 39 30.9
BEL	MB-38	W518	31m	4m	Not a Heritage Resource/Site (A-F.A.N)	S23 36 20.5 E28 36 09.4
BGG?	MB-39	W561	20m	8m	Not a Heritage Resource/Site (A-F.A.N)	S23 52 36.0 E28 56 51.1
BEL (Z.C.C)	MB-40	W552	91m	3m	Not a Heritage Resource/Site (A-F.A.N)	S23 51 28.1 E28 54 44.5
BGG?	MB-41	W547	65m	39m	Not a Heritage Resource/Site (A-F.A.N)	S23 50 35.4 E28 52 05.7
ARCH	MB-42	W546	236m	117m	C-No-go Area, Avoid site & ECO Monitor	S23 50 43.2 E28 52 10.9
ARCH	MB-43	W476	64m	20m	A- No Further Action Necessary	S23 46 56.7 E28 47 50.7
BGG	MB-44	W477	98m	58m	C-No-go Area, Avoid site	S23 46 46.9 E28 47 42.8

10.2. APPENDIX 2: HERITAGE MANAGEMENT PLAN INPUT INTO THE MEDUP-BORUTHO TRANSMISSION LINE CORRODR EMP, LIMPOPO PROVINCE, SOUTH AFRICA

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Chart Title:	Heritage Management Inputs for the Medupi-Borutho Transmission Line Corridor, EMP , Limpopo Province , South Africa								© NGT
Project Title:									
Objectives of the inputs	• To avoided disturbance/destruction/damage to the identified and unidentified heritage resources with and immediately around the project area • To actively and properly manage all the identified resources with the project area • To mitigate any impact or potential impacts to the identified and unidentified heritage resources during the project planning, construction and operational phases								
Type of Resources	Mitigation of Heritage Resources During Different Project Phases					Responsibility/Implementer/Monitor	Duration	Contact	EMP
	Planning	Construction	Chance Finds/Disturbances During Construction	Rehabilitation	Operational			Client/EM to	
Archaeological [Stone Age (ESA, MSA&LSA); Iron Age (EIA, MIA? LIA); Rock Art; & Historic Archaeology]; Palaeontological; & Meteorite.	Ensure that all the identified and mapped archaeological resources, both within and immediately around the project footprint, are demarcated in preparation for construction activities and associated infrastructure. (These Sections are also worthy to note 7, 27, 31 of the NHRA, N0.25 of 1999). A 5m buffer is recommended	Ensure that the demarcated archaeological resources, both with and immediately around the project footprint, are not disturbed at all times. Ensure that no machinery or other construction related infrastructure compromises the nature of any of these resources	Construction needs to stop immediately and a professional and accredited archaeologist or palaeontologist need to be called on sites to investigate and evaluate the finds and make necessary recommendations (e.g. objects in terms of Section 32 of the NHRA, No. 25 of 1999)	The identified mapped and demarcated archaeological resources need to be included in the rehabilitation plan of the project	During this phase all the resources that were identified and demarcated for conservation purposes need to be monitored on 6 months to annual basis	Environmental Control Officer (ECO) © NGT	Throughout the project – reporting to environmental manager on weekly basis and urgently in cases of chance finds.	Contact a professional and accredited archaeologist in terms of Section 35 of the NHRA, No.25 of 1999. “Preferable the one involved in the project scoping and/or EIA phases”	Include all significant archaeological/palaeontological/meteorite resources in the Integrated Environmental Management Plan as part of Section 35 of the NHRA, No.25 of 1999 or include them in terms of Section 38 of the NHRA depending

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									on the nature and size of development
Historical, Built Environment & Landscape (incl. Industrial)	Ensure that all historical, built environment & landscape features including industrial structures/features are documented, mapped, demarcated in preparation for construction activities and related infrastructure unless they will form part of the project construction such addition and/or alteration in which case a permit needs to be applied for from relevant responsible authority e.g. SAHRA or	Ensure that all the demarcated historical & built environment and landscape feature including industrial structures/features are not in any way compromised by the construction unless they form an integral part of the construction such as additions and/or alterations.	Should any unplanned disturbance to such resources occur as a result of unforeseen events such as accident the work needs to stop immediately and a qualified heritage consultant needs to be called on site to investigate and evaluate the nature of disturbance and make necessary recommendations. In case of discovery of heritage objects (in terms of Section 32 of the NHRA, No 25 of 1999)	The identified mapped and demarcated resources or resources included in the current project construction activities either through additions and/or alterations need to be included in the overall project area rehabilitation	During this phase all the resources that were identified and demarcated for conservation purposes need to be monitored on 6 months to annual basis – this includes structures/ features added on/altered	ECO	Throughout the project – reporting to environmental manager/project manager on weekly basis and urgently in cases of unforeseen disturbances as a result of accidents.	Contact a professional and accredited heritage consultant in terms of Section 34 of the NHRA, No.25 of 1999. "Preferable the one involved in the project scoping and/or EIA phases". In case of discovery of heritage objects (in terms of Section 32 of the NHRA, No 25 of 1999) through construction/digging, an archaeologist will be called on site.	Include all significant heritage resources in the Integrated Environmental Management Plan as part of Section 34 of the NHRA, No.25 of 1999 or include them in terms of Section 38 of the NHRA depending on the nature and size of development

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	PHRA (refer to Section 7 & 27 of the NHRA, N0.25 of 1999). A 5 to 2m buffer is recommended for structures/features not forming part of the current construction.		through construction/digging an archaeologist will be called on site.						
Burial Grounds & Grave	Ensure that all the identified and mapped burial grounds and graves sites (e.g. isolate graves or cemeteries – both municipal formalised and those not formalised as such), both within and immediately around the project footprint, are demarcated in preparation for construction activities and associated infrastructure. Should it be deemed that they will inevitably be disturbed a permit needs to be applied	Ensure that the demarcated burial grounds and grave sites, both with and immediately around the project footprint, are not disturbed at all times. Ensure that no machinery or other construction related infrastructure compromises the nature of any of these resources	Should any an previously un identified burials and graves, as a result of them being unmarked to make them visible, be accidentally discovered/uncover - construction needs to stop immediately and a professional and accredited archaeologist dealings with burials and graves need to be called on sites to investigate and evaluate the finds and make necessary recommendations (e.g. in	The identified, mapped and demarcated burial grounds and graves sites need to be included in the rehabilitation plan of the project	During this phase all the resources that were identified and demarcated for conservation purposes need to be monitored on monthly, 6 months to annual basis as deemed necessary by the responsible archaeologist in consultation with the EM or client & ECO	Environmental Control Officer (ECO)	Throughout the project – reporting to environmental manager on weekly basis and urgently in cases of accidentally discovered/uncovered burials and graves.	Contact a professional and accredited archaeologist in terms of Section 35 of the NHRA, No.25 of 1999. “Preferable the one involved in the project scoping and/or EIA phases”	Include all burials and graves Integrated Environmental Management Plan as part of Section 36 of the NHRA, No.25 of 1999 or include them in terms of Section 38 of the NHRA depending on the nature and size of development.

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© NGT	for with SAHRA BGG Unit in terms of Section 36 of the NHRA, N0.25 of 1999). In a case where they will not be direct impacted it is recommended that a 5m buffer need to be made available		terms of Section 36 of the NHRA, No. 25 of 1999)						

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