environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

HERITAGE IMPACT ASSESSMENT REPORT AND MANAGEMENT PLAN RELATING TO THE ESTABLISHMENT OF THE VELE COLLIERY NEAR MAPUNGUBWE WORLD HERITAGE SITE, MUSINA, LIMPOPO PROVINCE: SOUTH AFRICA

Report prepared for Limpopo Coal Company (Pty) Ltd for submission to the Department of Environmental Affairs

April 2012

siyathembana trading 293 PTY LTD

COAL of AFRICA LIMITED

DECLARATION OF INDEPENDENCE

Siyathembana Trading 923 (Pty) Ltd has been appointed by Limpopo Coal Company (Pty) Ltd as Heritage Impact Assessment consultants to assess the impact of Vele Colliery on the Outstanding Universal Value (OUV) of Mapungubwe Cultural Landscape. The report will be submitted to the South African Department of Environmental Affairs (DEA). The Company does not have vested interests in the proposed activity proceedings, have no and will not engage in conflicting interests in undertaking such activity. Siyathembana Trading has provided all information at their disposal regarding the study, whether such information is favourable or not, to Limpopo Coal Company.

_____ _____

Siyathembana Representative **DATE:**
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TERMS OF REFERENCE

In order to assess both direct and indirect threats to the OUV of Mapungubwe, the following terms of reference were compiled and approved by the Heritage Impact Assessment Steering Committee Task Team comprising of different Government Departments and Institutions at national and provincial level established and chaired by the Deputy Director-General: Biodiversity and Conservation of the DEA.

Heritage Impact Assessment for the MCL and WHS component

The following must be addressed for this component of the HIA:

a) Identification of heritage resources that make up the MCLWHS and its Statement of OUV (SoOUV);
b) Assessment of the potential impact (both positive and negative as well as short and long term) of the proposed mine and its associated activities on the SoOUV for MCLWHS. Potential impact at all stages of the mine lifespan (pre-mining, mining and closure stages) must be clearly indicated;
c) Generation of mitigation measures to enhance or curb the identified impact – including short and long term measures, and clearly indicating which ones are to run throughout the lifespan of the mine and its associated activities;
d) Compilation of an HIA report in line with components of heritage that make up the MCLWHS and its SoOUV;
e) Development of a Heritage Management Plan (HMP) to;

    i. Guide LCC and the relevant stakeholders in addressing the identified impacts;
    ii. Actionalize issues identified in (b) and (c) as clearly as possible, indicating what needs to be done, the targets and responsible persons/institutions;
    iii. Make recommendations for structures necessary for the implementation of the HMP;
    iv. Develop a monitoring programme to facilitate effective implementation of the HMP.

f) Recommendations for beneficiation projects such as research, publications and community heritage projects, i.e. contribute to the knowledge of Mapungubwe for dissemination to the general public.

Heritage Impact Assessment for the Vele Licensed Mining Area Component

The following must be addressed for this section of the HIA;

a) Re-assessment of the potential impact (both positive and negative as well as short and long term) of the proposed mine and its associated activities on heritage within the licensed mining area. Potential impact at all stages of the mine lifespan (pre-mining, mining and closure stages) must be clearly indicated;
b) Generation of mitigation measures to enhance or curb the identified impacts. This should include short and long term measures. A clear indication must been given of which measures are to run throughout the lifespan of the mine and its associated activities;

c) Compilation of a HIA report that has the following components:

i. Archaeology – Stone Age, Iron Age, Rock Art
ii. Palaeontology
iii. History or Contemporary History (some as represented by historical graves and settlements)
iv. Living heritage and intangible heritage

d) Development of a HMP to:

i. Guide LCC and the relevant stakeholders in addressing the identified impacts;
ii. Actionalize issues identified in (a) and (b) as clearly as possible, indicating what needs to be done, the targets and responsible persons/institutions.
iii. Make recommendations for structures necessary for implementation of the HMP;
iv. Align proposed management measures with the mining program (schedule) to facilitate effective implementation;
v. Develop a monitoring programme to facilitate effective implementation of the HMP.

e) Recommendations for beneficiation projects such as research, publications and community heritage projects, and contribute to the knowledge of Mapungubwe for dissemination to the general public.

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ABBREVIATIONS

ASAPA	-	Association of Southern African Professional Archaeologists
CoAL	-	Coal of Africa Limited
DEA	-	Department of Environmental Affairs
DMR	-	Department of Mineral Resources
DRC	-	Democratic Republic of Congo
EMC	-	Environmental Management Committee
HIA	-	Heritage Impact Assessment
HMP	-	Heritage Management Plan
I&APs	-	Interested and Affected Parties
ICMM	-	International Council on Mining and Metals
ICOMOS	-	International Council of Monuments and Sites
LCC	-	Limpopo Coal Company (Pty) Ltd
MCLWHS	-	Mapungubwe Cultural Landscape World Heritage Site
MoA	-	Memorandum of Agreement
NGOs	-	Non Governmental Organizations
OUV	-	Outstanding Universal Value
PPF	-	Peace Parks Foundation
SAHRA	-	South African Heritage Resources Agency
SANParks	-	South African National Parks
SoOUV	-	Statement of Outstanding Universal Value
TFCA	-	Transfontier Conservation Area
UNESCO	-	United Nations Education, Scientific and Cultural Organisation
WHS	-	World Heritage Site

DEFINITION OF TERMS AND CONCEPTS

Descent communities	refers to those communities with ancestral ties to the Mapungubwe Cultural Landscape for example the Tshivulas, Leshibas, Machetes and the Balembas
Direct impact	impact with explicit effect on heritage resources especially one which destroys the resources
Direct threats	refers to explicit or directly observable dangers or risks
Indirect threats	implicit dangers or risks
Indirect impact	impact with an implicit, intangible or no directly observable effect on heritage resources
Impact	tangible and intangible effects of a proponent's activities on the integrity of heritage resources
Local communities	refers to those communities who reside in close proximity to the Mapungubwe Cultural Landscapes, for examples the surrounding local farmers
Mitigation	actions to minimize the impact, direct or indirect of development on heritage
Stakeholders	includes all interested and affected parties
Threats	dangers or risks posed to the long term survival of heritage resources

EXECUTIVE BRIEF

According to the 1972 UNESCO World Heritage Convention Concerning the Protection of the World Cultural and Natural Heritage (1972) the "deterioration or disappearance of any item of the cultural or natural heritage constitutes a harmful impoverishment of the heritage of all nations of the world". It is for this reason that the Convention regards parts of this heritage to be of Outstanding Universal Value (OUV), because they represent or symbolize a set of ideas or values which are universally recognized as important, or having influenced the evolution of mankind as a whole or at one time or another. However, the pressures of modern infrastructure development and the need to provide essential services such as employment always exposes World Heritage Sites (WHSs) to direct and indirect impacts which must be identified and mitigated to preserve the OUVs.

The site of Mapungubwe was inscribed on the World Heritage list in March 2003, having satisfied nomination criteria ii, iii, iv and v of the UNESCO Convention. However, the area in which Mapungubwe is situated has proven to be geologically rich in minerals such as coal and diamonds. In a developing country such as South Africa, exploitation of mineral resources contributes to economic growth, uplift and empowers communities through creation of employment opportunities, and the provision of social amenities such as schools, hospitals and safe drinking water as part of corporate social responsibilities. In as much as mining developments have these positive potential benefits, unsustainable management of mining has the potential to harm the OUV of Mapungubwe World Heritage Site.

The main purpose of the HIA was to illustrate the potential impact (direct and indirect as well as short and long-term impacts) of the proposed Vele Colliery on the OUV of Mapungubwe Cultural Landscape World Heritage Site (MCLWHS) and compile a concomitant mitigation and monitoring plan.

The study used a methodology that combined desktop research, field visits and interviews with interested and affected parties. Public participation with local communities, heritage

authorities and professional bodies was also carried out to elicit stakeholder perceptions on impact monitoring and management. This methodology was informed by international best practice encapsulated in the International Council of Monuments and Sites (ICOMOS), Guidance on Heritage Impact Assessments (HIAs) for cultural world heritage properties (ICOMOS 2011) and the Proceedings of the Technical Workshop on World Heritage and Mining (June 2000). Local best practice was informed by the requirements of the National Heritage Resources Act, 1999 (Act 25 of 1999), SAHRA Minimum Standards for the Archaeological and Palaeontological Components of Impact Assessment Reports, the National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003) and the Mineral and Petroleum Resources Development Amendment Act, 2002 (Act 28 of 2002). Overall, the study reached the following conclusions:

1. The mining activities of Limpopo Coal Company (Pty) Ltd ("LCC")) associated with Vele Colliery do not directly impact on the core and the gazetted buffer of the listed World Heritage Property and the OUVs. However, the mining activities will impact on sites of the same time period as those in the World Heritage Property. These impacts are minimal and can be mitigated (Refer to Tables 7 & 8 and Annexure 8 of this report).

2. Interested and affected parties (I&APs) or stakeholders are concerned about the impact of Vele Colliery on the broader Mapungubwe Cultural Landscape (MCL). Feedback from stakeholders, following a detailed stakeholder engagement; indicates that a broad-based and continuous process of stakeholder engagement needs to be facilitated by the State Party (Refer to Tables 4, 9 & Annexure 7).

3. Limpopo Coal Company (Pty) Ltd, through the initial scoping and HIA for the proposed Vele Colliery, identified most heritage resources inside the LCC premises (Refer to Annexures 1 & 8) and created buffers (fences) around some of the recorded sites. However, the initial HIA study failed to relate these sites to those found in the core area of the MCLWHS. This made it difficult to assess the impact of the mining development on the OUVs. Furthermore, the study lacked a detailed mitigation and management plan to manage and mitigate the impact of the development on archaeological and other heritage resources.

4. There is no consensus regarding the meaning, purpose, nature and in some cases extent of the buffer zone of the MCLWHS. Various institutions, I&APs and other stakeholders have different conceptulisations of what constitutes such a buffer zone (Refer to Annexure 7).

5. The broader MCL extends to the neighbouring countries i.e. Botswana, Zimbabwe and some areas in South Africa outside the gazetted National Park. Mining activities are either taking place or have been licensed in all these areas and these activities may pose a threat both directly and indirectly to the individual elements of the cultural landscape. The State Party is making tremendous efforts to regularize such activities, and with full compliance to local legislation and effective monitoring, the impacts can be minimised.

Based on these conclusions, this report makes the following recommendations:

1. Matters arising from the nomination dossier must be immediately resolved by the State Party to enable effective protection and management of Mapungubwe World Heritage Site and Cultural Landscape. These include;

   (i) The transfer of targeted land to the managing authority and

(ii) Conclusion in the establishment of the Transfrontier Conservation Area.

2. Whilst acknowledging the efforts by the State Party to redefine the buffer zone of the MCLWHS, there is urgent need to speed up the process and to develop guidelines and regulations to govern the activities earmarked within such a zone. This buffer zone should be under the control of the management authority. It's recommended that no mining activities be allowed to take place in the buffer. All this will ensure adequate protection of the WHS and its associated OUVs in the short to long term.

3. In the short to long term, direct and indirect impacts must be continuously measured, monitored and mitigated throughout the life span of the mine. This equally applies to other proposed developments in the area.

4. In the short term, all heritage sites to be directly impacted by mining activities of Vele Colliery must be mitigated as required by the existing South African heritage legislation.

5. In the short to medium term, heritage sites outside the mining areas of Vele Colliery must be managed and researched during the entire course of the mining operation. While the sites are outside the listed World Heritage property, the information yielded will contribute towards a greater understanding of the broader MCL.

6. Since I&APs and other stakeholders have significant points of divergence, the State Party is encouraged to immediately conduct a comprehensive Stakeholder Engagement Programme with the aim of reaching consensus with the various parties. In the long term, the State Party must consider carrying out continuous stakeholder engagement to address concerns of stakeholders regarding the threats to the broader MCL. Such engagement will ensure the successful co-existence of sound heritage and biodiversity conservation with responsible development.

Summary

The sites located inside the core area of MWHS were seen as representative at the time of nomination. The proposed mining on Vele Colliery is situated outside the core and gazetted buffer zone. As such it has no direct impact on the OUVs of MWHS. The mining will, however, impact on the individual sites which make up the MCL as broadly defined. The proposed plans to monitor and mitigate the negative impacts will ensure that the integrity of the listed property will not be compromised.

1. Introduction

According to ICOMOS Guidelines on Heritage Impact Assessments for Cultural World Heritage Properties, 2011; **"**World Heritage Sites are thus single heritage assets with an international value that has been clearly articulated. Not everything within them contributes to OUV, but those attributes that do must be appropriately protected". The core of the MCL contains a representative collection of attributes that must be protected (Mapungubwe Nomination Dossier 2002).

This report is structured as follows: Chapter 1 provides an introduction and brief summary, Chapter 2 provides the conceptual approaches, Chapter 3 the data sources and methodology, Chapter 4 presents the results of the MCLWHS component, Chapter 5 presents the results of the Vele mining licensed area component, Chapter 6 focuses on the stakeholder engagement and consultation, Chapter 7 presents a Heritage Management Plan , and Chapter 8provides conclusions and recommendations.

1.1 Background to the Study

The MCL was listed as a World Heritage Site in 2003 on the basis of the 1972 World Heritage Convention Concerning the Protection of the World Cultural and Natural Heritage. Listed properties must have outstanding universal values which are non-negotiable. South Africa boasts with eight world heritage sites (Refer to Fig 1). World Heritage Sites across the globe are faced with threats both direct and indirect to their OUVs.

Fig 1: Map of South Africa showing its 8 World Heritage Sites in their respective classes (Natural, Cultural and Mixed)

1.2 Location of Vele Colliery

Limpopo Coal Company (Pty) Ltd initiated a process to explore coking coal at Vele Colliery situated about 25 kilometers from Mapungubwe Hill in the Vhembe District and Musina Local Municipality. Limpopo Coal Company (Pty) Ltd, through its subsidiary Harissia Investment purchased various farms stretching from Dongola Hill to within seven kilometers of the eastern boundary of MCLWHS and National Park (Refer to Fig 2).

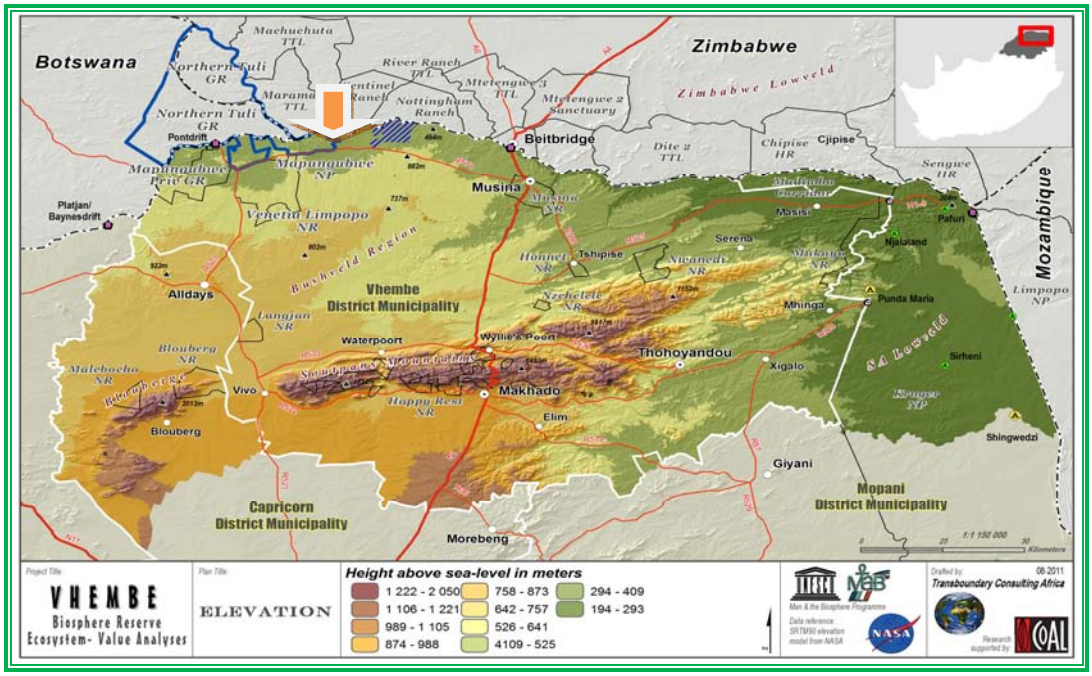

Fig 2: Location of Vele Colliery (stippled in blue) in relation to Mapungubwe National Park and the Vhembe Biosphere Reserve in the Limpopo Province

1.3 Statutory Requirements

In conformity with the relevant environmental legal framework, an Environmental Impact Assessment (EIA) was conducted in 2009 by an independent Environmental Assessment Practitioner (EAP) as part of the New Order Mining Right (NOMR) for the proposed Vele Colliery. The study included a broad based HIA comprising a heritage impact survey (by R&R Consultants; (Annexure 1), a paleontology study (conducted by Dr. J.F. Durand; Annexure 2, and a rock art study (by Dr. J.C. Hollmann; (Annexure 3). The inputs and comments made by a number of stakeholders and which rightly points out, amongst others, the sensitivity of the MCL which obviously exceeded the boundaries of the buffer provided by the Mapungubwe National Park and as enshrined in the Mapungubwe Nomination Dossier (Mapungubwe Nomination Dossier, 2002). The general concern about these studies was that although their terms of reference focused on the proposed Vele Colliery development site, the studies did not provide a clear indication of the proposed impact of Vele Colliery on the OUVs of MWHS and the broader MCL.

The limited nature of these studies and the unquestioned importance of preserving the integrity of the MCL precipitated the necessity to conduct an additional HIA study. Such a study would broaden the scope and application of the existing HIA by conducting a thorough

assessment of the potential impact of the mine development on the OUVs of the MWH property.

Besides the prescribed terms of reference, Siyathembana Trading (Pty) Ltd was guided by the essential guidelines developed by UNESCO and ICOMOS in assessing risk to World Heritage Sites as well as achieving a balance between the protection of World Heritage Sites and infrastructure development activities such as mining. The assessment was also guided by the values and philosophies in the South African heritage and environmental protection legislation that emphasize that development be "socially, culturally, environmentally and economically sustainable and where unnatural disturbance is unavoidable, it must be mitigated to enhance the cultural and natural heritage". These principles are outlined in the National Environmental Management Act, 1998 (Act 108 of 1998) and the National Heritage Resources Act, 1999 (Act 25 of 1999).

The existing Memorandum of Agreement (MoA) between the International Council on Mining and Metals (ICMM) and UNESCO has enumerated a set of principles that must be met for development and heritage protection to co-exist. This MoA states the need for clear communication, the importance of compromises in protecting the integrity of heritage and the need to allow for responsible development. These guidelines are essential in evaluating the risks and or opportunities associated with development in heritage sensitive areas. When combined with a number of conceptual frameworks such as the continuous evolution of cultural landscapes and robust qualitative methodologies, these guidelines offer a potent platform for risk assessment and management.

This report provides the results of the additional HIA and evaluates existing studies, in particular, assessing the direct and indirect impacts to the OUVs of the MCL. It has been established that the threats which were identified during the time of nomination are basically the same as those prevailing today. Intensive agriculture, though reduced somewhat in terms of scale, is still a feature of the landscape while the scale of mining has increased. In neighboring countries, mines such as Tuli Coal in Zimbabwe are abandoned while prospecting has been reported in Botswana. Game ranching has increased in recent years and there is no evidence to suggest that impact studies were done for the construction of access roads on these ranches.

A field-based risk and impact assessment revealed that Vele Colliery largely poses no direct threat to the OUVs of the MCLWHS, but rather indirect and localized impacts. These indirect impacts include the possible negative effect of dust on the rock art while the potential destruction of sites on Vele represents localized impacts. Continuous monitoring is required to ascertain the effect of indirect threats. The indirect effect can be effectively mitigated by generating additional data that would add to the existing knowledge on the MCLWHS. A mitigation plan has been developed which, if implemented will achieve South African legislative compliance while balancing the needs of heritage with those of infrastructure development as recommended by both the ICOMOS and UNESCO.

1.4 Mapungubwe World Heritage Property Descriptions

The MCLWHS is located near the confluence of the Shashe and Limpopo Rivers, the meeting point for Botswana, South Africa and Zimbabwe (Refer to Fig 1 and 2). The boundaries of the property are defined by the following coordinates:

NW corner, 22°12'56"S 29°08'22"E
NE corner, 22°10'10"S 29°29'04"E
SE corner, 22°14'15"S 29°31'35"E
SW corner, 22°17'40"S 29°12'00"E

The area is bound by the Limpopo River to the north, the Alldays-Pontdrift road to the west; the Musina-Pontdrift road and the boundary of the farm Riedel to the south, and by the boundary of the farm Riedel and an as yet unsurveyed line up the western side of the irrigated lands on the farm Weipe in the east. In total, the area measures 28 168.66 hectares in geographical extent, and is likely to increase substantially if plans for developing a Transfrontier Conservation Area (TFCA) that would include the adjacent areas of Botswana and Zimbabwe are realized (Fig 3).

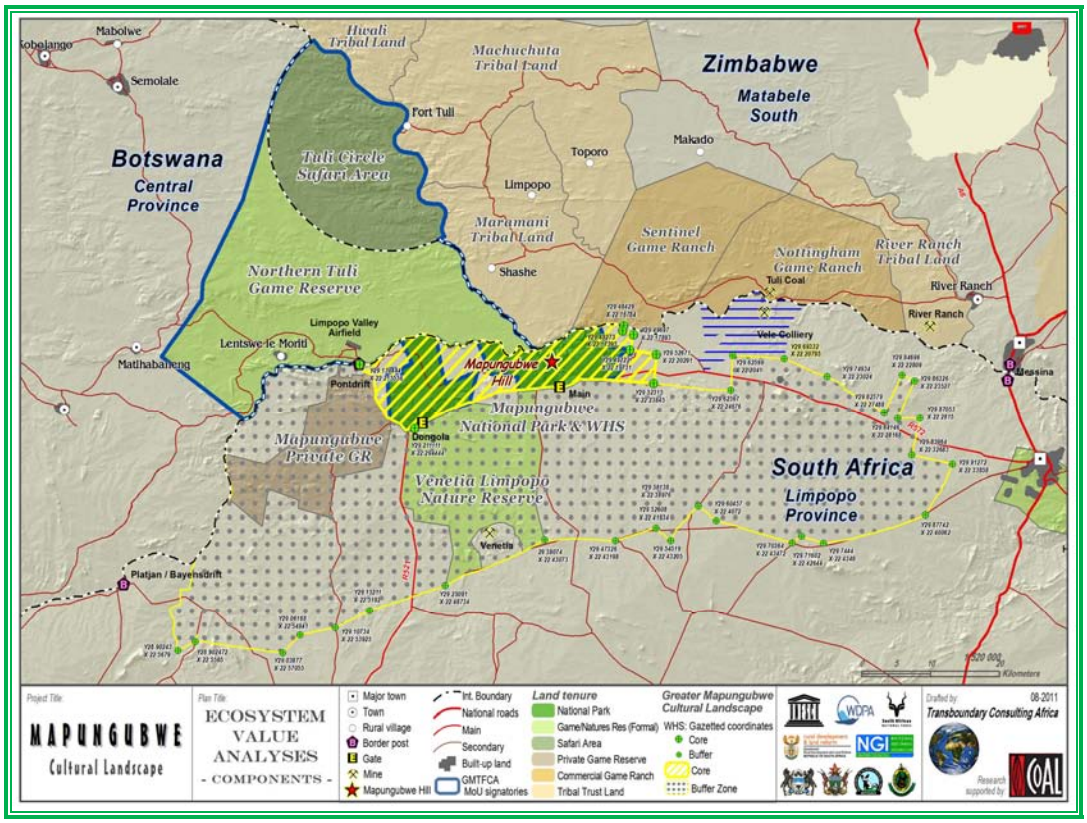

Fig 3: Spatial representation of the gazette coordinates for the core and buffer zones of the Mapungubwe Cultural Landscape which is not being strongly enforced. Note that other buffer zones also exist. Vele Colliery is outside the buffer zone showing the need to create one between it and the World Heritage Site

1.5 Statement of OUV, MCL, South Africa ID. No 1099

In order to assess impact at individual sites and collectively, it is important to outline the attributes that individually and collectively define the OUV of the MCL. The following statement of OUV was defined by UNESCO and is critical for identifying any potential threats, direct or indirect to the cultural landscape.

Brief Synthesis

The MCL demonstrates the rise and fall of the first indigenous kingdom in Southern Africa between 900 and 1300 AD. The core area covers nearly 30,000 ha and is supported by a suggested buffer zone of around 100,000 ha. Within the core of the World Heritage property are the remains of three capitals - Schroda; K2/Bambandyanalo and the final one located around Mapungubwe hill - and their satellite settlements and lands around the confluence of the Limpopo and the Shashe rivers whose fertility supported a large population within the kingdom.

Mapungubwe's position at the crossing of the north/south and east/west routes in southern Africa also enabled it to control trade, through the East African ports to India and China, and throughout southern Africa. From its hinterland it harvested gold and ivory - commodities in scarce supply elsewhere – and this brought it great wealth as displayed through imports such as Chinese porcelain and Persian glass beads.

This international trade also created a society that was closely linked to ideological adjustments, and changes in architecture and settlement planning. Until its demise at the end of the 13th century AD, Mapungubwe was the most important inland settlement in the African subcontinent and the cultural landscape contains a wealth of information in archaeological sites that records its development. The evidence reveals how trade increased and developed in a pattern influenced by an elite class with a sacred leadership where the king was secluded from the commoners located in the surrounding settlements.

Mapungubwe's demise was brought about by climatic change. During its final two millennia, periods of warmer and wetter conditions suitable for agriculture in the Limpopo/Shashe valley were interspersed with cooler and drier pulses. When rainfall decreased after 1300 AD, the land could no longer sustain a high population using traditional farming methods, and the inhabitants were obliged to disperse. Mapungubwe's position as a power base shifted north to Great Zimbabwe and, later, Khami. The remains of this famous kingdom, when viewed against the present day fauna and flora, and the geo-morphological formations of the Limpopo/Shashe confluence, create an impressive cultural landscape of universal significance.

> ***Criterion (ii):*** The MCL contains evidence for an important interchange of human values that led to far-reaching cultural and social changes in Southern Africa between AD 900 and 1300.
>
> ***Criterion (iii):*** The remains in the MCL are a remarkably complete testimony to the growth and subsequent decline of the Mapungubwe State which at its height was the largest kingdom in the African subcontinent.
>
> ***Criterion (iv):*** The establishment of Mapungubwe as a powerful state trading through the East African ports with Arabia and India was a significant stage in the history of the African sub-continent.
>
> ***Criterion (v):*** The remains in the Mapungubwe cultural landscape graphically illustrate the impact of climate change and record the growth and then decline of the Kingdom of Mapungubwe as a clear record of a culture that became vulnerable to irreversible change.

Integrity

All remains of the main settlements are in the nominated property, as are all major phases of the Mapungubwe kingdoms' development and decline. The property contains substantial areas of virtually untouched cultural landscape of very high quality but, pending their decommissioning, these are separated by some areas of modern citrus plantations and circular irrigated agricultural fields in private ownership. The considerable agricultural enterprise of the final phase at Mapungubwe has vanished. Although much of the core landscape has returned to its unimproved state with wild grazing game animals, the recent opening up of the property to big game, especially elephants needs to be considered, and is being monitored.

The Messina area is a rich mining area and the diamond mining operations at Riedel (small scale) and Venetia (major operation) could have a potential impact on the property. There is

also a possibility that deposits of other valuable minerals may yet be found. With mining rights being recently returned to the State, better future control was anticipated but the granting of a mining licence for coal 5 km from the boundary of the property, in a highly sensitive area adjacent to the Limpopo river and in the proposed buffer zone that was submitted at the time of the inscription, is a considerable threat. The integrity of the site has been affected by the standard of the excavations in the 1930s which it could be argued led to valuable evidence being lost – and thus the completeness of the site, in both physical and intellectual terms has been compromised.

Authenticity

The nominated property and buffer zone have largely not been subjected to any destructive form of human intervention since the remains were abandoned, and the current agricultural activities have not had a major impact on the cultural landscape in terms of its ability to convey its value. However there is a need to ensure that old excavations are not eroded by climatic forces or by uncontrolled visitors.

Protection and Management Requirements

The Mapungubwe site and the buffer zone are legally protected through the National Heritage Resources Act (No 25 of 1999), the World Heritage Convention Act (No 43 of 1999) and the National Environmental Management Act (No 73 of 1989). The property is also recognized as a protected area in terms of the National Environmental Management: Protected Areas, 2003 (Act 57 of 2003). This legislation implies that mining or prospecting will be completely prohibited from taking placing within the property and the buffer zone. Furthermore, any development with a potential impact on the property will be subjected to an environmental impact assessment.

The SANParks is the management authority for the property and provides overall management involving coordinating government and local community efforts to conserve the site. The SANParks is currently updating the Integrated Management Plan. Regular consultative meetings with stakeholders and local communities take place on the site through the park forum and by other means of engagement. A Trilateral Memorandum of Understanding is also being drawn up with the objective of establishing the Limpopo-Shashe Transfrontier Conservation Area (TFCA). This very extensive area of 5,040 km² will, when established, constitute an effective buffer zone. It is intended that each participating country will concentrate on one facet of protection: cultural heritage in South Africa; wildlife in Botswana; and living cultures in Zimbabwe.

To help guarantee long-term protection for the property there is a need to complete the Integrated Management Plan and to submit the buffer zone for approval by the World Heritage Committee. There is also a need to ensure that any consideration of mining licenses is in line with the recommendations of the Technical Workshop on World Heritage and Mining adopted at the 24th session of the World Heritage Committee, to ensure that mining does not constitute a threat to the property, its buffer zone or its wider setting.

List of Attributes That Convey OUV

The ICOMOS Guidance on Impact Assessments (2011) emphasizes the need to identify, define and list the attributes that convey OUV. This makes it easy to evaluate impact on those attributes individually and collectively.

Table 1: Attributes that convey OUV of MCLWHS

Criterion	List of Attributes that convey OUV
ii. MCL has evidence of interchange of human values	- The Limpopo River was important for local and international trade - Individual Zhizo, K2, and Mapungubwe Iron Age sites. Collectively, this ensemble of sites demonstrate interactions that led to far reaching social and cultural developments - Rock art, hunter-gatherer and Iron Age sites that demonstrate landscape sharing between farmers and hunting and gathering peoples - Archaeological objects that are testimony of local, regional and international interaction - Intangible values and living traditions associated with contemporary communities
iii. MCL contain remains that are testimony to the growth and subsequent decline of Mapungubwe which at its height was largest kingdom in the African subcontinent	- Individual Zhizo, K2, and Mapungubwe Iron Age sites. Collectively, this ensemble of sites demonstrate interactions that led to the rise and decline of Mapungubwe Floodplains of the Limpopo River anchored the agriculture that sustained the state Individual Khami, Venda, Sotho-Tswana and recent sites that show cultural succession in the MCL area
iv. Establishment of Mapungubwe as a powerful state trading through the East African ports with Arabia and India was a significant stage in the history of the sub-continent.	- The Limpopo River was significant for local and international trade - Individual local and exotic objects that are testimony to the local, regional and international trade. Examples include gold objects, ivory objects, Persian glass beads, and Chinese porcelain - The Limpopo flood plains hosted elephants which were hunted for ivory - Natural landscape, rivers, valleys, mountains
v. The remains in the Mapungubwe cultural landscape graphically illustrate the impact of climate change and record the growth and then decline of the kingdom of Mapungubwe as a clear record of a culture that became vulnerable to irreversible change.	- Individual Zhizo, K2, and Mapungubwe Iron Age type sites. Collectively, this ensemble of sites demonstrate interactions that led to the rise and decline of Mapungubwe - Floodplains of the Limpopo River anchored the agriculture that sustained the state - Individual Khami, Venda, Sotho-Tswana and recent sites that show cultural succession in the MCL area

According to the Nomination Dossier (UNESCO document 1099 of 2002), the MCL comprises of the:

- Remains of palaces dating to the Mapungubwe period, AD 1200 to 1300;
- Archaeological remains testifying to the beginnings of Mapungubwe dating from AD 900 to AD 1200 AD, represented by Zhizo and Leopard's Kopje cultures or communities;

- Remains of early settlement attributed to the Stone Age, the Early Iron Age and Rock Art traditions in the area or region;
- 'Natural' landscape surrounding the built remains;
- Intangible heritage which comprises Mapungubwe Hill itself that is associated with sacredness, beliefs, customs and traditions of local communities;
- Living heritage that is associated with continuing traditions of rain making, and participation by local communities in reburial ceremonies; and
- Landscape sharing and interaction between farmers and hunter-gatherers.

Although the landscape has evidence of human occupation dating back to millions of years, the nomination dossier states that the landscape was nominated on the basis of the Iron Age period, particularly the period between AD900 and 1300 (Fig 4). In summarizing the OUV of Mapungubwe, the nomination dossier states that "the Mapungubwe Cultural Landscape, whose remains are a testimony to the earliest known state society in southern Africa (AD 900-1300), when viewed against the present day fauna and flora, and the geo-morphological formations of the Shashe-Limpopo confluence, creates an impressive landscape of universal significance" (Mapungubwe Nomination Dossier 2002, Refer also to section 2.2 for a more comprehensive statement on Mapungubwe's OUVs). The occupation of this landscape has continued over time, anti-climaxing with the forced removal of local people during colonialism and the establishment of private farms, ranches and mines (KYS 2011; Refer to Annexure 4).

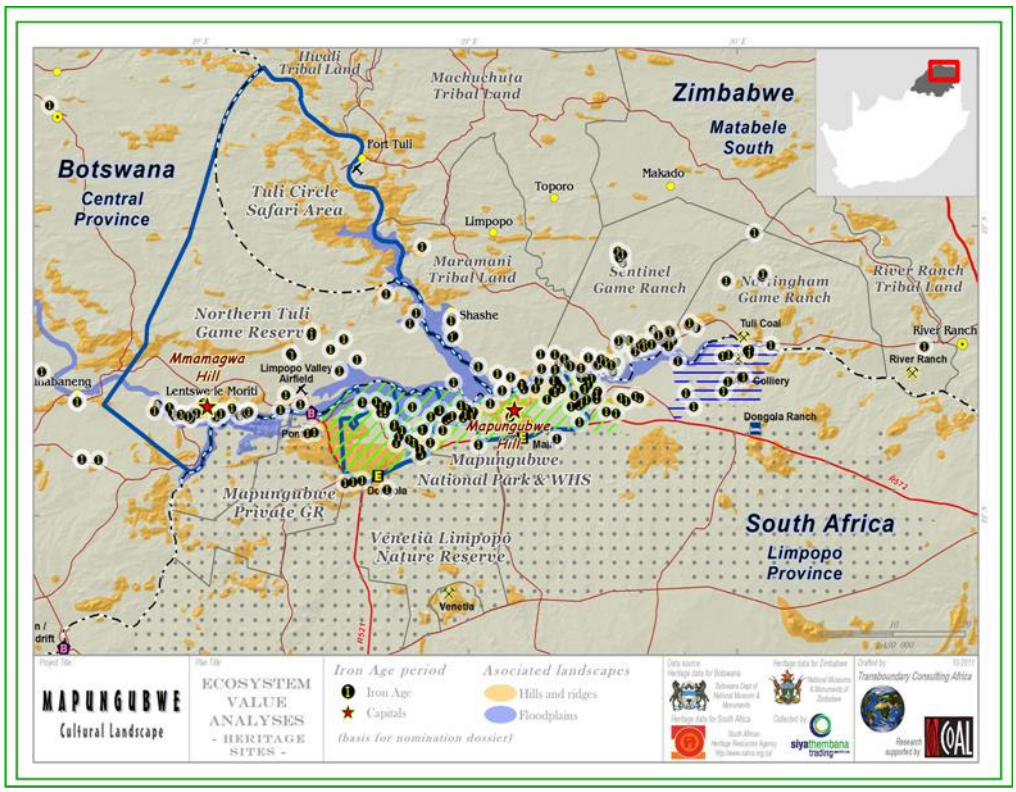

Fig 4: Map showing the distribution of known Iron Age sites in and adjacent to the Mapungubwe Cultural Landscape

The MCLWHS contains about 400 archaeological sites in the core area (listed property), some of which provide evidence for the evolution of the state of Mapungubwe between AD 900 and 1300. The settlement sequence of the MCLWHS starts with the Early Stone Age, followed by the Middle and Later Stone Ages with the Early, Middle and Late Iron Ages

subsequently following (Fig 5; Huffman 2000; Manyanga 2007). Recent research demonstrates the synchronous occupation of the landscape by both hunter gatherers and farmers during the Iron Age to historical times (Hall and Smith 2000; van Doornum 2008). In the last hundred years, colonialism resulted in the displacement of local people leading to the creation of farms and ranches owned by people of European descent. Mines have been established in the area showing the continuous evolution of this layered landscape (KYS 2011; Refer to Annexure 4).

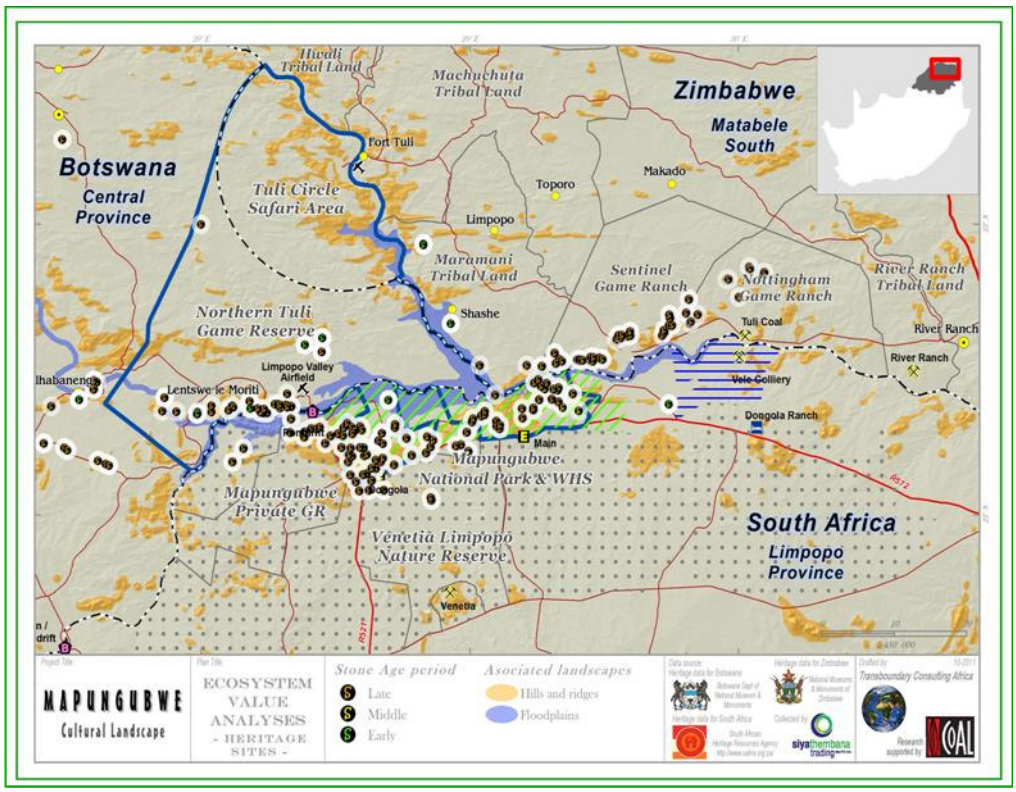

Fig 5: Map showing the distribution of known Stone Age sites in and adjacent to the Mapungubwe Cultural Landscape World Heritage

Three main phases of development are recognized in the broader Mapungubwe landscape and these are associated with the Iron Age (Huffman 2007). The first phase, known as Zhizo, lasted from about AD 900-1020 and is best preserved at the site of Schroda. The second phase, known as Leopard's Kopje or K2, has been investigated in detail at the site known as K2 on the farm Greefswald and dated from about AD 1020-1220. The most elaborate settlement during the third phase was on Mapungubwe Hill and the adjacent Southern Terrace and dated from AD 1220-1300. At the height of its importance, between AD 1220 and 1300, the MCL sustained a population of at least 9000 people. According to Huffman (2000), regular flooding of the Limpopo River provided silt and water for crops. Grazing lands enabled stock to be kept. Elephants were hunted for their ivory and other animals for their hides while mining provided iron, gold and copper ores. This landscape is evolving with each period leaving its mark, a process that continues to this day (Manyanga 2007) (Fig 6).

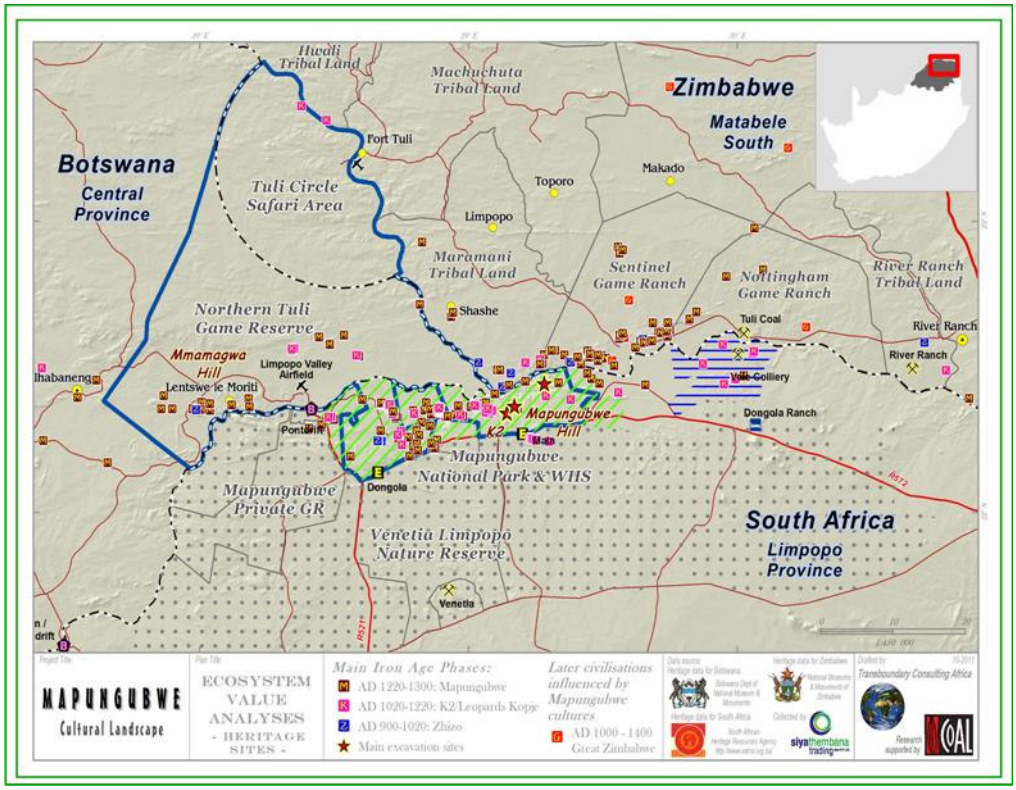

Fig 6: Map highlighting the distribution of the various groups that settled in the region of the Mapungubwe cultural landscape during various periods in history

At any given point in history, the MCL witnessed new activities performed at different scales. In the last thirty years or so, archaeological excavations, cattle and game ranching, intensive agriculture and mining have threatened the integrity of the landscape (Refer also to Mapungubwe Nomination Dossier). The establishment of a nature reserve and subsequently a national park has cushioned the 400 sites within its borders and provided protection from the ravages of development. With varying degrees of effectiveness, sites outside the core area are protected through the National Heritage Resources Act, 1999 and ancillary legislation.

1.6 Heritage at Risk and Mining

There are a number of WHSs at the risk of mining or modern development encroachment in the form of scale and extent similar to Mapungubwe. A significant number of sites are found in Africa, and indications are that this number is on the increase (Fig 7). According to IUCN, African Natural World Heritage sites that are increasingly threatened by commercial mining and oil/gas projects include:

- Virunga National Park in the Democratic Republic of Congo (DRC): In this park, gold mining and other armed conflict posing a threat to a park with some of the greatest diversity of habitats of any park in Africa, ranging from steppes, savannas and lava plains, swamps, lowland and montane forests to volcanoes and the unique giant herbs and snowfields of Ruwenzori over 5,000m high;
- Comoé National Park, Cote d'Ivoire: The government of Cote d'Ivoire is currently issuing licences to explore West Africa's largest biosphere reserve;

- Mount Nimba Strict Nature Reserve on the boundary of Cote d'Ivoire and Guinea: The nature reserve's unique biodiversity is under threat from miners extracting high grade iron ore;
- Dja Biosphere Reserve, Cameroon: This is home to some of the largest and best protected rainforest tracts in Africa, but now the reserve is under threat from cobalt mining operations on its precincts;
- Kahuzi-Biega National Park in the DRC: There are direct threat to gorillas – a protected species – due to unauthorised and unregulated coltan and gold mining;
- Selous Game Reserve, Tanzania: In this reserve, uranium exploration within the property, a 50,000 km^2 sanctuary is posing a direct threat to a large number of elephants, black rhinoceroses, cheetahs, giraffes, hippopotamuses and crocodiles, relatively undisturbed by human impact;
- Aïr and Ténére Nature Reserve , Niger: This is the largest protected area in Africa, covering some 7.7 million hectares, due to its unique desert landscape, flora and fauna but which is now under threat from petroleum prospecting activities;
- Manovo-Gounda Nature Reserves, Central African Republic: The largest savannah park in west and central Africa, located at a major biogeographic crossroads of central Africa, is being threatened by gas and petroleum exploration;
- Mana Pools National Park, Sapi and Chewore Safari Areas, Zimbabwe: Unregulated and unlicensed gold, copper and uranium exploitation is threating directly some of the natural wildlife species in these areas.

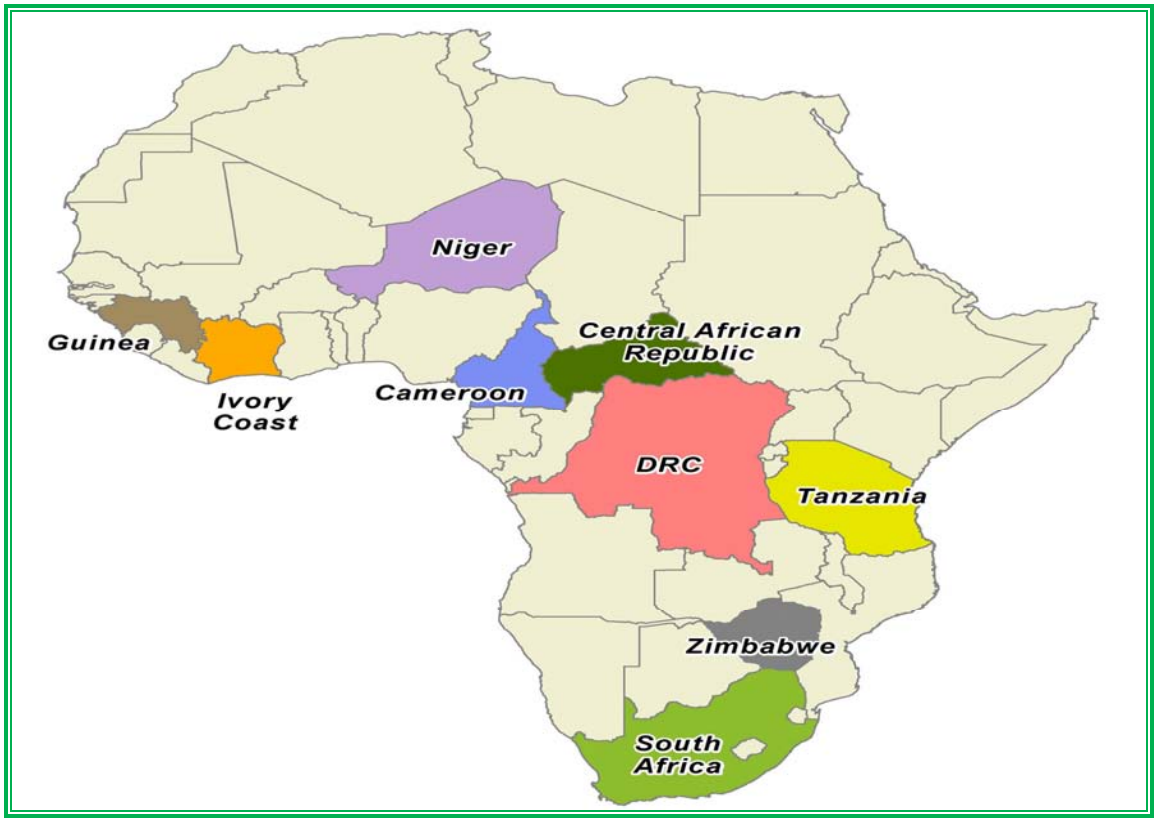

Fig 7: Countries in Africa where World Heritage Sites are under various threats from mining and gas/petroleum exploration activities

All these natural or cultural landscapes may be regarded as heritage at risk. These mining and exploration projects are in their nascent stages, which means that governments, mining and oil/gas companies, financial backers and other stakeholders have the opportunity to make well-informed decisions for present and future generations by committing to preserving

the heritage and thereby also safeguarding the livelihoods of local people and Africa's long-term sustainable development.

Other world examples where mining is posing a threat to cultural and natural heritage include:

- Larentz National Park in Indonesia, with the highest levels of biodiversity in South-East Asia, where gold mining is taking place directly in the national park;
- The Cave of Hands (Cueva de las Manos) in Argentina, where gold mining is now taking place within the associated landscape, threating outstanding panels of rock art in the Pinturas River ravine;
- Yellowstone National Park in USA, where waste contamination, sewage leakages, alien species and gold mining, are all posing a threat to the park's ecology and wildlife;
- Kakadu National Park in Australia where uranium mining is taking place inside the park, posing a risk to the living heritage associated with indigenous people living there;
- Doñana National Park in Spain which is directly exposed to toxic metallic waste spill; and
- Zhoukoudian in China, where quarrying within the site precincts is leading to loss of important geological specimens.

A wide range of conservation measures including ongoing monitoring, the establishment of regulations to govern activities in the buffer zones and full stakeholder participation have been suggested or implemented to minimise threats to OUVs for which the world heritage sites adjacent to the mining represent. The conservation, protection and management of Mapungubwe should draw from some of these examples, in respect of granting of mining licences; environmental management, community development, stakeholder participation, etc. (refer Figs 8 and 9 for the geology of the region). The International Council on Mines and Minerals (ICMM) Sustainable Development Framework (2003) has committed member companies to respect legally designated protected areas and not to explore or mine in World Heritage properties. It further stipulates that all possible steps be taken to ensure that existing operations in World Heritage properties as well as existing and future operations adjacent to World Heritage properties are not incompatible with the OUVs for which these properties are listed and do not put the integrity of these properties at risk (ICMM 2003). The main lesson from this comparative study is that if done within a compliance framework heritage and development can co-exist.

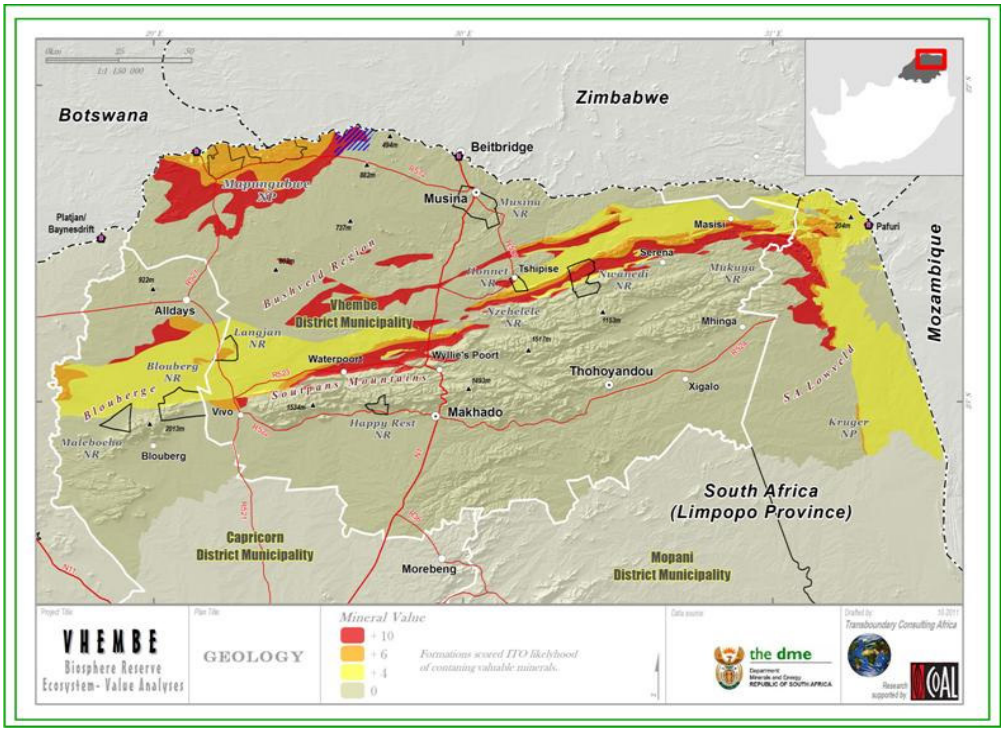

Fig 8: The mineral value of the geology of the Vhembe Biosphere Reserve in the Limpopo Province of South Africa. As will be shown later, most of the mineral rich areas have been prospected and or being explored

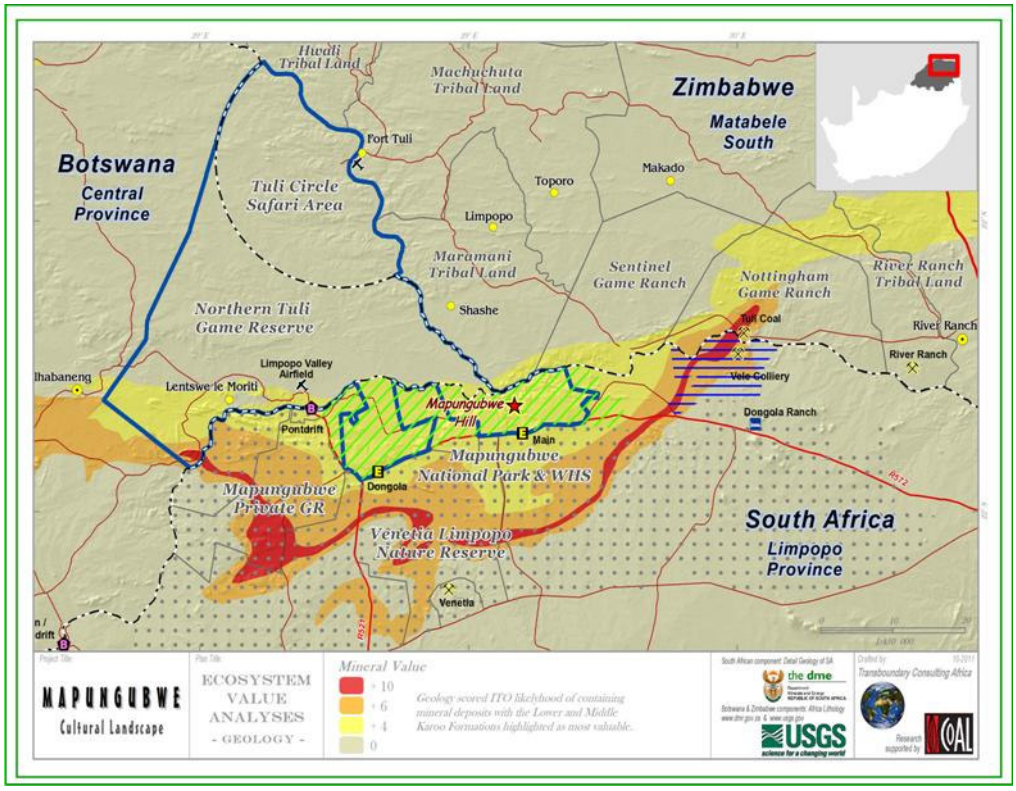

Fig 9: The mineral value of the geology of the Mapungubwe Cultural Landscape.

Summary

For millions of years, each generation has successively left its mark on the landscape. In recent times, population pressures and the need for economic development have threatened the existence of cultural remains from bygone generations, some of which have OUV to humanity. Such threats and impacts must be identified, managed and mitigated to ensure sustainability for present and future generations. It must always be borne in mind that the OUVs of Mapungubwe are based on the period AD 900 to 1300 as contained in the listed World Heritage Property (Mapungubwe Nomination Dossier 2000).

As such, threats to the integrity of sites dating to this period in the listed property constitute threats to the OUVs. The threats to other heritage resources such as Rock Art and Stone Age sites some of which date to the time before and after AD 900-1300 are adequately covered using the South African National Heritage Resources Act, 1999.

2. CONCEPTUAL APPROACHES

Given the sensitivities surrounding the MCL, a number of conceptual approaches were utilized to distill results that are specific to all the important issues. These approaches were designed to assess the impacts and opportunities associated with different land use activities around the MCL, but with special reference to the South African side. They stem from the local and international best practice represented by ICOMOS and its regulations, UNESCO and its regulations and guidelines, as well as local legislation and compliance frameworks.

2.1 Understanding Cultural Landscapes

Cultural landscapes are boundless and cannot be defined by geographical coordinates (UNSECO 1972; Munjeri 2000). This definition is supported by the fact that communities living around World Heritage sites such as Great Zimbabwe, Lalibella and others view heritage resources as points on an evolving landscape (Munjeri 2000). Cultural landscapes are places of cultural significance. According to the South African National Heritage Resources Act of 1999 ‘‘cultural significance’’ means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. As such, communities value heritage protection and continued but sustainable consumption of both the heritage and the landscape. Therefore, heritage protection and management inevitably must find a compromise between competing land uses.

2.2 Understanding Outstanding Universal Value (OUVs)

The World Heritage Convention Concerning the Protection of the World Cultural and Natural Heritage (1972) provides a framework for listing natural and cultural heritage of universal value as World Heritage Sites. It also notes that globally, heritage is at risk and that “deterioration or disappearance of any item of the cultural or natural heritage constitutes a harmful impoverishment of the heritage of all nations of the world”. Heritage protection at the national level very often remains incomplete because of the scale of the resources which it requires and of the insufficient economic, scientific and technological resources of the country where the property is situated. It is for this reason that the Convention regards parts of this heritage to be of outstanding interest and therefore needs to be preserved as part of the world heritage of mankind as a whole.

The concept of OUV first discussed by UNESCO in 1976, was interpreted as “meaning that a property submitted for inclusion in the World Heritage List should represent or symbolize a set of ideas or values which are universally recognized as important, or having influenced

the evolution of mankind as a whole or at one time or another". Since then, a number of criteria have been developed to measure OUV (Refer to Jokilehto 2005) and, at its 28th session, the World Heritage Committee agreed to the following definition, as set out in paragraph 49 of the Operational Guidelines (2005):

"***Outstanding universal value means cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity. As such, the permanent protection of this heritage is of the highest importance to the international community as a whole….***"

The Committee recognized that the definition and application of OUV will be subject to evolution over time. This evolution is reflected in the changes that have been made to the criteria and their application. The Committee also noted that the concept of OUV is often poorly understood and requires improved communication generally at the site level and recommended that the identification of OUV be achieved with the participation of stakeholders, including local communities and indigenous people. The development of the SoOUV for World Heritage properties as required by the Operational Guidelines for the Implementation of the World Heritage Convention (UNESCO 2008) was meant to set out clearly the attributes that reflect OUV and the links between them. Integrity and authenticity are also useful in understanding OUVs.

There are also concepts such as 'limits of acceptable change' and 'absorption capacity' which are being discussed within the framework of OUV. It is not clear at this stage how useful these concepts are, or how they may be operationalized. There is also no agreement on how to revive heritage value that has been eroded (ICOMOS 2008).

The MCL whose remains are a testimony to the earliest known state society in Southern Africa (AD 900-1300), when viewed against the present day fauna and flora, and the geo-morphological formations of the Limpopo/Shashe confluence, creates an impressive landscape of universal significance. Mapungubwe was placed on the World Heritage List in 2003 on the basis of the following criteria:

Criterion (ii):

The MCL contains evidence of an important interchange of human values that led to far-reaching cultural and social changes in Southern Africa between AD 900 and 1300 (Refer to Fig 10).

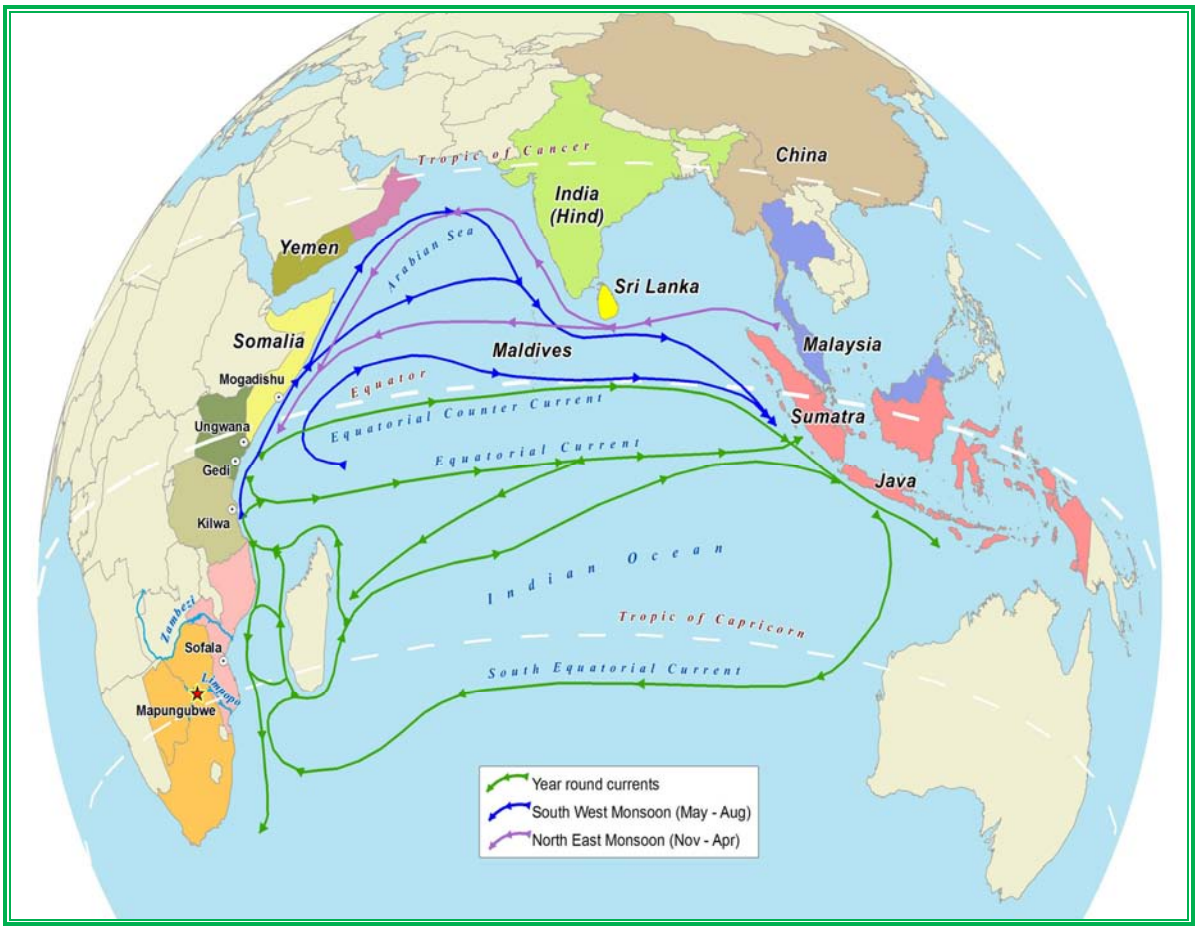

Fig 10: Mapungubwe OUV criterion ii - Illustration of the trade routes based on prevailing winds currents in the Indian Ocean linking with the Mapungubwe Kingdom.

Criterion (iii):

The remains in the MCL are a remarkably complete testimony to the growth and subsequent decline of the Mapungubwe State which at its height was the largest kingdom in the African sub-continent (Refer to Fig 11).

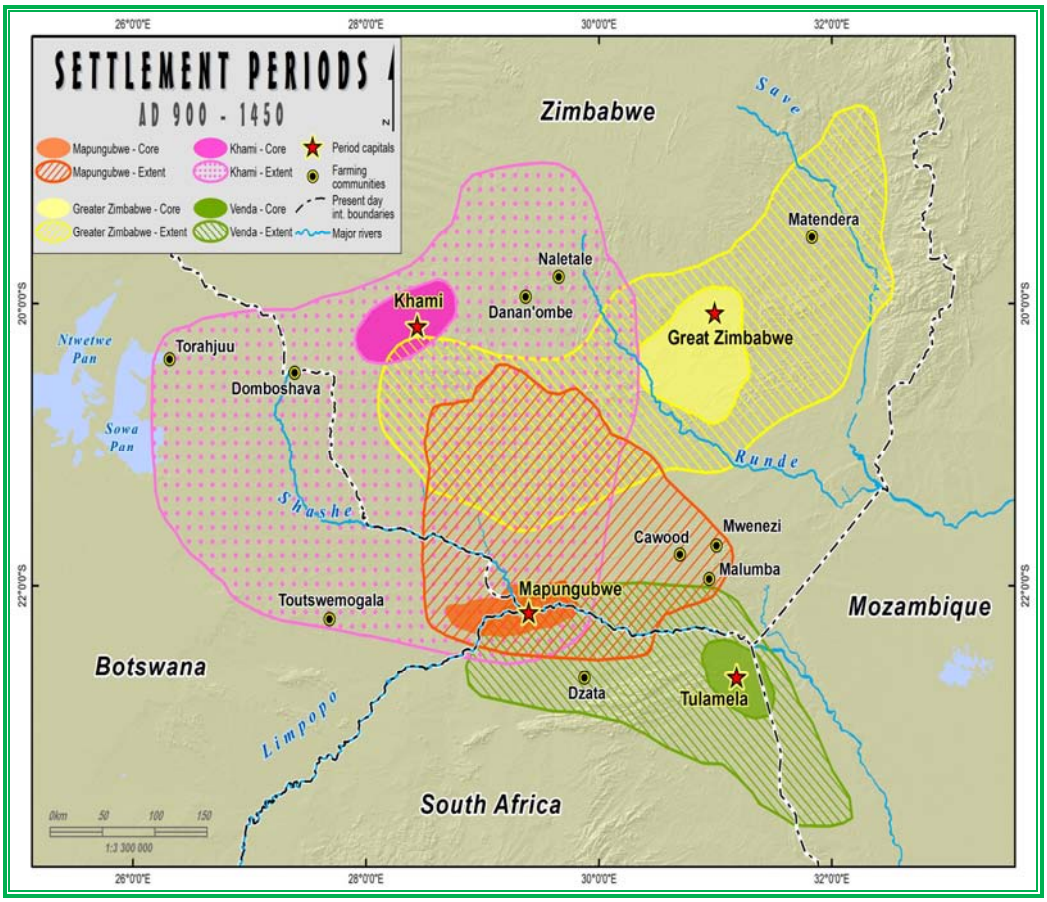

Fig 11: Mapungubwe OUV criteria iii - Overlapping settlement periods of the greater region providing proof of the interchange of human values

Criterion (iv):

The establishment of Mapungubwe as a powerful state trading through the East African ports with Arabia and India was a significant stage in the history of the African sub-continent (Fig 12).

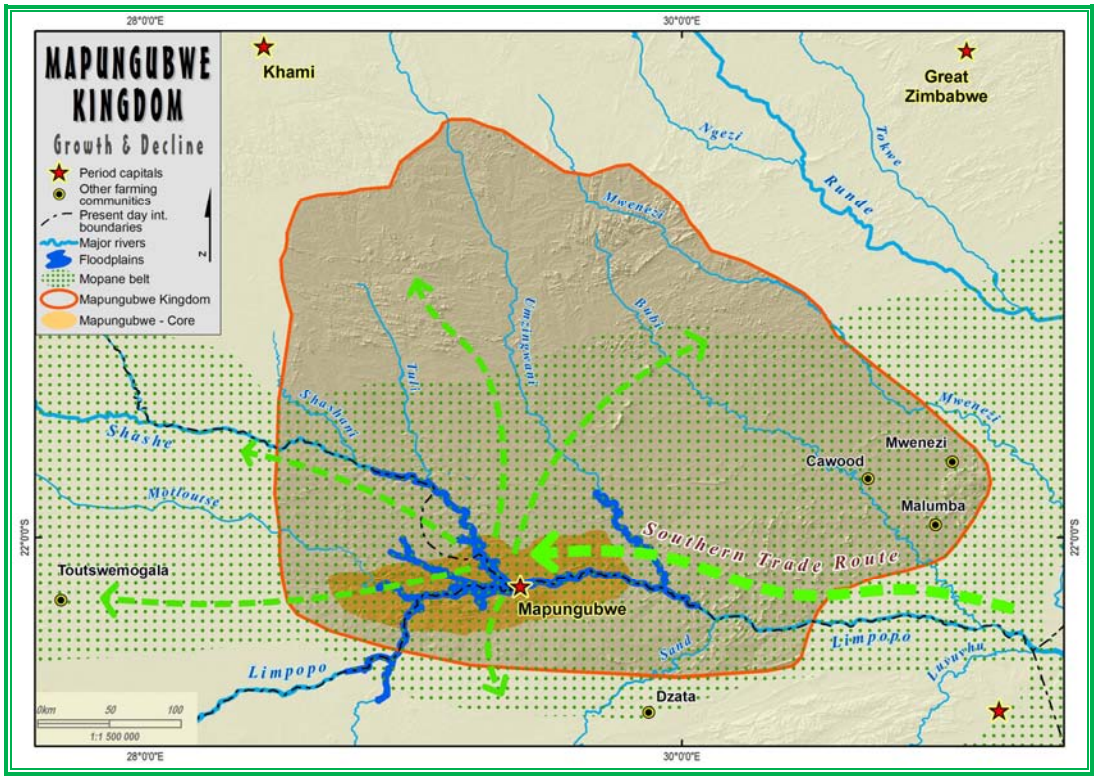

Fig 12: Mapungubwe OUV criterion iv: Trade routes along the Limpopo River and inland dispersion that contributed to the rise, development and demise of the kingdom based at Mapungubwe

Criterion (v):

The remains in the MCL graphically illustrate the impact of climate change and records the
growth and decline of the Kingdom of Mapungubwe as a clear record of a culture that
became vulnerable to irreversible change (Fig 13)**.**

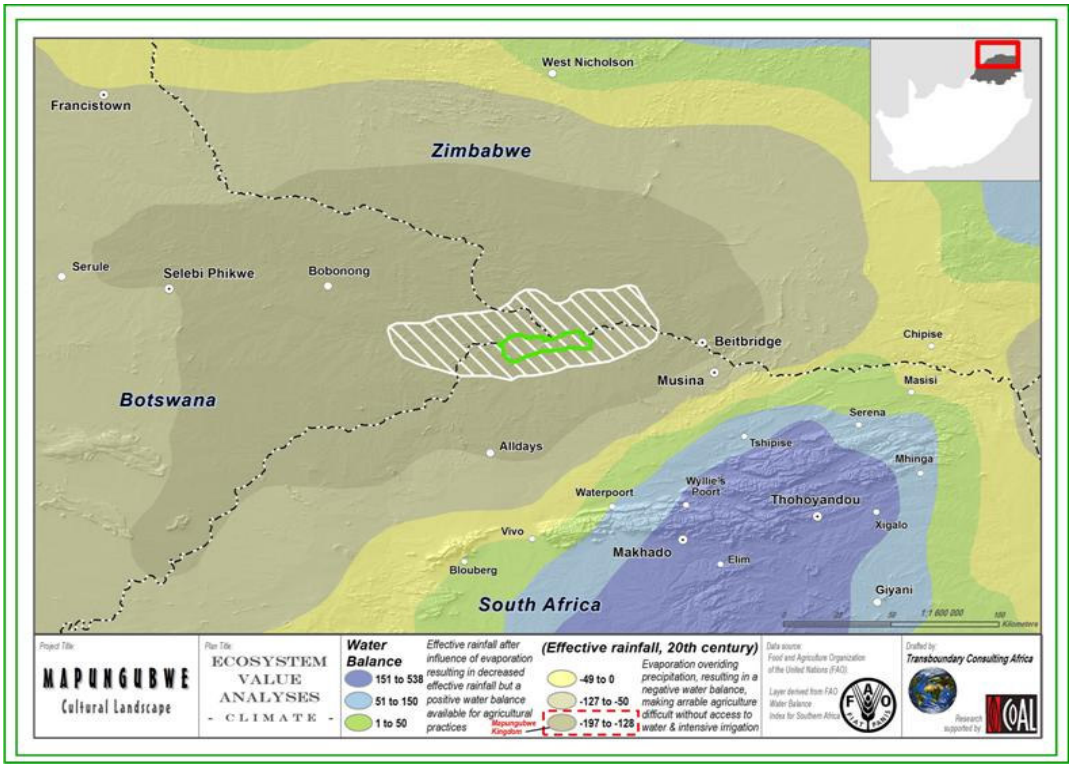

Fig 13: Mapungubwe OUV criterion v - 21st century climatic conditions that maybe similar to those that led to the decline of the Mapungubwe Kingdom in the 13th century

It is accepted by all State Parties that the OUV defines the thinking at the time and it is non-negotiable. Against this background, the HIA evaluated the integrity of these criteria against perceived and/or real threats, given that the MCL contains substantial areas of virtually untouched cultural landscape of very high quality. The original nomination dossier identified potential threats such as the re-introduction of wild grazing animals, agriculture and mining. All these threats were cumulatively engaged to devise appropriate mitigation measures.

2.3 Defining and Quantifying "Sense of Place"

The concept "sense of place" varies greatly and elicits different interpretations and meanings from different people. Some perceive it as a characteristic that certain geographic places present. To others, it is a feeling or perception held by people about such places. Current usage of the term regarding the Mapungubwe World Heritage Landscape seems to imply those characteristics that make the place pristine. Sense of place is important in any discussion of heritage and environmental conservation and growth management because development tends to eliminate unique features of landscapes. Sense of place may appear a fuzzy or purely subjective concept, but there are clear definitions that begin to narrow its focus. Some definitions perceive sense of place as those things that add up to a feeling that a community is a special place, distinct from anywhere else (Daniels 1999), or something that results gradually and unconsciously from inhabiting a

landscape over time, becoming familiar with its physical properties and accruing history within its confines (Ryden, 1983).

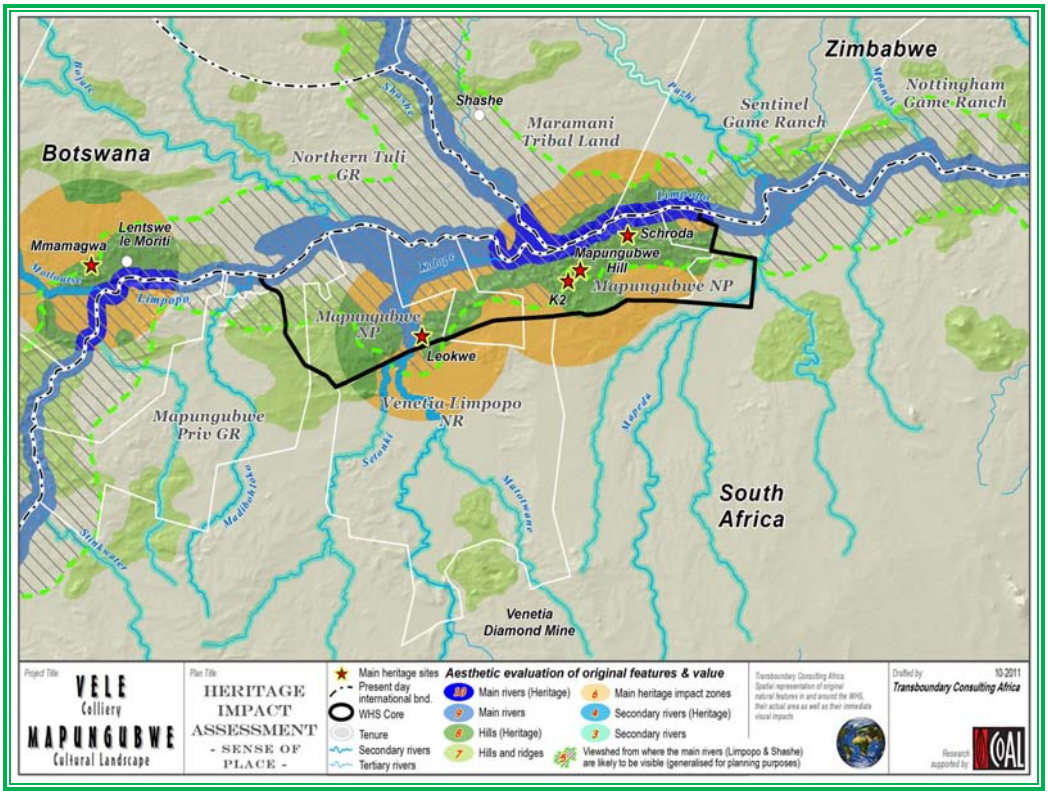

Fig 14: Spatial representation of original natural features in and around the WHS, their actual area as well as the interrelated view-shed of the two main rivers

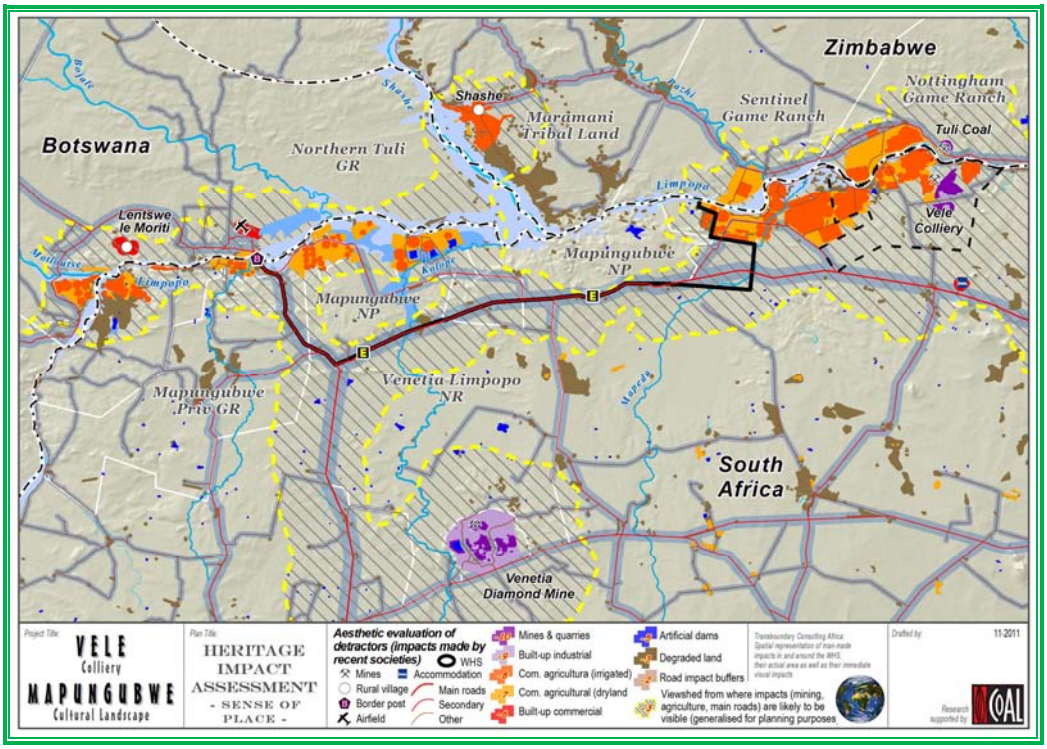

Fig 15: Spatial representation of man-made impacts in and around the WHS, their actual area as well as their immediate visual impacts

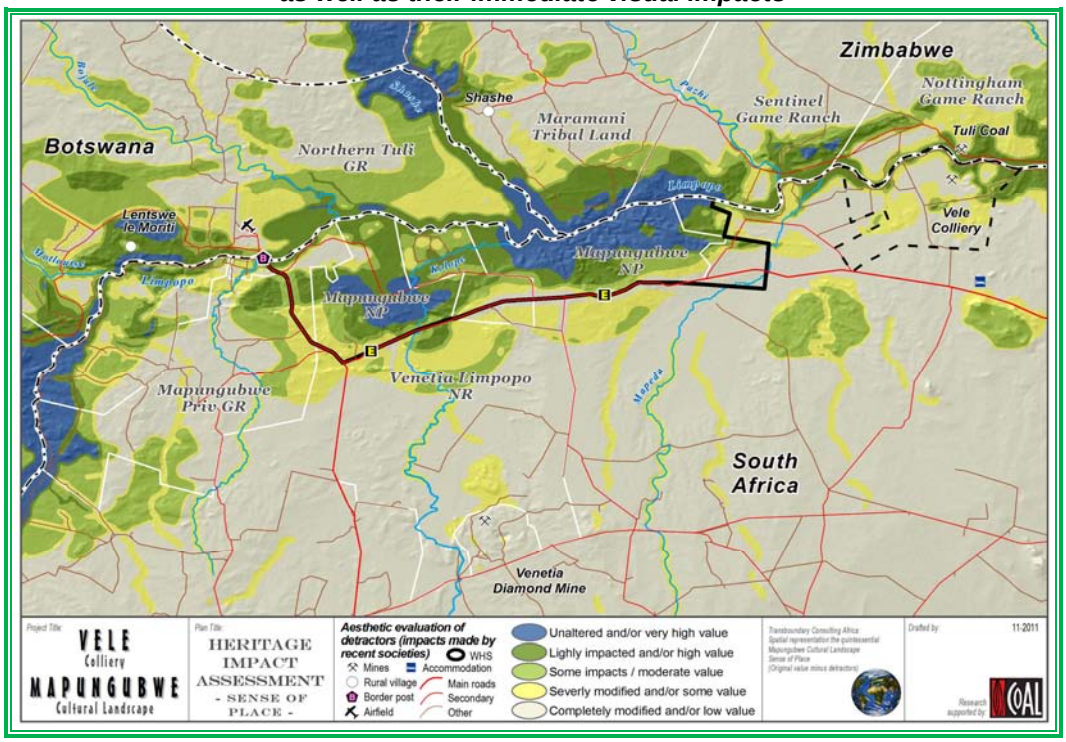

Fig 16: Spatial representation of the quintessential MCL sense of place, unaltered to completely modified (Original value minus detractors)

In the context of the MWHS the approach used considers the definition as offered by Jackson (1984) who views it as a place, permanent position in both the social and topographical sense, which gives communities an identity. In this regard, sense of place is primarily about the human landscape, the human legacy of impact on the land, and memory. There are other characteristics about sense of place which include natural features, patterns of human settlement and social relationships, since the connection between people is a key component of place, and something that is determined by local knowledge, best expressed by the native population. In the case of Mapungubwe, sense of place would best be expressed by descent communities, although it is acknowledged that it has also been part of the construct arising from centuries of layering, including colonialism (Refer to Figs 14, 15 and 16).

Descriptions of place can take many forms, but one of the most effective, with respect to heritage management is an inventory of heritage resources. A comprehensive profile of both the natural and cultural landscape aids not only in preservation of existing resources, but can provide direction for future growth. Quantifying sense of place is, in our view, conserving those resources that make such a place unique (Refer to Annexure 5 on visual impact). The approach used seeks to relate this concept with OUVs as presented above. In a landscape however, some places have a deeper sense of place when compared to others. For example, former capitals such as Mapungubwe Hill may evoke a deeper sense of place than the smaller sites. Thus the concept of sense of place is inextricably linked with significance.

2.4 Stakeholder Consultation and Engagement

Heritage belongs to everyone. As such, there are a number of stakeholder groups such as government departments (Department of Environmental Affairs, Department of Arts and Culture, and Department of Mineral Resources), mining companies, local communities, especially those with land claims in the area, Peace Parks Foundation (PPF), archaeologists, management authorities (e.g. SANParks), heritage agencies (such as SAHRA), etc. with a vested interest in the events and developments around Mapungubwe.

Stakeholder engagement is a process in which individuals, groups and organizations and associations actively engage regarding heritage issues by setting goals, formulating, selecting and evaluating policies, and planning and implementing heritage matters. The proceedings of the Technical Workshop on World Heritage and Mining stipulate that all stakeholders must always seek to achieve common ground to protect heritage while at the same time allowing development to take place. Stakeholder consultation was done with I&APs previously (Annexure 6 and 7). As such, the evaluation of threats and opportunities is based on these guidelines as well as the feedback from similar processes in the past. The stakeholder situational analysis identified three interested and affected groupings namely, local and descent communities, government departments and non-governmental and pressure groups. A detailed stakeholder consultation process conducted by Siyathembana (Pty) Ltd targeted the following interest groups:

***a. Local and descent communities*:** Focus was placed on the Machetes, the Tshivulas, Leshibas as well as other Venda communities living in and around the MCL.

b. Government departments, professional bodies and institutions directly connected to the heritage: These include SAHRA, SANParks, UNESCO, Association of Southern African Professional Archaeologists (ASAPA), ICOMOS South Africa, ICOMOS International, National Museums and Monuments of Zimbabwe (NMMZ), National Museums and Art Gallery (NMAG) of Botswana, Parks and Wildlife Authority of Zimbabwe, PPF, universities such as the University of Botswana, University of Zimbabwe, University of Cape Town and the University of Pretoria, UNESCO, National Heritage Council, Cultural Institutions (museums), African World Heritage Fund, among others. These institutions are mandated to oversee and or manage heritage.

***c. Civil Society*:** NGOs, Political Parties, Action Groups, Trade Unions, Environmental Groups, Media Houses, etc.

The strategy for stakeholder engagement required the identification of impacts, and the development of mitigation and management plans followed by a comprehensive stakeholder consultation and engagement programme (Annexure 7). This made practical sense given that previous studies had been done and that stakeholders required information on how heritage resources would be protected in the long term from increasing threats to biodiversity (Fig 16).

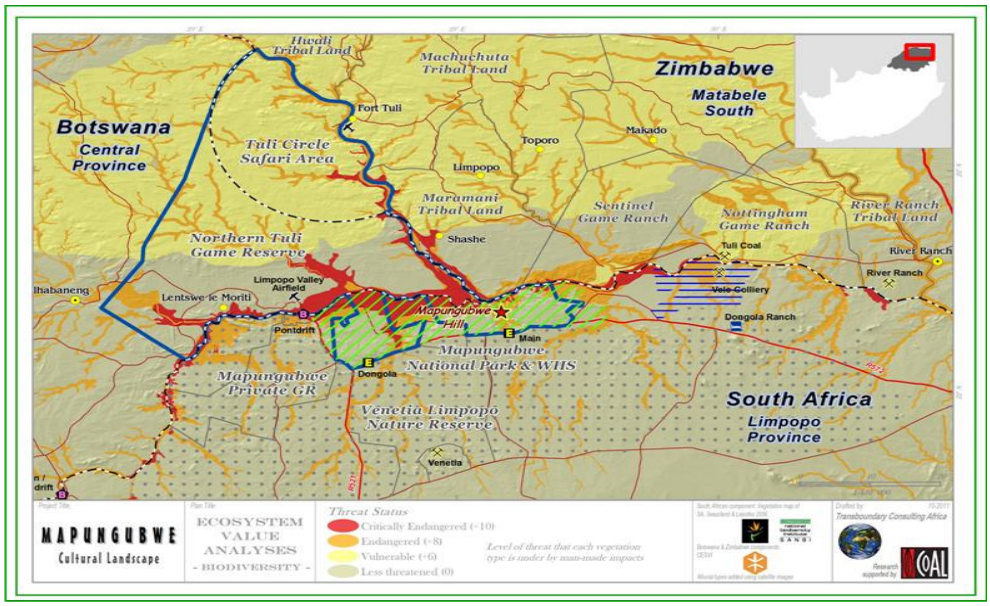

Fig 17: Map illustrating the various levels of threats to biodiversity within the Mapungubwe Cultural Landscape and beyond. The shaded area represents the current boundary of the core area of the MCLWHS

2.5 Understanding Vulnerabilities

The next conceptual approach employed in this impact study is based on the ICOMOS concept of Heritage at Risk as outlined in a number of documents (Refer for example to Saur 2001, 2003, 2005and 2008) in view of "its capacity to expose the dangers facing heritage in various countries of the world and promote practical measures to avert or at least allay them". In the development of an increasingly globalized world dominated by the strongest economic forces, the tendency to make all aspects of life uniform is regarded as a risk for cultural heritage, as this presents a change of attitude to historic evidence of the past. However, this very process of globalization is also causing a renewed consciousness of the significance of the monuments that embody regional and national identity.

It is accepted that the MCL is not immune to these vulnerabilities triggered by large scale industrialization. It is therefore important to establish why and how cultural heritage is fast disappearing and what measures need to be put in place to stem this trend. Figure 18 depicts the increasing threat to the MCL caused by prospecting and mining.

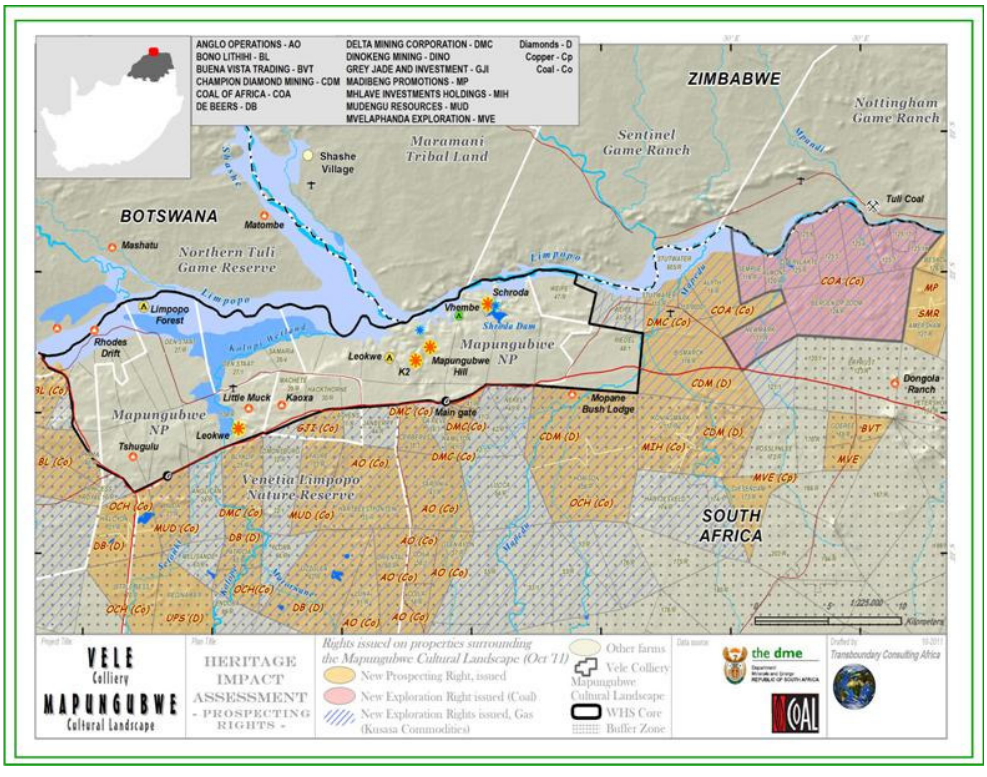

Fig 18: Current prospecting rights issued adjacent to the core of the World Heritage Site

Due to these threats from increased prospecting, some local communities expressed the need for broad based stakeholder engagement to map ways of ensuring that these threats are managed to achieve sustainable heritage and biodiversity conservation.

2.6 Buffer Zones

Over the years, the concept of “buffer zones” has emerged as potent managing tools for effective heritage protection. Basically, a buffer zone is a piece of land that lies between the boundaries of heritage resources and other land use activities. It is useful for flagging threats to heritage sites. Once development is allowed in the buffer, it means that such threats may extend to the listed or protected area. Although a useful concept, it is not clear what the optimum size of a buffer zone is. This is made more complicated by the ever increasing demand for land to meet day to day survival needs.

In some areas such as the Coloseum in Rome, the buffer zone is only a few meters in size but in others, the buffer stretches for kilometers. The awareness that heritage should co-exist with other equally important needs has often prompted governments to use their discretion to allow some developments to take place in sections of the buffer zone under stringent regulatory conditions. It is important to have a fixed buffer zone which implies the need to fix boundaries of cultural properties. Although landscapes are endless, shifting boundaries expose heritage sites to more and more threats.

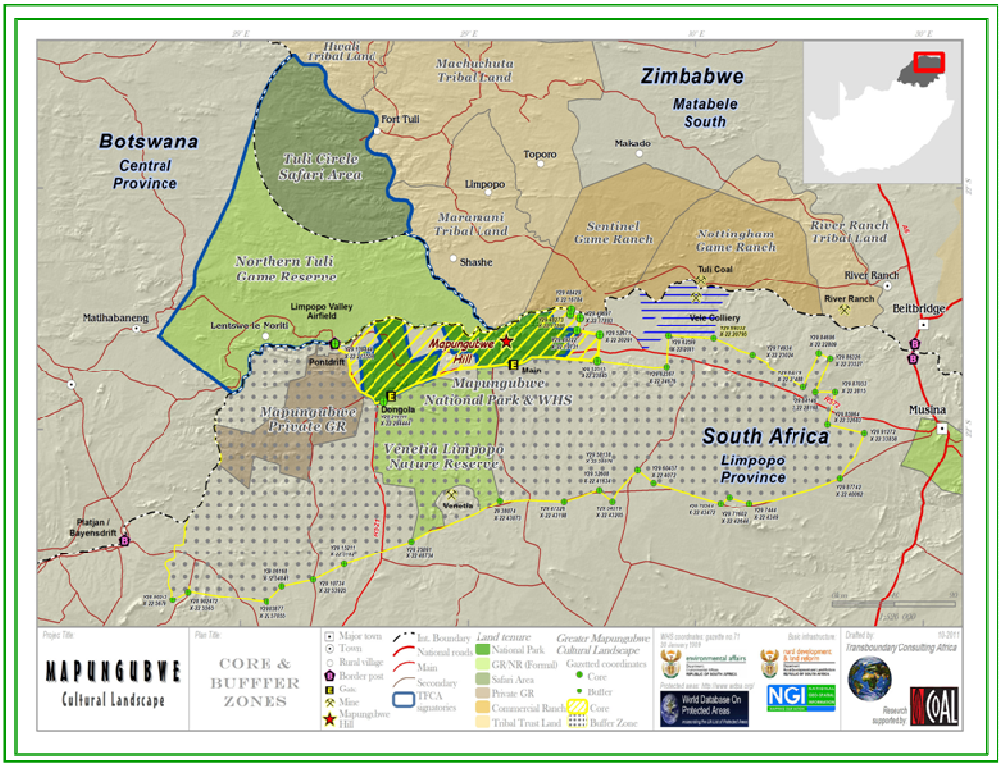

Fig 19: Map showing the buffer zone that was gazetted in 2009.

A study of the Mapungubwe nomination dossier reveals that a buffer zone was proposed at the time of inscription. The UNESCO WHC Advisory Body

Evaluation of 2002 (Document 1099 - http://whc.unesco.org/archive/advisory_body_evaluation/1099.pdf) notes the following with regards to such a buffer zone:

"The core site covers nearly 30,000 ha. This is supported by a buffer zone of around 100,000 ha – although this is not marked on the maps supplied. The nominated site contains substantial areas of 'natural' landscape of very high quality – in the north of the area bordering the rivers. To the south the boundary cuts across geometrical citrus farms – which in time will be taken out of agriculture. The proposed boundaries correspond with those of the Vhembe-Dongola National Park, which is currently in the course of being established. No clear buffer zone is indicated on the maps supplied. The northern boundary of the nominated property is the Limpopo River, which forms the frontier between the Republic of South Africa and the neighbouring states of Botswana and Zimbabwe. A Trilateral Memorandum of Understanding has been drawn up with the objective of establishing the Limpopo-Shashe Transfrontier Conservation Area (TFCA); this very extensive area (5,040 km2), will, when established as a TFCA, constitute a very effective buffer zone. It is intended that each country will concentrate on one facet of protection: cultural heritage in South Africa, wildlife in Botswana, and living cultures in Zimbabwe."

A buffer zone was subsequently delineated and gazetted along with the core zone in the Government Gazette (NR71) in January 2009 by the DEA. The rationale for including certain areas in the buffer zone has been based on the proposed Limpopo-Shashe TFCA expansion plan and that process has not yet been concluded to the extent that it is legally binding on the involved parties. In realization of the bigger scope of the then Limpopo Shashe TFCA (now Greater Mapungubwe TFCA) as outlined in the signed MoU between Botswana, South Africa and Zimbabwe, a decision was taken to adopt a phased approach in the development of this TFCA. Phase one of the South African component of the TFCA as outlined in the draft Integrated Development Plan for Greater Mapungubwe TFCA is comprised of Mapungubwe National Park and World Heritage Site, and Venetia Nature Reserve (Refer to Fig 19). Realizing that the gazetted buffer is of such a significant size and encompasses a multitude of landowners and land tenure, there is a need to re-assess the extent and alignment of this zone. This zone creates an area that sufficiently protects the core of the world heritage site, while being manageable and enforceable for the relevant authorities. The outcomes of this study, along with Ecosystems Services Value Analyses allows for informed, holistic and give-and-take decision making by all parties.

UNESCO World Heritage Committee Decision - 34COM 7B.52 (September 2010) still refers to the buffer zone as "proposed" and highlights the need for clarity on the exact delineation of the buffer zone. The field assessment established that the current buffer zone is not practical in protecting the World Heritage property, in the context of competing land uses. Vele Colliery is outside the buffer zone and none exist between it and the World Heritage Site. In light of this, it is suggested the State Party revisits the issue of the buffer zone with the aim of defining a fixed buffer zone that will be under the control and management of the management authority.

The stakeholders in the area (e.g. the Chairperson of the Vhembe Biosphere Reserve) also stressed the need for having restrictive guidelines that will allow sustainable heritage protection to co-exist alongside development. This is supported by international conservation principles that emphasize the importance of biospheres in conservation. An all inclusive stakeholder consultation is however required to resolve the issue of buffer zones.

Summary

In responding to the needs of WHSs, the concepts discussed above were combined with best practice as recommended by international organizations such as ICOMOS, UNESCO, SAHRA's Minimum Standards and the National Heritage Resources Act 25 of 1999. This blending of local and international best practice promoted a robust evaluation of the threats and opportunities posed by mining and other developments on the integrity of the MCLWHS.

3. DATA SOURCES AND METHODOLOGY

In order to articulate and identify both perceived and real threats to the OUVs of the MCL, robust methods that are well known worldwide for their effectiveness in evaluating impacts were adopted. The use of GIS enabled the manipulation of data, especially in assessing the various layers of heritage sites and development. It constituted a useful tool for risk management in the case of mining activities in the broader Shashe-Limpopo landscape. To be consistent with World Heritage criteria, the methodology was derived from ICOMOS Guidelines on Impact Assessments on World Heritage Sites, the UNESCO and ICMM agreement on how to achieve a balance between development and heritage protection.

Greater weight was placed on the methodology outlined in the ICOMOS Guidance of 2011 which calls for a more global approach and which is directly linked to the expression of the site's OUV. The methodology also placed greater emphasis on cumulative impacts and the adverse incremental changes. The ICOMOS 2011 Guideline argues that a failure to consider the combined impact of development on the range of attributes that convey OUV create future problems as was the case with the WHS of the Middle Rhine Valley. As demonstrated in the previous chapter, Mapungubwe's OUV is reflected in a range of attributes. In order to sustain OUV it is these attributes that need to be protected. The HIA therefore considers the impact of Vele Colliery on these attributes, both individually and collectively. The Guidelines calls for experts to use their judgment in developing methodologies and assessment tools. Local standards of best practice were also taken into consideration. These tools are critical in identifying and documenting attributes that convey OUV thereby enabling a significance and impact assessment.

The local standards of best practice were also taken into consideration. These tools are critical in identifying and documenting constituent elements of the landscape thereby enabling a significance and impact assessment. The main methodological tools include dedicated desktop studies, interviews, field surveys and mapping. The different tools were used together with the

conceptual approaches outlined above to effectively address the terms of reference. A stepwise approach was adopted. Firstly, the threats to the OUVs of Mapungubwe prevailing during the time of nomination were enumerated and assessed. This was followed by the identification of impacts in the present. Lastly, the threats caused by the Vele Colliery to OUVs were assessed to arrive at mitigation or monitoring strategies to either neutralize any real or perceived threats.

3.1 Desktop Survey

A very detailed and robust desktop study that utilized primary and secondary sources was conducted. In order to capture the needs of WHSs, an intensive review of UNESCO documents and guidelines was carried out. This involved reviewing guidelines on mining and heritage, publications on buffer zones, as well as those on conducting impact assessments for WHSs. This was followed by a review of databases in university libraries, at SANParks, as well as those compiled by LCC. These databases contain previous HIA reports, the Mapungubwe Nomination Dossier and a number of published and unpublished sources. Unpublished newspaper reports as well as supporting affidavits by the Mapungubwe Coalition Group were also consulted. Based on this information, heritage resource distribution maps were created as assessment and management tools.

To place the local situation in a global context, a comparative study of heritage at risk was carried out. This involved the study of literature on World Heritage at the risk of globalization, with a focus on infrastructural development such as road construction, dam construction, industrial pollution, and industrial extraction activities such as mining. The case studies were drawn from both the developing and developed world where WHSs are under perceived threat from mining and related developments. The case studies include Yellowstone in the USA, Kakadu in Australia and Zhoukoudian in China, among others. The desktop study revealed that when done within a compliance framework, development represents a massive opportunity for heritage awareness, research and protection.

3.2 Interviews with Heritage and Environmental Professionals

Interviews were carried out with anthropologists, archaeologists, rock art specialists, cultural and natural heritage professionals, and environmental managers of mining companies such as Vele. Unfortunately due to the closure of Tuli Coal in Zimbabwean interview with the environmental manager could not be conducted.

3.3 Interviews with Stakeholders and Local and Descent Communities

Interviews were also carried with commercial farmers and descent communities living in or adjacent to the WHS and claimants to the land identified for the proposed coal mining development. The following clans or groups who are land claimants to the area – Tshivhula, Machete and Leshiba

– were consulted (Refer to stakeholder engagement report, Annexure 7). During the interviews, some of the local farmers were very hostile to the extent of refusing to grant access to archaeological sites in their respective areas. It is presumed this is linked to the land claims. Archaeology is seen as a tool for empowering those communities who were forcibly removed from “their” land. Although local communities have different expectations, they all see the unifying thread that runs through co-management of heritage resources and effective local and descent community participation. The increasing number of mining licenses in the area is widely seen by heritage authorities, local communities and other stakeholders as a big threat to the MCL. Strong calls were made to redefine the buffer zone and to create guidelines that will govern land use activities and sustainably conserve heritage and other resources on the landscape.

3.4 Fieldwork, Field Evaluation and Assessment Visits

Field surveys were conducted to document and assess the potential risk to sites posed by the proposed mining development. Field walking was done in selected areas of the Mapungubwe National Park, the area between the World Heritage Property and the proposed coal mining development and within the proposed mining development area itself. Site visits were conducted, not only to document and assess significance and risk, but also to check condition, authenticity, integrity, sensitive viewpoints and other pertinent information. This ensured a robust HIA process.

3.5 Mapping and Plan Viewing

Based on observations in the field and the desktop study, themed maps or plan views of the areas surveyed and impacted, directly and indirectly by mining activities, were produced. This is an exercise in spatial rendering that is useful in showing the disposition of attributes, their relationships and their association with the visual, historical, and other important components of the SoOUV in relation to the proposed mining. Of importance here are the maps showing all mining projects, current and proposed, in and around the MCL as well as the intensive agricultural activities (Fig 19 & 23)**.** The evaluation of these maps was central to identifying threats to the integrity of the cultural heritage.

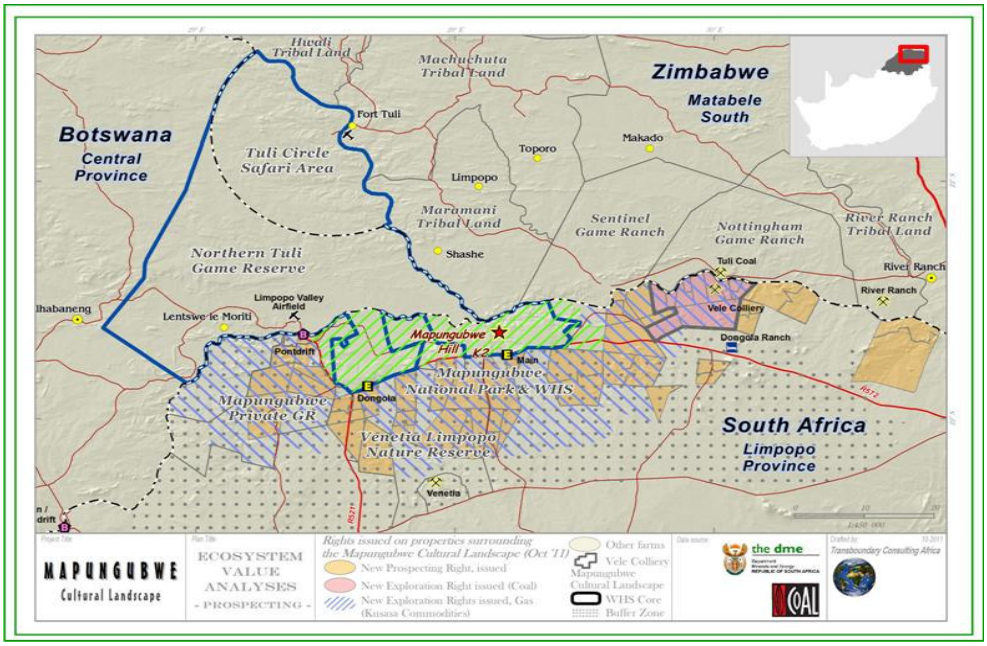

Fig 20: Map showing all mining projects, current and proposed, in and around the MCL as well as the intensive agricultural activities

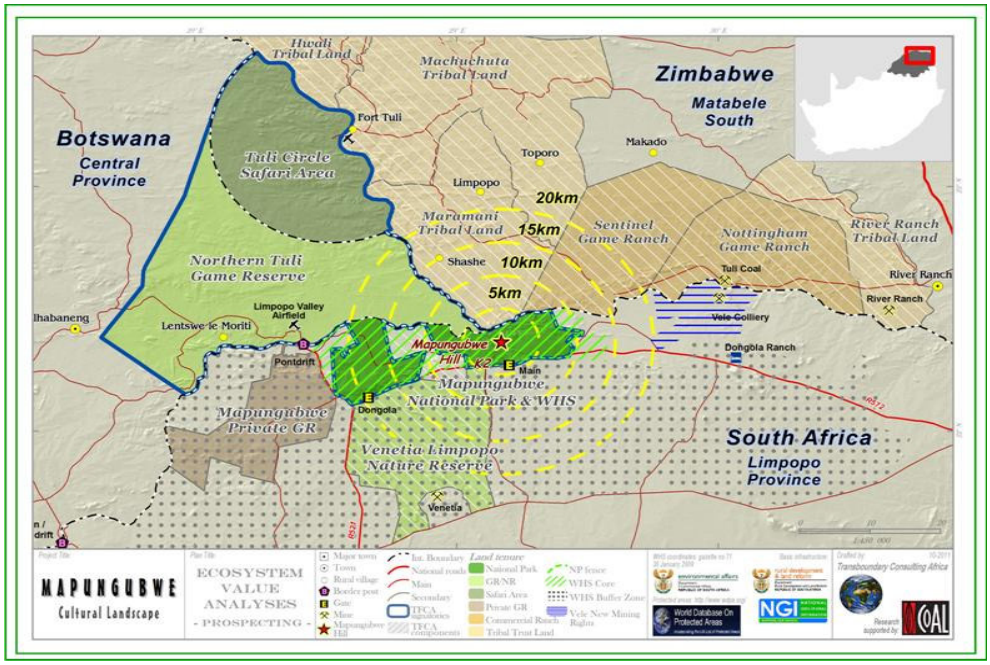

Fig 21: Map showing the Vele Colliery in relation to Mapungubwe Hill and the World Heritage Core and Buffer Zones

3.6 Assessing Value

The sites and the landscape were assessed in terms of value, and aligning this assessment as much as possible with the ICOMOS Guidelines for Impact Assessments for World Heritage Sites (2011) and SAHRA Archaeology, Paleontology and Meteorites Guidelines: Minimum Standards for the Archaeological and Paleontological Components of Impact Assessment Reports.

Appendix 3A of the ICOMOS Guidelines provides for valuing heritage attributes based on statutory designations, either international or national, and priorities or recommendations set out in national research agendas, and ascribed values. The possible depth of the deposit, concentration of material, integrity of the deposit and site extent was used in assessing the research potential of sites (ICOMOS 2011). Professional judgment was used to determine the importance of the resource. Photographs were taken as a record to help peer reviewers to relate to the valuation agreed to by the team. The value of the sites was then defined using the following ICOMOS Grading Scale:

- **Very High** - Sites of acknowledged international importance inscribed as Word Heritage property, individual attributes that convey OUV of the World Heritage property, assets that can contribute significantly to acknowledged international research objectives.
- **High** - Nationally-designated archaeological monuments protected by the State Party's laws; undesignated sites of the quality and importance to be designated; assets that can contribute significantly to acknowledged national research objectives.
- **Medium** - Designated or undesignated assets that can contribute significantly to regional research objectives.
- **Low** - Designated or undesignated assets of local importance; assets compromised by poor preservation and/or poor survival of contextual associations; assets of limited value, but with potential to contribute to local research objectives.
- **Negligible** - Assets with little or no surviving archaeological interest.
- **Unknown** - The importance of the asset has not been ascertained.

3.7 Assessing Impact

The process of valuation was linked to the impact assessment process. Following ICOMOS Guidelines, impacts were categorized as direct, indirect, negative or beneficial. Direct impacts are those that arise as a primary consequence of the proposed development or change of use. Direct impacts can result in the physical loss of part or all of an attribute, and/or changes to its setting – the surroundings in which a place is experienced, its local context, embracing present and past relationships to the adjacent landscape (ICOMOS 2011). Indirect impacts occur as a secondary consequence of construction or operation of the development and can result in physical loss or changes to the setting of an asset beyond the development footprint. The effect of individual and cumulative impacts was taken into consideration. As suggested by ICOMOS, the scale or severity of impacts was ranked with regard to the value of the asset as follows:

- No change

- Negligible change
- Minor change
- Moderate change
- Major change

However, the significance of the effect of change on an attribute is a function of the importance of the attribute and the scale of change. The following descriptors were used to quantify the change or impacts which may be adverse or beneficial:

- Major beneficial
- Moderate beneficial
- Minor beneficial
- Negligible beneficial
- Neutral
- Negligible adverse
- Minor adverse
- Moderate adverse
- Major adverse

Although the local system of valuing sites as enshrined in the National Heritage Resources Act, 1999 is based on three categories: national (Grade 1), provincial (Grade 2) and local (Grade 3), it is sufficiently accommodated within the international system. Although only K2, Mapungubwe Hill, Schroda and possibly Leokwe fits the description of international and national heritage sites, the majority of sites outside the core area qualify as local or regional significance and thus of high value. None the less, they were assessed on their contribution towards the understanding of the MCL in general. A data capture sheet was designed to document the most salient aspects of the sites and for significance assessment (Appendix 1). In evaluating the importance of the heritage sites in relationship to mining, the following aspects, with a specific emphasis on integrity and significance, were looked at:

- Context -- whether heritage objects is in situ or re-deposited
- Design – whether the sites have a discernible spatial pattern or random artifact
- Variety – whether the site has multiple data categories
- Quantity – whether the site provides sizable samples
- Representation – whether the site is typical or unique
- Research potential
- Local concern

An archaeological impact re-assessment was carried out on the Vele Licensed Mining area based on these criteria and SAHRA Minimum Standards for Archaeological and Paleontological Impact Assessments (Refer to Annexure 8: Archaeological Impact Assessment Relating to Vele Licensed Mining area).

Summary

A robust identification and assessment methodology was distilled from UNESCO and ICOMOS Guidelines, as well as the local best practices encapsulated in the SAHRA Minimum Standards and applicable legislation. This enabled adequate assessment of the risks to the sites.

4. RESULTS: MAPUNGUBWE CULTURAL LANDSCAPE WORLD HERITAGE SITE COMPONENT

4.1 Introduction

In order to evaluate the impact on the MCL posed by the proposed mining at Vele Colliery and to assess the pressures to this cultural landscape in general, the desktop study was an insightful review exercise. It enumerated the threats prevailing during the nomination time, those that developed over time as well as the ones emanating from infrastructure development in the present such as mining. The desktop study also revealed the concerns and views of the different stakeholders towards the proposed mining. Based on these, a field study was conducted to verify the situation on the ground.

4.2 Issues from the Nomination Dossier

The nomination dossier reveals that despite the absence of a practical and effective buffer zone, the boundaries of the MCLWHS as submitted by the South African government extend from the Limpopo River to the north, the Alldays-Pont Drift road to the west; the Musina-Pont Drift road to the south with the boundary of the farm Riedel forming the eastern extent. The total area is equal to 28 168.66 hectares. An ICOMOS (2003 p.3) review document clearly states that the boundaries of the Mapungubwe National Park and the proposed TFCA acted as the buffer zone for the sites that are in the park. This is also supported by the fact that the State Party only provided management plans for individual sites of importance in the park such as Mapungubwe Hill, K2 and Schroda among others. Furthermore, the dossier states that Mapungubwe was declared on the basis of Iron Age sites dating between AD900 and 1300. However, it acknowledged the presence of sites dating to different periods.

A review of the nomination dossier shows that a number of direct and indirect impacts prevailed during the nomination time. Intensive agriculture using heavy duty machinery was identified as a threat with the impact of ploughing on cultural sites, bush clearing and removal of water. Grazing by animals was also viewed as a danger to heritage resources. Two mining operations with a potential impact on the MCLWHS existed; the now abandoned Riedel diamond mine, and the major Venetia Mine. The small mine has since been closed down. The Venetia Mine is a major diamond mine operated by De Beers Consolidated Mines Ltd. The nomination dossier states that the impact of the mine was assessed through a full Environmental Impact Assessment (EIA) and an Environmental Management Plan (EMP) was prepared. Although mining rights in areas that would form part of the park existed, the nomination dossier stated that in protected areas the government can stop the mining from being carried out. The presence of Venetia Diamond Mine has contributed to a strong understanding of the

MCL through developer-funded archaeological research demonstrating that when mining is undertaken responsibly effective heritage awareness and protection can be achieved. I this case mining provided an opportunity for heritage conservation rather than a threat

Environmental pressures caused by wild animals were identified as threats together with the possibility of natural disasters. The impact of tourism and inhabitants on the cultural landscape was also considered. Land claims in the area by communities who were forcibly removed during colonialism are an additional consideration. These factors may be a threat to the WHS if land is parceled between the different groups who may not share the same vision for the reclaimed land as a National Park and World Heritage Site.

4.3 Stakeholder Consultation

4.3.1 Local and Descent Communities

The desktop study revealed that there are members of the community who are opposed to the proposed mining at Mapungubwe, arguing that it will among other things desecrate their ancestors. However, there is another group which argues that mining is important in that it creates jobs in a poverty stricken area of the country. This pro-mining group expressed concern about how they were forcibly removed from the land and denied access to different parts of the landscape which is associated with their ancestors. The local and descent communities view the whole issue as that of power games where the rich and dominant perpetuate their monopoly of access to disenfranchise others. The local farmers and conservation groups are worried about the lack of rigorous enforcement of the buffer zone. The communities want the State Party to conduct a comprehensive stakeholder engagement that will bring the different and often conflicting stakeholders together.

4.3.2 Mapungubwe Action Group and the ASAPA

The desktop study revealed that a number of NGOs joined hands to express their dissatisfaction with the proposed Vele Colliery and its threats to the MCL. The main concerns raised in court affidavits, newspaper articles and other information suggest that issues of dust, pollution, and the likely inadequacy of the HIA done for Vele constituted hazards to the OUVs of Mapungubwe. Other concerns include the impact of a large number of people on a fragile and tranquil landscape should mining at Vele be allowed and the possible negative visual impact of Vele Mine. Therefore, this group initially opposed the Vele Mining development but is now closing ranks to cooperate with LCC in achieving sound heritage and environmental stewardship. A Memorandum of Understanding (MOU) has been signed between some NGOs and LCC.

4.3.3 Department of Mineral Resources (DMR)

As a government department mandated with the regulation and development of and the exploitation of the mineral resources in South Africa, the DMR‘s mission is to promote ecologically sustainable development and use of natural resources to promote economic and social development for all South Africans. The government of

South Africa and the business sector in general views the mining industry as a crucial player in the fight against poverty and underdevelopment. It seeks to achieve global competitiveness and to attract investment in the South African mining industry. The Department champions the idea of sustainable development throughout Africa through NEPAD and the African Mining partnership. The DMR endorsed the mining at Vele Colliery in anticipation of employment creation, poverty alleviation, investment opportunities and beneficiation to mine communities and labour, in line with the government's New Growth Path and Entrepreneurship Programmes. However, DMR must also respect the importance of achieving a synergy between development and sustainable heritage conservation. To achieve this it may be necessary to cooperate with other stakeholders, to develop regulations that champion sound environmental management, conservation and heritage stewardship.

4.3.4 Department of Environmental Affairs (DEA)

The DEA is the State Party responsible for the WHS of Mapungubwe. The mission of the Department is to promote conservation and the sustainable use of natural resources to contribute to economic growth and poverty alleviation. It also aims to ensure that environmental assets are conserved, valued, sustainably used, protected and continually enhanced. As the State Party, the Department must ensure that the outstanding issues in the nomination dossier are addressed. Stakeholder engagement must also be done to resolve the issue of buffer zones and to ensure that heritage and environmental assets are protected from uncontrolled development.

4.3.5 Limpopo Coal Company (Pty) Ltd

The developers of Vele Colliery are determined to create sustainable economic development in the country. The Company has signed a Memorandum of Agreement (MoA) with the government, in particular DEA and SANParks, where it demonstrates a strong commitment towards protecting heritage sites. Environmental concerns such as dust, noise and negative visual impact will be mitigated through implementation of the recommendations made in the different specialist reports (Refer to Annexures 5, 8, 9 & 10).

4.3.6 South African National Parks (SANParks)

The SANParks is the management authority for the MCL. The management of SANParks argues that based on their observations the proposed mining has no direct impact on the integrity of the MCL. They have recently signed a MoA with the DEA and LCC in pursuance of balancing heritage protection and sustainable mining development around the MCL. A stakeholder meeting should be considered with the aim of mapping a way forward.

4.3.7 South African Heritage Resource Agency (SAHRA)

The SAHRA is mandated with identifying, protecting, and conserving heritage assets for present and future generations. The organization questioned the comprehensiveness of the initial HIA and was uncomfortable with the fact that the HIA study failed to relate the archaeology of Vele Colliery to the broader MCL. This omission persuaded the organization to require a new broad based HIA which

addresses the impact of mining on the MCL. The SAHRA is also generally uncomfortable with the rapid increase in mineral prospecting around Mapungubwe. It also endorses the idea of developing strong regulations to govern land use within MWHS and within areas around it. Furthermore, greater local community participation in managing heritage assets must be evident.

4.4 Field Visits

Based on the information from the desktop study, two field visits (10 days in total) were undertaken during the month of October 2011. The first visit was aimed at understanding the situation within the Mapungubwe Cultural Landscape, within the area between the World Heritage Site and Vele Colliery and inside Vele Colliery itself. A preliminary assessment was done to determine the situation on the ground. The second visit was aimed at assessing the individual sites located in the initial HIA as well as surveying the whole of LCC property to identify any potential missed sites. Field observations were captured on a data capture sheet for assessment of significance and threats.

4.5 Risk Assessment

A synthesis of all the information was done to identify the impacts on the integrity of the MCL in general. A number of maps were created as visual aids to help illustrate the impact, both positive and negative. A study of published and unpublished maps of the MCL and adjacent areas also helped in visualizing the area and threats to the site. Particular importance was attached to maps that showed activities within and near the World Heritage property. Maps presenting the relationship and distances between the MCL and Vele Colliery were also perused. Different types of maps were produced to identify the threats to the cultural landscape. It is clear from the maps that future threats can be identified, and predicted on the basis of possible minerals available and global demand for mineral resources.

To identify general threats to the landscape as a whole, a request was made to the DMR for information on licenses that have already been awarded, lodged or being considered. This information was assessed spatially to identify potential and real impacts posed by mining in general and to assist in creating mitigating circumstances. The study identified the following threats, some of which are not directly related to mining and do not have a bearing on OUVs:

4.5.1 Mining

Mining is associated with positive and negative impacts on the integrity of the MWHS. A map created to visualize the impact of mining on the cultural landscape reveals the existence of several mining claims, two of which are within two kilometers of the boundary of the MCL (Refer to Figs 17 and 19). Located about 25 kilometers from Mapungubwe Hill and K2, Vele Colliery poses an indirect impact to the MCLWHS in the sense that the mining activities impact on sites with associative values to those in the core area. Desktop research and field surveys on Vele property and the area between the National Park and Vele Colliery yielded K2 and Mapungubwe sites some of which will be impacted on by the

upgrading of existing roads and other infrastructural development activities. The sites which are close to the road will be mitigated while those unaffected by development will be protected and used in heritage education by the mine. There is also moderate to high research potential which will increase the knowledge base of the K2/Mapungubwe Period. However, it is suggested that a fixed buffer zone be established between Vele and the WHS and strong regulations must be put in place to regulate activities therein.

Outside South Africa, mining is a threat to the integrity of the broader MCL. For example, a coal mine, Tuli Coal was established on the Zimbabwean side to exploit the same coal belt as Vele Colliery (the mine is now closed) (Fig 20). A diamond mine on River Ranch in Zimbabwe is at the operational phase within the same cultural landscape where K2 and Mapungubwe type sites are found (Manyanga 2007). Details of any impact assessments done are not known. Processes to establish a Transfrontier Conservation Area must be hastened so that these areas can be subject to best practice prevailing in adjacent areas.

Fig 22: Tuli Coal Mine on the Zimbabwean component of the MCL

The establishment of mines in the MCL if done within a compliance framework represents an opportunity to further enhance our understanding of the world heritage's OUVs. Mines have resources which make it possible to sustain research and to manage sites. A good example is Venetia, which after meeting the EIA requirements, has supported archaeological research and training of students. This has contributed to capacity development in terms of skills development as well as to knowledge generation. As a result of this work more is known about sites associated with Mapungubwe and subsequent cultural developments.

4.5.2 Infrastructure development within the Mapungubwe World Heritage Site component

There are power lines and access roads inside the WHS. Impact studies were undertaken when these were established. There is a large pipeline which takes water from Shroda Dam (a dam located in the park) and passes through the world heritage property on its way to Venetia Farm to the south. Again, impact studies were done and a contract exists between Venetia Mine and SANParks. Access roads, power lines and water pipelines to supply Venetia Mine, construction of lodges and dams have all been built in and around the MCL. The impact of these activities is minimal to negligible.

4.5.3 Un-rehabilitated excavations and the absence of a collection at Mapungubwe

The activities of archaeologists have often left un-rehabilitated sites such as the huge excavation trench at K2. Furthermore, virtually all the objects excavated at Mapungubwe are housed in Pretoria and Johannesburg thereby depriving the cultural landscape of objects critical to its integrity. This has been remedied somewhat by the construction of an interpretive centre where some of the objects will be stored. Archaeologists have not always shared their field notes with management authorities resulting in an incomplete database hosted by SANParks. This compromises the integrity of the key sites.

4.5.4 Intensive Agriculture

Although intensive agriculture within the boundaries of the park has ceased, it still persists in the areas adjacent to the park. For example, the farm Weipe situated next to the park is a large scale farming operation on the Limpopo flood plain. Apart from ploughing archaeological sites and mixing the stratigraphy, ploughing sometimes releases dust and this impact on the rock art is unknown (Fig 21 and 22).

Fig 23: Intensive commercial agriculture in the Limpopo flood plain is also posing a significant threat to Mapungubwe's OUVs

A large part of the Limpopo flood plain extending to LCC property is under cultivation for citrus, cotton, wheat and other cash crops. These farms have been in existence for many years and any sites located on them are unlikely to be of value due to disturbance.

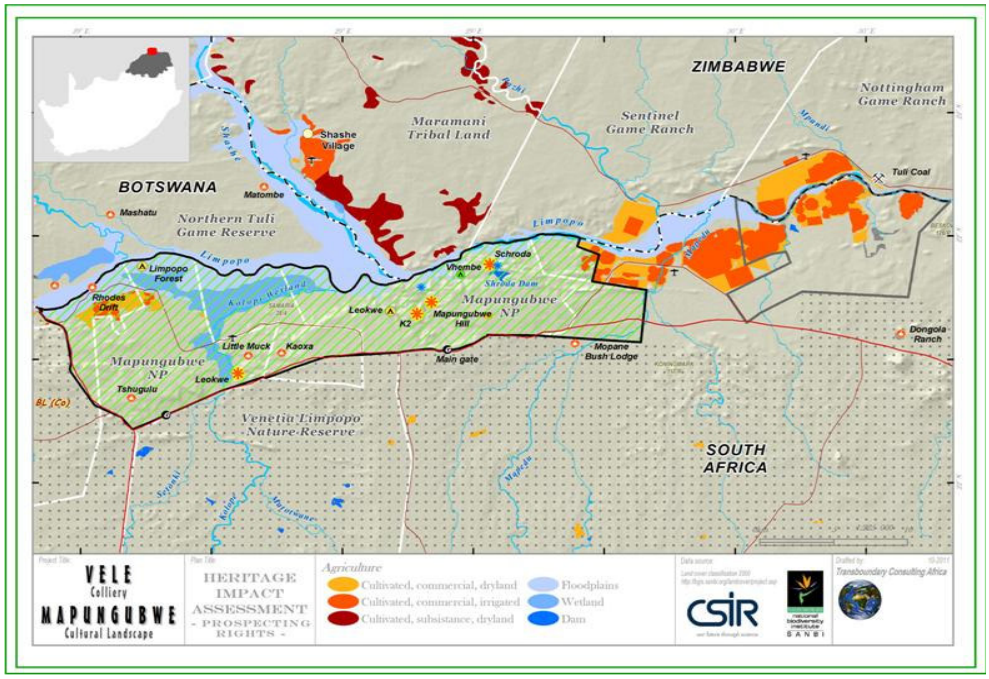

Fig 24: Map showing intensive irrigated agriculture operations on the fertile floodplains of the Limpopo River

4.5.5 Unresolved buffer zone

An assessment has shown that the idea of a buffer zone for the MCLWHS has been conceptualized differently and continues to be an unresolved issue (Refer to Figs 22 and 33). When Mapungubwe was inscribed as a World Heritage cultural landscape, the boundaries of the National Park were seen as providing a natural buffer to the main heritage sites of Schroda, Bambandyanalo and Mapungubwe Hill. A formal buffer was delineated and gazetted in 2009 (Refer to Fig 3, p15). Further ideas assumed that the proposed TFCA would constitute an effective buffer for the world heritage property. In the same context, the Protected Areas Act of 2003 provides for a ten kilometer buffer zone from the boundaries of the Mapungubwe National Park. In this case, because the National Park contains both cultural and natural elements, the cultural landscape is protected. Figure 22 below is the current conceptualization of what may constitute an ideal buffer zone by the SANParks.

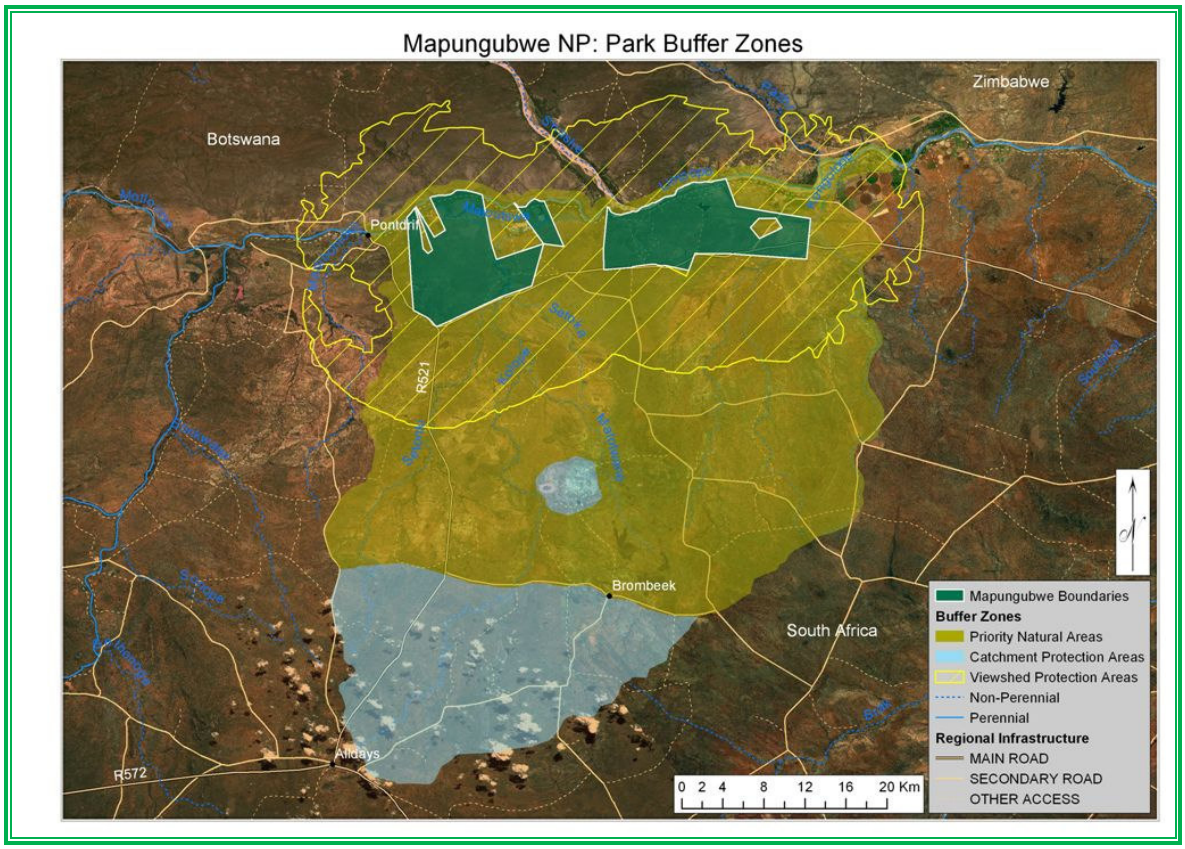

Fig 25: Mapungubwe National Park, priority natural area, view-shed and catchment protection areas

The responsible Minister may, however, from time to time authorize developments in the buffer zone. The threat caused by lack of clarity in terms of a buffer zone is moderate to strong and it is advisable that a fixed buffer zone that allows activities with a low impact be gazetted. Regulations governing activities in the buffer zone must be established through or following a public consultation. This view is shared by many local stakeholders and conservation groups.

4.5.6 Wild animals

The advent of game farming has seen many farms neighbouring Mapungubwe being turned into wildlife sanctuaries (Fig 26).

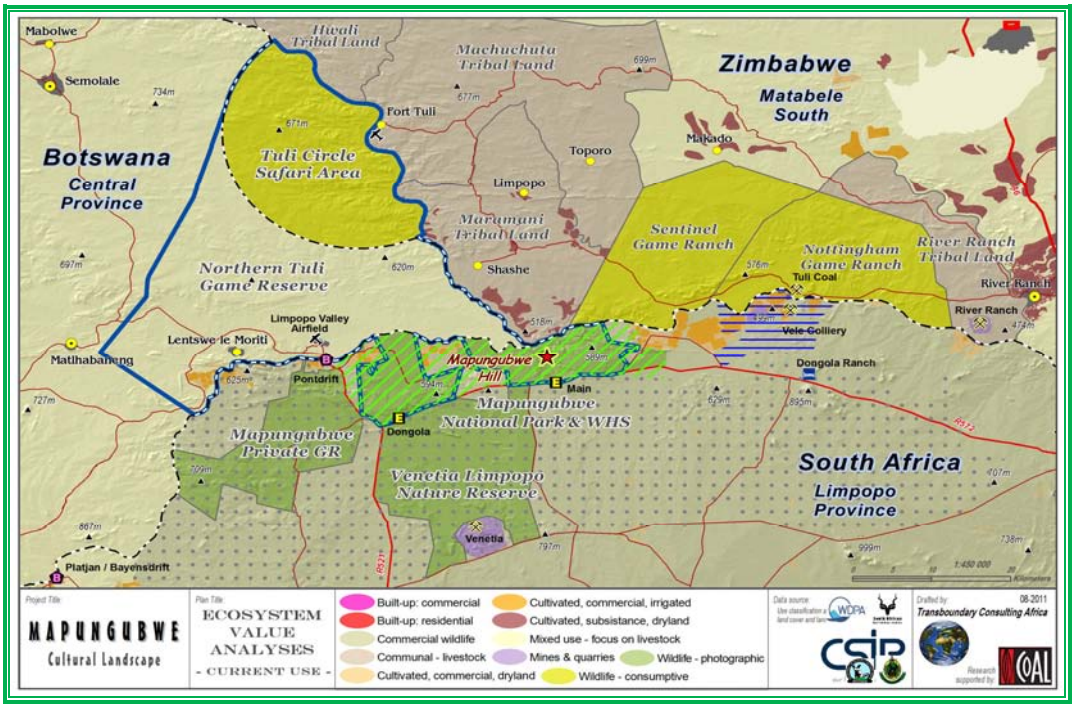

Fig 26: Land-use map of the region illustrating the dominance of wildlife related activities within the MCL

Some animals affect archaeological sites by burrowing through them while others produce pellets which accumulate on top of deposits with archaeological dung (Fig 27).

Fig 27: A K2 site located in Vele Colliery showing dark patches of wildlife dung/pellets. The impact this has on archaeological sites has not been ascertained.

The impact over time is not known, but may introduce elements which may not have been present in the past, posing interpretation problems.

4.6 Mitigation Measures

The risk analysis revealed the mining activities at Vele Colliery pose indirect negative impacts on OUVs of MCLWHS. The key negative impacts include the increase in dust pollution on rock art sites, and destruction of associative heritage resources outside the core and the buffer zone of the inscribed property. In heritage terms, mitigation measures are essential to prevent, reduce and where possible remedy or offset any significant adverse impacts on the OUVs. These impacts can easily be mitigated through monitoring and through full implementation of the EMP developed by LCC and recommendations suggested in this report (Refer to Table 5). The most important issue about mitigation plans is that they should not be an afterthought, but must rather be integrated into overall planning so that best heritage protection is achieved. Neither should mitigation be rushed. Furthermore, the effects which cannot be mitigated are acknowledged and viable alternatives provided. The mitigation plan for LCC ensures that the best heritage fit is obtained and is integral to the implementation of programmes. Commitment to implementation is central to the success of these mitigation plans. Each threat to the OUVs is listed below followed by the proposed mitigation.

4.6.1 Mining

The LCC proposes to carry out both underground and open cast mining of coal on its property (Figs 28 and 29).

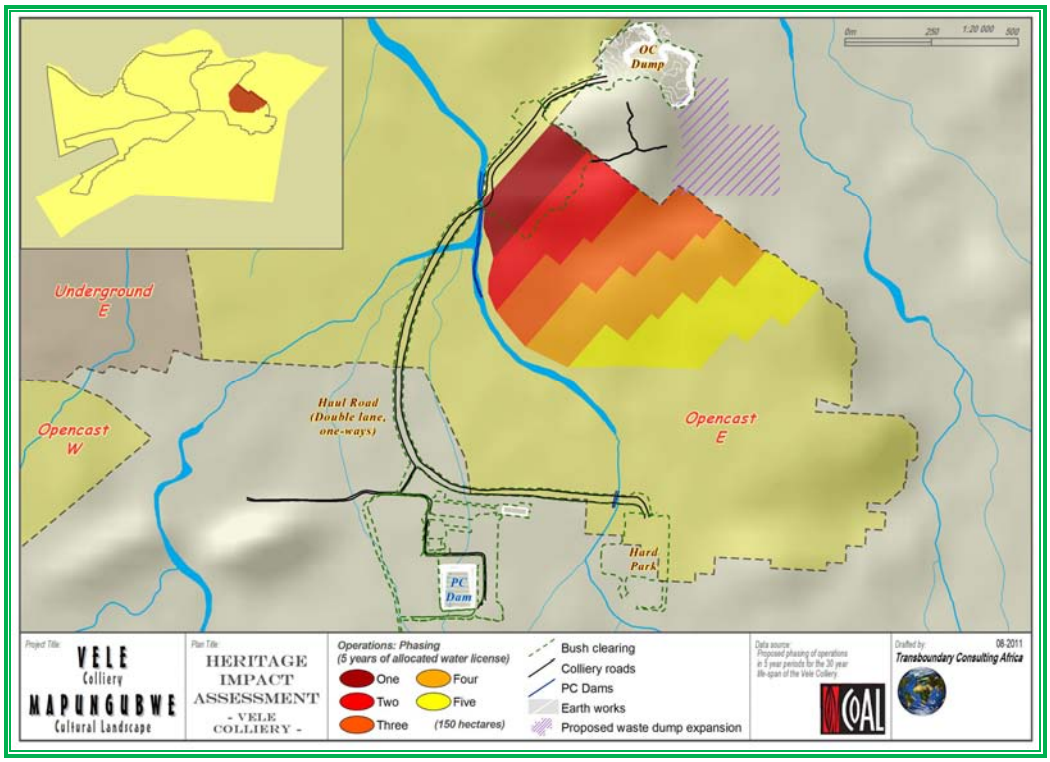

Fig 28: Layout of the Vele Colliery infrastructure

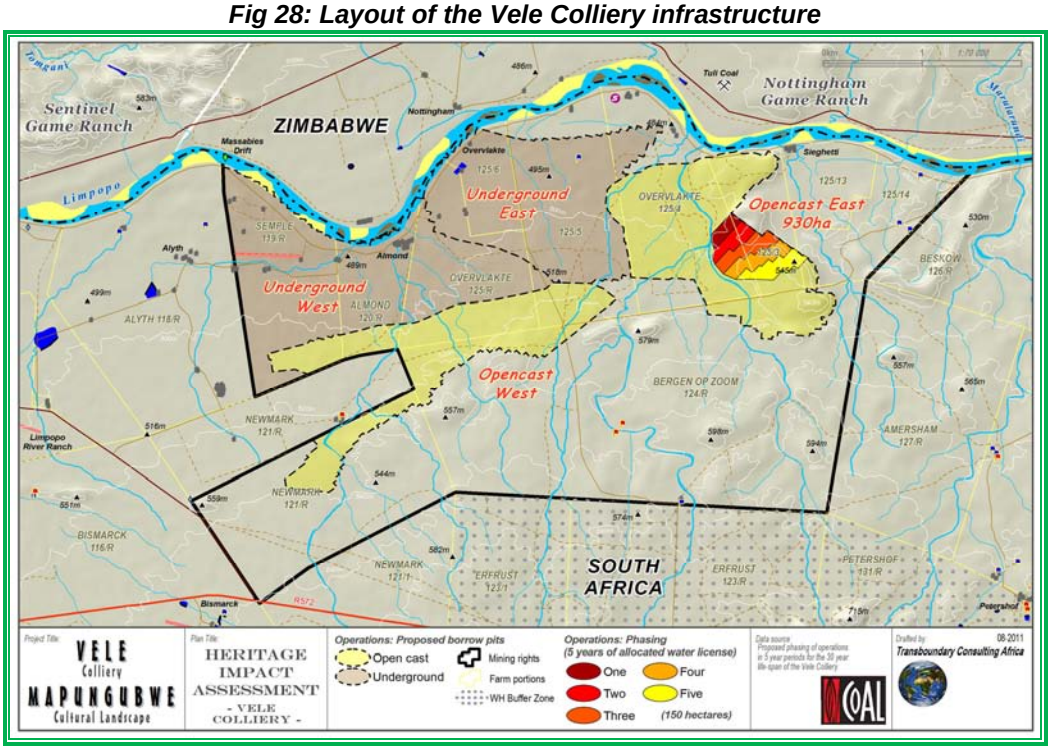

Fig 29: Proposed pits and planned phasing of the initial five years of mining operations at the Vele Colliery

Opencast mining results in large-scale top soil removal which can completely destroy heritage places (Fig 30). A number of sites have already been recorded in Vele Colliery, close to the area earmarked for opencast mining. The soil removed results in spoil dumps, which may cover heritage resources (Refer to Figs 31 and 32).

Fig 30: Opencast mining at Vele poses a threat to archaeological sites on the Colliery properties

Underground mining can create vibrations that can weaken sites above. However, when conducted at sufficient depths the impact of undermining will be negligible. Alternatively, mining plans must favour heritage protection. For example, underground mining that leaves a pillar around affected heritage may be adopted. Any development that leads to the removal of top soil must be subjected to rigorous monitoring. Annual reports on the status of heritage must be submitted to the management and heritage authorities.

4.6.2 Opportunities

One of the most important aspects of the mitigation plan is constant monitoring which promotes adaptive management. This allows that both direct and indirect impacts are monitored and their effect quantified. Furthermore, the issue of impact assessment and research will no doubt add to our understanding of the broader MCL. The case of Venetia presents a good example where sustained research has been allowed in the area resulting in the identification and protection of critical heritage resources.

4.6.3 Other Impacts on the OUVs but not Directly Related to the Mining at Vele Colliery

4.6.3.1 Intensive agriculture

The MCL has witnessed intensive agriculture for many years. Agriculture that was formerly practiced on farms now forming part of the park has ceased. Impact assessments should be conducted before new areas are cleared for farming and or grazing as this may salvage sites or lead to the modification of plans. However, most archaeological sites in this area are located on ridges adjacent to flood plains, so the effect may not be very strong. Agriculture must therefore avoid these areas. It is recommended that new areas to be opened for intensive agriculture be monitored to make sure that no sites are destroyed.

4.6.3.2 Game ranching

The effects of game ranching on heritage are not well known and remain an area that requires further research. An assessment demonstrates that the sites both in the core area and within the broader cultural landscape are affected by burrowing animals, destruction of stonewalls through toppling, and trampling on ash midden deposits. Developments on game ranches are hardly subjected to heritage impact assessments. There is need for monitoring to determine the impact of wildlife as well as wildlife farming on heritage sites. Periodic reports on the state of heritage are determined to be important.

4.6.3.3 Infrastructure Development

Infrastructure developments in the form of tourism and associated activities as well as residential developments such as visitor convenience structures, power lines, etc., bring negative visual distortions to the cultural landscape, and may impact on sense of place. Any infrastructure development must be accompanied by impact assessments as required by the law. Where possible, plans that avoid destruction of heritage must be embraced. A routine monitoring programme is necessary to ensure the integrity of archaeological sites. Developments that will have a strong visual impact must be modified to a specific height which will not make a prominent feature on the landscape. Periodic reports are also mandatory.

4.6.3.4 Land claims

During colonialism, many communities were evicted from their land which now forms the MCLWHS and surrounding farms. They are now claiming their land back through the land restitution programme. Should this happen, this will probably enhance the intangible and living elements of the world heritage property and associative sites, as land claimants can revive their reconnections with the heritage places and associated spiritualties. Land claimants could also be directly involved in the management of the sites and beneficiation models could be based on the Communal Areas Management Program for Indigenous Resources (CAMPFIRE) model or that in practice around the Kruger National Park. This will also enhance the OUVs, especially the intangible aspects of the cultural landscape.

4.6.3.5 Buffer zone

There is a need for a re-evaluation of the current buffer zone for the listed world heritage property with inputs from a broad spectrum of parties involved, e.g. government, resource managers, scientific services, tourist industry representatives, corporations and community representatives. Through this initiative the expansion of the core zone into the neighbouring countries to encompass the actual extent of high value sites could also be considered. Once a focused and manageable zone is delineated, developments in the buffer must be well regulated and the buffer should act as a protective zone for the core area. Furthermore, an intensive survey of the areas in the buffer zone and documentation of the sites represented is required.

Table 1: Heritage impacts and mitigation plan to safeguard OUV of MCLWHS. The table combines the impact of mining at Vele Colliery with general threats observed.

Activity	Duration	Impact	Level of Impact without mitigation	Mitigation	Level of Impact with mitigation	Monitoring
Opencast mining	10-15 years	Destroys sites related to the listed MCL , dust	Negative High	Rescue sites before or during mining operations Keep dust to acceptable levels Spray surfaces (Refer to Annexure 9)	Negative Low; Sites preserved on record	Monitoring the removal of top soil; survey areas earmarked for spoil heaps
Underground mining	10-15 years	Undermining heritage, Blasting creates noise and vibrations which may affect rock art sites and Stone Age and Iron Age sites on hills	Negative High	Refer to blasting impact assessment by BME, refer also to noise impact assessment by Jongens Keet Associates (Annexure 10 & 11)	Negative Low	Continuous monitoring of noise to national and international recommended levels for the entire lifespan of mine
Mining spoil heaps	Duration of mine	Obliterate archaeological sites, negative visual impact	Negative High	Establish buffers around sites near spoil heaps, keep spoil heap to below 20 meters to reduce visual impact	Negative Low	Keep spoil heaps to a height of twenty meters Refer to visual impact assessment reports by Metro GIS (Annexure 5) Concurrent with all mining activities
Mining and associat	Duration of mine	Negative effect on sense of place, visual impact,	Negative High	Limit heights, use earth colours, reduce	Negative Low	Monitor for duration of mining

Activity	Duration	Impact	Level of Impact without mitigation	Mitigation	Level of Impact with mitigation	Monitoring
ed developments		destroying sites		light, rehabilitation concurrent with mining activities, introduce dust and noise suppression		Refer to visual impact assessment study by Metro GIS, monitor removal of top soil
Mining in general	Duration of mine	Impact Assessments generate new data sets that advances knowledge, increase in tourist numbers	Positive High	There is a need for high quality research to generate new knowledge	Positive High	Research results to be published in peer reviewed publications
Agriculture	Duration of farming activity	Ploughing destroys archaeological sites, mixes cultural deposits	Negative High	Assess impact of new areas earmarked for agriculture	Negative Low-high	Monitoring exposed soils; aerial surveys for crop and soil marks
Game ranching	Duration of game ranching activity	Compromises integrity of archaeological sites	Negative Medium	Assess impact of access roads and fences, game trails	Negative Low	Monitoring of effect of animals on sites

Summary

A risk assessment and situational analysis has identified a similarity in the threats to the MCL existing at the time of nomination and in the post nomination period. The impact of agriculture and game ranching is still largely the same although crop farming has ceased inside the National Park. Tourism developments and associated activities such as game farming represent a new threat which must be regulated. Although a few mines existed during the nomination period, the number of licenses granted for exploration and or mining have increased in recent years. This will bring more pressure on the MCL and surrounding areas. These new mining licenses represent a strong threat which must be mitigated by establishing rules for governing activities in the buffer zone as well as declaring some areas no go areas for development. These stringent measures when carried out in areas in close proximity to sensitive areas will allow the State Party to achieve its goal of balancing conservation and development.

5 RESULTS: VELE LICENSED MINING PORTION

5.1 Re-assessment of Archaeological Sites on Vele Colliery

Given the controversy around the identification and significance of heritage sites on the Vele licensed mining portion it was necessary to revisit the sites and provide detailed descriptions of the archaeology and possible impacts of mining and associated activities to the sites (Refer to Appendix 1 for data capture form). The re-evaluation is more specific in terms of the source, nature, and extent of impact on the individual sites (Refer to Annexure 8). Furthermore, the definition of sites was broadened to discount un-diagnostic single artifacts on the surface as heritage places of significance. The re-assessment resulted in the recording of a number of heritage sites inside the Vele licensed mining area (Tables 2 and 3; Fig 28 and 29). A revision to the previously recorded sites reveals an omission in terms of capturing important archaeological features such as middens as well as conducting a proper count of some graves.

The re-assessment concluded that sites in Vele have a connection with the MCL. The Zhizo, K2 and Mapungubwe sites recorded in the Vele mine portion belong to the same period as those in the listed MCL The ranking of the sites was revisited to establish consistency. Sites with research potential and with integrity were ranked higher than single artifact sites with little or no apparent context. These issues necessitated the re-evaluation of the sites as shown in Table 1 above. The ranking scale used is presented in the last chapter and is based on ICOMOs Guidelines and SAHRA Minimum standards.

All the sites identified during the desktop study were revisited followed by dedicated field walking along exposed surfaces such as roadsides. Known settlement locations for MIA people such as low ridges were also surveyed. The desktop study demonstrated that typical sites are located on low ridges. These were targeted for intensive field walking resulting in the identification of a number of previously unrecorded sites. The results are presented below.

Table 2: Re-assessment of archaeological and other heritage sites on Vele Colliery

Site Name	Descriptions	Threats	Action Required
Site 1 ***S22º 08' 35.6" E29º 40' 45.0"***.	Early Iron Age site with Happy Rest pottery, Significance: Medium	About 300 meters from the mine dump	Academic Research, Management plan
Site 2 ***S22º 08' 47.8" E29º 40' 53.3"***.	Spring surrounded by at least three middens, plain short necked pottery, graphite burnished Significance: Medium	Strong threat from current spoil heap some 50 meters away, gully erosion bisects the site	Academic Research, Management plan
Site 3 ***S22º 09' 39.3" E29º 37' 02.0"***	Recent burials, eleven in total. Significance: High	Underground mining	Management plan; Re-location of burials in consultation with relatives of deceased
Site 4 S22º 09' 45.7" E29º 37' 27.2"	K2/Mapungubwe site partially affected by dam construction Significance: medium	Underground mining	Academic Research, Management Plan
Site 5 ***S22º 10' 35.6" E29º 40' 29.1"***.	Extensive K2/Mapungubwe site with a possible central cattle kraal. Significance: Medium	100 meters from access road and situated about 200 meters near the	Academic Research, Management plan

Site Name	Descriptions	Threats	Action Required
		mining plant	
Site 6 ***S22º 11' 14.6" E29º 41' 11.5"***.	Heap of stones, possibly a grave. Significance: High	No planned activities nearby	Management plan
Site 7 ***S22º 12' 04.3" E29º 40' 27.4"***.	Old coal mine of unknown date Significance: Low	No immediate threats	Management plan
Site 8 ***S22º 12' 19.6" E29º 40' 01.4"***.	Old farmhouse Significance: low	Access road and possible renovations	Management Plan
Site 9 ***S22º 09' 19.3" E29º 35' 35.3"***.	Open area containing plain pottery. Significance: Low	Located in area earmarked for underground mining	Academic Research, Management plan
Site 10 ***S22º 08' 59.3" E29º 35' 13.8"***.	Extensive site, 100 meters in radius, un-diagnostiic pottery. Significance: low	Located in area earmarked for underground mining	Academic Research, Management plan
Site 11 ***S22º 08' 27.2" E29º 38' 54.6"***.	K2/Mapungubwe site with middens. Significance: Medium	Threats from infrastructure development	Management Plan
Site 12 ***S22º 11' 24.8" E29º 38' 58.7"***	Large K2/Mapungubwe site about 200 meters in radius with house/grain bin foundations and middens. Significance: Medium	Part of site affected by existing servitude road	Salvage Excavation, Academic Research
Site 13 ***S22º 11' 10.0" E29º 39' 00.4"***.	K2/Mapungubwe site with grain bin stands. Significance: Low	Access road and road upgrades	Salvage excavation, Academic Research
Site 14 ***S22º 10' 44.2" E29º 39' 18.4"***.	Upper grinder. Significance: negligible	Potentially threatened by proposed underground mining	Academic Research
Site 15 ***S22º 10' 53.0" E29º 39' 20.2"***.	A highly eroded site with iron objects, pieces of slag. Integrity has been compromised. Significance: low	Negligible mining threat, only threatened by soil erosion	Academic Research
Site 16 S22º 10' 49.1" E29º 39' 51.2".	Small site affected by erosion. Significance: low	Negligible mining threat. Deposit integrity compromised by gully erosion	Academic Research
Site 17 S22º 10' 51.9" E29º 39' 47.9".	Small site affected by erosion. Significance: low	Negligible mining threat	Academic Research
Site 18 S22º 10' 25.3" E29º 40' 19.4".	Open area with no visible material culture on the surface	Plant Area	Academic Research
Site 19 S22º 10' 25.4" E29º 40' 28.6".	K2/Mapungubwe site with a possible central cattle kraal and middens. Significance: Medium	Access road which is 100 meters away, and the mining plant	Academic Research, Management plan
Site 20 (S22º 12' 23.4" E29º 34' 48.4")	MSA/LSA site on a Hilltop. Significance: Low	Negligible impact from mining	Academic Research, Management plan
Site 21 (S22º 11' 32.0" E29º 36' 11.0")	Single artifact occurrence	Negligible impact from mining	Academic Research

Site Name	Descriptions	Threats	Action Required
site 22 (S22º 12' 28.4" E29º 36' 45.0")	Single artifact: Significance: low	Negligible impact from mining	Academic Research
Site 24 S22º 08' 56.0" E29º 41' 14.4"	K2/Mapungubwe site whose integrity has been affected by erosion. Significance: low	Spoil heap from open cast mining	Academic Research, Management plan
Site 23 S22º 08' 32.3" E29º 40' 56.0	Hut foundations, midden deposit and undecorated pottery. Significance Low	Spoil heap is major threat to the site which is about 200 meters away.	Academic Research, Management plan
Site 25 S22º 09' 03.6" E29º 41' 09.2".	Same site with 24 above	Spoil heap	Academic Research, Management plan
Site 26 S22º 08' 53.1" E29º 39' 22.4".	Extensive site with un-diagnostic pottery and a possible central kraal. 100 meter radius, Dhaka structures Significance: Medium	Access roads	Academic Research, Management plan
Site 27	New sites		Academic Research
Site 28	New Sites		Academic Research
Site 31 S22 09 21.0, E29 40 42.0	Graves: Significance High 11 graves that are already fenced off	Threatened by mine dump	Academic Research, Management plan
Site 32 S22 09 18, E29 40 35	Possible Graves/Stone cairns: Significance High	Threatened by dump	Academic Research, Management plan
Site 33 S22 09 30 E29 40 06	Graves: Significance High	Negligible threat from mining	Academic Research, Management plan
Site 34 S22 º 12' 13.1" E29 º 39' 21.5"	A large K2/Mapungubwe site with a central kraal and vitrified dung, shell, lithic, and bone. Significance: Medium	Threatened by road. Already dissected by the road.	Salvage Excavation, Research
Site 35 S22 º 08" 45.6" E29 º 40" 22. 3"	A fairly large disturbed site with un-diagnostic and graphite burnished pottery, ostrich egg shell beads. Remains of midden still exist. Significance: Medium	Site affected by road construction. Outside mining area.	Academic Research
Site 36 S22 10 01 E29 40 15	Isolated Middle Stone Age flakes and scrappers	Plant and slurry dam	Academic Research

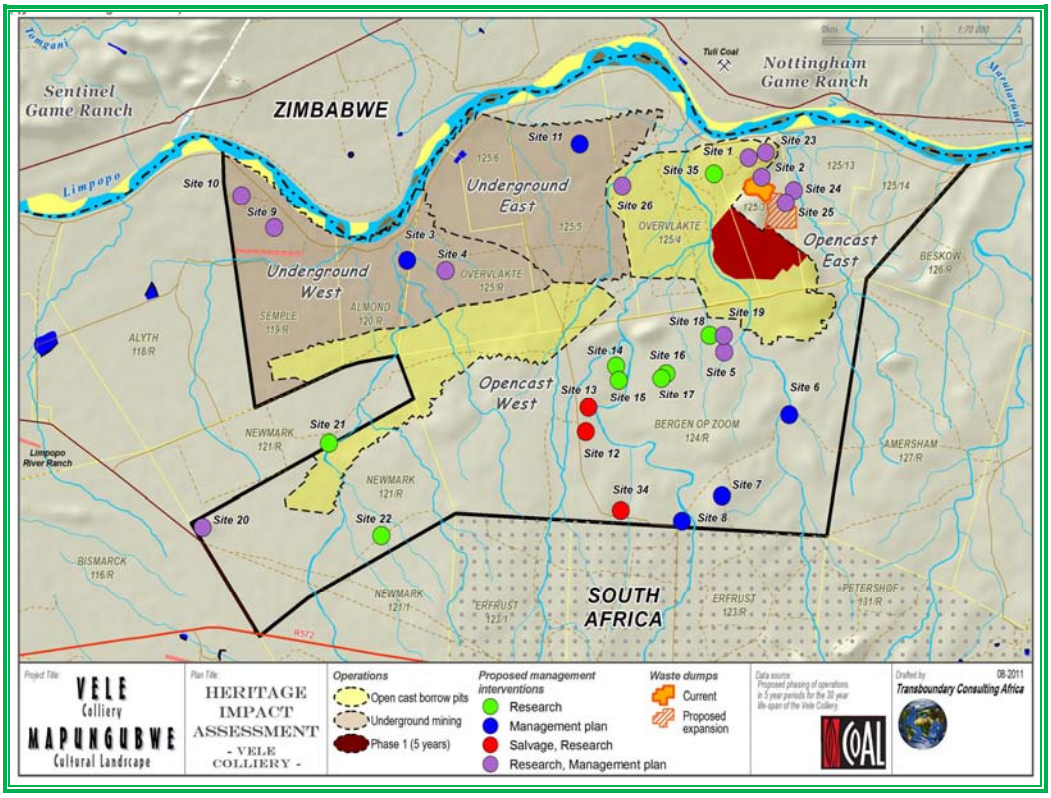

Fig 31: Classification of significance and threat levels of the heritage sites on the colliery properties

5.2 Mitigation Measures for Vele Licensed Mining Portion

The mitigation plan for Vele Colliery has taken into consideration a number of things such as alternative mining methods and alternative construction methods, all designed to ensure the long term protection of heritage resources. The following mitigation measures are recommended for the Vele Licensed Mining portion (Refer to Table 3; Figs 29 and 30):

5.2.1 Mining

A number of options have been considered including doing underground mining to save sites on the surface. Sites affected by ground disturbance must be mitigated, for example site 34 along the access road.

5.2.2 Infrastructure Development

All infrastructure development must be monitored. Access road construction and all activities resulting in the removal of top soil must be monitored. There is a need for a resident archaeologist to monitor all construction activities and document sites that are exposed, disturbed and destroyed due to mining activity. An independent archaeological consultancy must do the assessment on an annual basis to ensure the effectiveness of the heritage conservation plan and its implementation.

5.2.3 Research

Research is important in identifying heritage sites of importance. It is recommended that LCC initiate dedicated archaeological research on the Iron Age, and where necessary, the Stone Age of the Vele Licensed Mining area. This should result in the commissioning of publications that would reach out to specialists and the general public.

Table 3: Impact and mitigation programme for the Vele Mining Licensed area

Activity	Potential Impact	Signifi-cance without mitigation	Mitigation measures	Signifi-cance with mitigation	Monitoring
All activities	Surface and ground disturbance will destroy heritage and environmental resources	High	• Identify heritage resources prior to mining, during mining and when rehabilitating mine • Fence off designated infrastructure and mining areas • Rescue sites in cases where alternatives are not possible e.g. site 34 • Appointment of resident archaeologist to monitor all ground disturbing activities • Watching briefs during top and sub-soil removing activities	Moderate	• All surface and ground disturbance activities must be monitored for the duration of the mining • Periodic monitoring reports must be submitted to heritage authority • Heritage authority must make periodic inspections for the duration of the mining • Plant indigenous tree species
Open cast mining	Dust Impact on rock art	Moderate	• Water sprays during construction and operation of access roads • Water sprays at stock piles • Limit vehicle speed on dirty roads • Develop air blast control measures • Monitoring of levels of dust at Vele and in the MCLWHS (Refer to Annexure 9)	Low	• Dust levels must be monitored for as long as necessary • SANParks must monitor dust levels to establish if there is effect on rock art • Annual environmental legal compliance audit
	Noise	Moderate	• Location of noise fixed facilities away from sensitive areas • Construction activities, and equipment and other noise creating facilities must be	Low	• Periodic monitoring of noise levels to ensure that they are kept to the statutory minimum • This should last to the duration of the mining

			restricted to certain hours during the day and early evening		
	Poor waste management	Moderate	• Earth from mining must be disposed in areas with no heritage sensitivity • Backfilling as mining proceeds will offset many negatives • Fencing and flagging of heritage resources	Low	Periodic monitoring of mining spoil dumps and other waste disposal areas
	Visual Impact	Moderate	• Spoil heaps to be kept at a minimum • Vehicles and other infrastructure to be painted in earth colours	Low	Periodic monitoring of visual impact from key areas such as Mapungubwe Hill
	Impact on research	High	• Chance discovered sites must be studied and rescued • Sites un-impacted by mining must be studied • Develop heritage and conservation awareness programmes	High Positive	The resident archaeologist must inform heritage authorities of the existence of significant heritage resources both archaeological and paleontological when discovered by chance
Underground mining	Noise	High	• Noise controls to be attached to fans • Use of low noise fans on ventilating shafts • Blasting to be controlled • Develop site specific evaluation and damage avoidance measures for monuments that are vulnerable to vibration damage.	Low	Period monitoring of noise levels
	Visual Impact	High	• Keep infrastructure at minimum – maximum heights of any structure to be 20m • Avoid use of reflective colours in construction • Implement light pollution controls • Establish vegetation screens	Moderate	Periodic monitoring of impact

Coal, transporting, and processing	Increased traffic, surface disturbance associate with road construction	High	• Adhering to all road regulations • Ensuring headlights are on all the time • Monitoring soil disturbing activities • Creating barriers around heritage sites	Moderate	Periodic Monitoring
Mine closure and post closure period	Rehabilitation may affect heritage resources	High	• A management plan will be developed to protect heritage resources • A programme will be put in place to increase public awareness of the sites • A rehabilitation plan will be developed	Low	• Post mining land use activities must consider the future of sites inside Vele • National heritage legislation and Environmental conservation laws must be used to protect the heritage and to regenerate the environment.

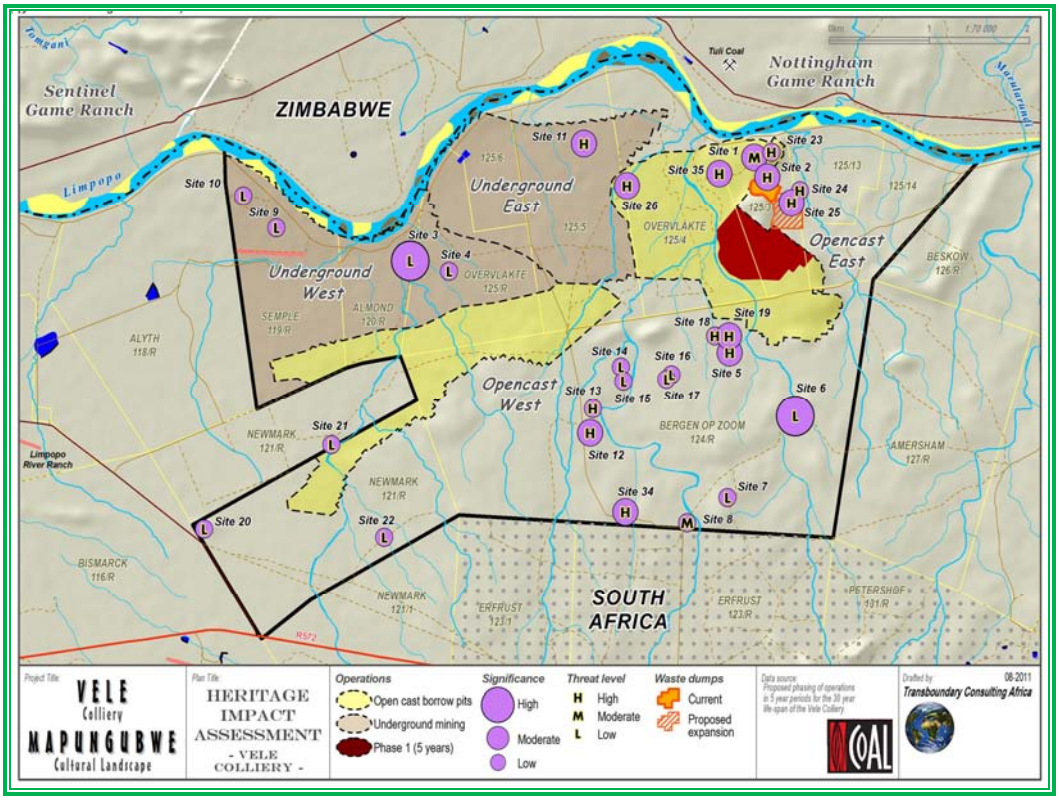

Fig 32: Classification of significance and threat levels of the heritage sites on the the Colliery properties

Summary

The Vele Colliery will impact on heritage resources which are related to those in the MCLWHS. Sufficient mitigation strategies have been devised to minimise the impact. Routine monitoring and stakeholder participation is important in ensuring that adverse impacts are eliminated for the life span of the mine.

6 RESULTS OF STAKEHOLDER ENGAGEMENT AND CONSULTATION

6.1 Introduction

Engagement is essential for ensuring that a wide variety of stakeholders have an input in the way heritage is managed. Furthermore, the more stakeholders and I&APs are involved in managing heritage resources, the more germane heritage management becomes. The main guiding principle in the stakeholder engagement and consultation was that credible solutions could only be created through the full participation of all stakeholders. Full participation was important for developing mitigation and management plans to safeguard the OUVs of the MWHS prior to mining (planning), during mining (operational phase) and after the mining (mine closure). Inputs or comments of I&APs were also considered in the assessment of heritage value, sense of place etc., and informed the development of mitigation and management plans for ensuring the maintenance of the integrity of the MCL.

6.2 Methodology/Approach

In order to clearly articulate and incorporate the views/inputs/comments of all the stakeholders in the assessment, management and mitigation plans, a methodology that combines meetings with identified key stakeholders and interviews was adopted. Three levels of stakeholder engagement were identified; local and descent communities, professional bodies and institutions directly affected or connected to heritage conservation or protection. Institutions that have a mandate to oversee and manage the heritage resource and civil society were also included.

Dr Otsile Ntsoane, a heritage expert who has extensively worked with local and descent communities in and around Mapungubwe with the late Professor Ralushai, conducted the public participation with local communities (Refer to Annexure 7 and 12). Consultations were held with the BaHananwa, the Vhalemba, and the Vhangona, the Tshivula, the Leshiba and Machete communities. The Vhembe, Capricorn and Blouberg municipalities were also consulted and engaged.

Professional bodies included amongst others, key personnel and line function units with the SANParks, the proponent LCC, the SAHRA at national and provincial levels, the DEA as well as the National Museum and Monuments of Zimbabwe and the National Museum and Art Gallery in Botswana. The expert opinion of Dr Sophia Labadi of the World Heritage Centre in Paris was also sought together with that of the Johannesburg based African World Heritage Fund.

In addition to the engagement with the above mentioned organizations, presentations were made to the DEA Heritage Impact Study Task Team on 26 October 2011 which comprises amongst others, representatives of LCC, DEA, Limpopo Economic Development, Environment and Tourism (LEDET), SAHRA, SANParks, professional consultants, etc. This was followed by presentation of the HIA findings and management plan on 1 November 2011 to the EMC established in terms of the environmental authorization to oversee compliance at Vele Colliery. The EMC comprises of various organizations and spheres of government. Interviews and meetings were also conducted with civil society groups who are not directly involved in managing the heritage but whom however, associate heritage with a number of values. Such stakeholders include environmental groups such as PPF, Endangered Wildlife Trust (EWT), identified committees within political parties, labour organizations and others. The inputs and comments of the stakeholders were fed into the research design for assessing values and informed the mitigation and management plans. The draft HIA and Management Plan document was circulated to representatives of the three layered groups including local communities.

6.3 Results

A detailed study of the concerns, inputs and comments of stakeholders revealed that stakeholders are heavily polarized (e.g. pending court cases and the media mudslinging). Long-term engagement is thus required to bring a union of minds. It is recommended that the State Party conduct a broad based stakeholder engagement programme that is more future looking and that will promote the participation of all the stakeholders once the technical aspects highlighted in this report are adopted. It was also noted that the stakeholders in the Vele mining case represent different classes in society, have different educational backgrounds and differing access to communication tools and media houses. In light of this, the stakeholder engagement plan recommended below takes this into consideration. Although there are land claims, a solution can be created through co-management options. The SANParks already has similar arrangements for the management of some National Parks with local communities. It also became evident that there is a need to clearly articulate the role of LCC and the role of the State Party. The role of other developers in the region must also be mapped out. The main concerns of the different stakeholder layers are presented below.

6.3.1 Local and descent communities

The local communities include various farmers, owners of game ranches and conservancies as well as the descent communities. Local conservation groups are worried that large scale industrialization is fast developing in the broader cultural landscape. As such, there is a need to develop regulations that allow conservation and mining to go hand in hand. The land claimants, particularly the Machete group, felt that they are not being fully involved in the developments around Mapungubwe and desire to play an active role. The other groups lauded the employment opportunities associated with heritage but emphasized that their culture must be preserved. They also lamented that often they do not get access to their ancestral heritage. Most of the descent communities commented that active heritage protection will assist reviving their indigenous knowledge systems and create opportunities accruing from tourism benefits. There were, however, some community groups who were not sure of how they could contribute to a process led by others. As the owners of their heritage, they thought they should take the lead in deciding what must be done with their heritage.

6.3.2 Professional Bodies and Government Institutions with a Mandate for Managing Heritage

Stakeholder input from organizations such as SAHRA, SANParks, DEA and other groups in this category emphasized the need to ensure that local communities are fully and meaningfully involved in heritage protection and other activities associated with the mining. It was also felt that the most effective way to manage elements of the MCL is to relate them to the broader landscape and not to treat them as individual entities. The need to have a buffer zone through full stakeholder consultation was also noted. The SAHRA highlighted the need for clear policies to regulate development given that some mining licenses were granted for areas lying next to heritage places such as Leokwe Hill. It was further noted that the main threat is not Vele Colliery but the new developments that are being proposed with no regulatory frameworks in place. The ASAPA expressed their interest in working with other stakeholders for the good of heritage and development in the EMC for Vele.

6.3.3 Civil Society

Non-governmental organizations consulted emphasized the importance of sound and sustainable heritage stewardship. They also noted that large scale infrastructure development will have a negative impact on sense of place. They furthermore noted that working together for a common cause is more constructive than fighting. Some of the NGOs are part of the EMC that met on the 1st of November at Klein Kariba in Bela Bela, Limpopo Province. The issue of restrictive and effective regulations was reiterated. The members of the political parties who were consulted and those of Cosatu acknowledged the importance of Mapungubwe as the heritage place gave its name to the highest honour in the country. However, they noted that the country has regulations which are designed to protect natural and cultural resources so that jobs can be created while the heritage and environmental future is not jeopardized.

6.3.4 Limpopo Coal Company (Pty)Ltd

The LCC recognizes the need to balance heritage and development. They have signed MoUs with the State Party and SANParks committing to sound heritage and environmental stewardship. They have also established an EMC comprising major stakeholders, including the State Party, the Action group, local communities as well as other I&APs .

6.4 Stakeholder Engagement Plan

It is evident that the stakeholders are strongly polarized. There may be differences in terms of approach. The common denominator in the results of the public consultation process is that there is a need to develop regulations and effective buffers that will protect the values of the MCL. Such regulations must be a result of full consultation with all stakeholders. The following plan takes note of the different types and needs of stakeholders and emphasizes activities that promote the unification of minds and ideals to conserve heritage. The Stakeholder Engagement Plan consists of several steps.

6.4.1 Commitment to stakeholder consultation

For engagement to succeed there must be active commitment by all parties to work together towards a common good. Stakeholders must be informed all the time about key developments

that affect their direct or indirect interests while acknowledging that information is confidential to the State Party and the Company.

6.4.2 Identifying stakeholders

It is important to identify and map all the stakeholders including those with a direct and indirect interest as well as those with the potential to influence outcomes.

6.4.3 Stakeholder engagement mechanisms

Table 4: Stakeholder Engagement Mechanisms

Stakeholder	Engagement mechanism	Frequency	Responsibility
Local and descent communities	Meetings Reports by LCC Reports by SANParks Reports by community representatives	Continuous	State Party SANParks LCC activities inside Vele
Professional bodies and organizations with mandate to manage heritage	Meetings Reports by LCC Reports by SANParks Reports by SAHRA Reports by DEA Reports by UNESCO	Continuous Reports must be submitted periodically at times agreed by all stakeholders	State Party (to ensure that OUVs are retained) LCC, for activities inside Vele Colliery SANParks, for activities in and around MCLWHS SAHRA, to ensure that compliance is achieved DEA , to ensure that compliance is achieved UNESCO, to ensure that OUVs are maintained
Civic Society	Meetings Reports by LCC Reports by the State Party Reports by SANParks	Continuous	LCC, for activities inside Vele; SANParks, for the listed portions of the MCLWHS; State Party, for maintaining compliance; SAHRA, for ensuring that compliance on heritage matters
Other interested stakeholders	Meetings	Periodic	SANParks State Party LCC, for Vele portion UNESCO

6.4.4 Workshop

There is a need for a workshop to address issues of concern raised by all the stakeholders. The State Party should also consider creating a committee that will represent the different interest groups and ensure that the engagement process is managed effectively.

6.4.5 Consultation Procedures

If a representative committee is established then consultation on issues can be achieved through representation. Mechanisms for expressing issues and raising concerns must be established as well.

Summary

Stakeholder engagement is an ongoing process. The main point of misunderstanding among the stakeholders is that some consider LCC as responsible for the whole cultural landscape. This is the responsibility of the State Party and its structures. The LCC and other developers should however be responsible for their own properties. The State Party is therefore recommended to conduct a stakeholder engagement and consultation process that will lead to the adoption of common strategies and a standard for maintaining the integrity of the cultural landscape. The inputs from the stakeholder consultation were considered in the management plan which is presented in the next chapter.

7 HERITAGE MANAGEMENT PLAN

7.1. Introduction and Purpose of the Plan

In modern heritage conservation practice, a management plan is universally recognized as the primary guiding document for the conservation and future use of cultural and natural landscapes. The main objective of the management plan is to ensure that all future management decisions about the core of the MCLWHS and actions taken are carried out within a framework governed by the UNESCO and ICOMOS Conventions and Guidelines, the South Africa National Heritage Resources Act of 1999, the National Environmental Management: Protected Areas Act of 2008, and the SAHRA Minimum Standards for Archaeological and Paleontological Impact Assessments.

The main purpose of the management plan is to develop management strategies for sites making up the MCL in the core area, the buffer zone and inside Vele Colliery. This management plan has been developed with the full consultation of I&APs. It provides guidance on short and medium to long term management actions and strategies to ensure that the OUVs of the MCLWHS are protected. Due regard has been given to the individual heritage places inside Vele Colliery. The plan is designed to guide the State Party, the developer and I&APs in securing the future of this important heritage landscape. The main limitation was time – a longer period of time would have been necessary to create a detailed management plan. All the required information is available. It is recommended that an integrated management plan for Vele Colliery be developed within six months to allow for full consultation.

7.2. Statement of Significance for the MCL and Archaeological Sites inside Vele Colliery

The heritage resources making up the MCL are described in Chapter 1. According to the nomination dossier, the MCL , whose remains are a testimony to the earliest known state society in Southern Africa (AD 900-1300), when viewed against the present day fauna and flora, and the geo-morphological formations of the Limpopo/Shashe confluence, creates an impressive landscape of universal significance. Mapungubwe was placed on the World Heritage List on the basis of the following criteria:

Criterion (ii): The MCL contains evidence of an important interchange of human values that led to far-reaching cultural and social changes in Southern Africa between AD 900 and 1300.

Criterion (iii)**:** The remains in the MCL are a remarkably complete testimony to the growth and subsequent decline of the Mapungubwe State which at its height was the largest kingdom in the African subcontinent.

Criterion (iv)**:** The establishment of Mapungubwe as a powerful state trading through the East African ports with Arabia and India was a significant stage in the history of the African sub-continent.

Criterion (v)**:** The remains in the MCL graphically illustrate the impact of climate change and record the growth and then decline of the Kingdom of Mapungubwe as a clear record of a culture that became vulnerable to irreversible change***.***

Besides these OUVs, represented by the 400 sites in the core (defined by the boundaries of the National Park), the buffer zone and adjacent areas also host heritage places dating to the Mapungubwe period as well as the Stone Age, Iron Age, and recent homesteads and burials. There is also the natural landscape surrounding the built areas. The whole MCL is an associative landscape. It has intangible values which are as significant as the built-up areas. Furthermore, there are remains of the succeeding generations such as the Khami period, and the ancestral and historical Venda. This entire heritage is associated with the living traditions of the descent communities. The MCL is therefore associated with spiritual, scientific, educational, political, economic and social values. Although the sites in the core were seen as representative at the time of nomination, the whole landscape must be considered as significant. This is one of the guiding principles in this document.

7.3. Management Issues

Based on the information from the desktop survey, field visits and stakeholder engagement, the main management issues for the MCL are:

i. Conflicts between different land users;
ii. Conflict between heritage conservation and large-scale mining development;
iii. Problems arising from lack of implementation of the outstanding issues from the nomination dossier; and
iv. Problems arising from stakeholder polarization.

An implementation plan has been designed to ensure sustainable heritage conservation by identifying short and long term remedial and necessary monitoring schedules. This information is presented in Table 5.

7.4. Immediate Action required in the Core and Buffer Zone to Ensure that OUVs are Protected and Enhanced

Most of the current problems at Mapungubwe emanate from the lack of a clearly defined buffer zone to the core area. The buffer zone is an essential component for the protection and mitigation of impacts to the OUV. The following steps to fix the buffer zone need to be taken as a matter of urgency.

Table 5: Management actions to re-assess and fix the buffer zone

Actions	Actors	Recommendation	Time frame
Identify areas to be included in the buffer zone	SANParks and DEA plus Consultant	Refer to Map1 for proposed buffer area	Two months
Identify current land use and their impacts in the proposed buffer zone	SANParks and DEA	Create a database of land-use patterns and identify sources of risk. Liaise with stakeholders on impact of their activities on heritage	Two months
Demarcate and acquire land in the buffer zone	SANParks and DEA	Liaise with landowners and other stakeholders	Two months
Develop regulations to govern buffer zone	SANParks and DEA	Conduct a stakeholder meeting and establish a technical team to steer the process	Six months
Stakeholder Engagement	SANParks DEA	Conduct an inclusive stakeholder engagement process to find common ground and a way forward for the landscape	1 year

The end result must be a clearly defined buffer zone with clear regulations and monitoring mechanisms for the management of the park. While these are short-term measures, it is furthermore recommended medium term measures that will ensure the long term survival of the heritage landscape are developed. Table 6 presents medium term interventions required to enhance the OUVs.

Table 6: Management strategies to ensure protection of OUVs in the medium to long term

Activity	Recommendations	Duration	Schedule of Monitoring	Responsibility
Creation of an Integrated Management Plan for sites in the core and buffer zone	• The existing management plan only focuses on a few individual sites in the core • A new integrated management plan must be designed taking into consideration high levels of threats posed by industrialization • The plan must be reviewed after three years	1-2 years to allow for full stakeholder participation	State Party to submit plan to UNESCO and ICOMOS	• DEA • SANParks • SAHRA • Appoint consultant
Identify sites in the buffer zone through detailed surveys	• Archaeologists/heritage specialist to survey and collate heritage data in the buffer zone • Cooperation of landowners to be sought	1-5 years	Consultant reports to be submitted to State Party and SAHRA	• State Party • SANParks • SAHRA • Appoint Consultant
Create database of sites in core and buffer zone	• As a management tool, the managing authority needs to create a database of all known sites • This will make it easy to monitor threats to the heritage sites that make up the OUVs • It will help in guiding research	1 year, work to start immediately		• State party • SANParks • Appoint Consultant
Measure and monitor levels of dust in core area and buffer zone	• Measure levels of dust before mining resumes • Measure levels of dust on commencement of mining • Monitor continuously afterwards	Immediately and for the duration of mine	SANParks to submit monitoring reports quarterly to DEA and other Stakeholders	• SANParks • Consultant
Employ more support staff	• 2 more archaeologists including a rock art specialist must be employed • A community liaison officer must also be employed together with a conservator	Immediately	SANParks to liaise with DEA	• SANParks

These actions must be reviewed after two years during which an integrated management plan should have been developed. Immediate actions essential to protecting the individual sites are tabulated below. The actions must be implemented as a matter of urgency. Table 7 presents the actions, actors and recommendations regarding monitoring schedules.

Table 7: Immediate measures required to protect heritage sites on Vele Colliery

Activity	Recommendation	Duration	Schedule of monitoring	Responsibility
Rescue excavations	• Mitigate sites, 13, 34 • Sites disturbed by public road construction and subsequent upgrades	1 to 2 months	Archaeologist/Heritage Consultant to submit report to SAHRA as per NHRA act of 1999	• LCC • Consultant • SAHRA • DEA
Erecting buffers or flags around sites	There is a need to flag heritage sites so that they can be avoided	Immediately	Archaeologist/Heritage Consultant to submit report to SAHRA	• LCC • Consultant • SAHRA
Integrated Management Plan	There is a need to develop an integrated management plan to harmonise heritage conservation with biodiversity protection	1-2 years to allow for full consultation	Consultant to submit report to SAHRA and DEA	• LCC • SAHRA • Consultant

Medium to long term strategies for protecting these sites have also been developed and are presented in Table 8. Implementation of these management actions will only be successful if there is full participation of all stakeholders.

Table 8: Management strategies for long term preservation of heritage sites inside Vele Colliery

Activity	Recommendations	Duration	Schedule of monitoring	Responsibility
All activities	• Identify heritage resources prior to mining, during mining and when rehabilitating mine • Fence off designated infrastructure and mining areas • Rescue sites in cases	For the duration of mine	• Watching briefs reports during top and sub-soil removal • Bi-Annual reports to be submitted to SAHRA • SAHRA to make	• LCC • SAHRA • Archaeological Consultants

	where alternatives are not possible e.g. site 34 • Appointment of resident archaeologist to monitor all ground disturbing activities • Watching briefs during top and sub-soil removing activities • Stakeholder engagement • Rescue excavation of sites threatened with development		periodic and unannounced inspections	
Open cast mining	• Water sprays during construction and operation of access roads to keep dust to a minimum (Refer to Annexure 9) • Location of noise fixed facilities away from sensitive areas (Annexure 10) • Construction activities, and equipment and other noise creating facilities must be restricted to certain hours during the day or early evening • Fencing and flagging of heritage resources near spoil heaps or other activities • Chance discovered sites must be studied and rescued • Sites un-impacted by mining must be studied • Develop heritage and conservation awareness programmes	10-15 years or for the duration of open cast activities	• Annual reports to be produced by Archaeologists /Heritage Specialist for evaluation by SAHRA • LCC to submit heritage report to DEA annually	• SAHRA • LCC • DEA • Archaeological Consultant

Underground mining	• Noise controls to be attached to fans • Use of low noise fans on ventilating shafts • Blasting to be controlled and confined to specific time of the day (Annexure 11) • Develop site specific evaluation and damage avoidance measures for monuments that are vulnerable to vibration damage • Keep infrastructure at minimum – maximum heights of any structure to be 20m • Avoid use of reflective colours in construction • Implement light pollution controls • Establish vegetation screens.	For the duration of underground mining	• Annual reports to be submitted to heritage authorities and State Party	• SAHRA • LCC • Archaeological Consultant • DEA
Coal, transporting, and processing	• Adhering to all road regulations • Ensuring headlights are on all the time • Monitoring soil disturbing activities • Creating barriers around heritage sites	For duration of mine	• Periodic monitoring & reporting	• SAHRA • LCC • Archaeological /Heritage Consultant
Mine closure and post closure period	• A management plan will be developed to protect heritage resources • A programme will be put in place to increase public awareness of the sites • Post mining land use activities must consider the future of sites inside Vele • National heritage legislation and Environmental conservation laws must be used to protect the heritage and to regenerate the environment	For the closure and post-closure period		• SAHRA • LCC • Archaeological Consultant

Table 9 presents the stakeholder engagement activities essential to achieving success.

Table 9 Stakeholder Engagement Actions

Activity	Recommendation	Duration	Schedule of monitoring	Responsibility
Managing sites in core and buffer zone	There is need for stakeholder engagement with all I&APs	On-going	Consultant to produce reports for SANParks and SAHRA	• Consultant • SANParks
Rehabilitating sites in the core area	Stakeholder input required for rehabilitating sites such as K2	Immediately	Consultant to submit report to SAHRA as per the provisions of NHRA Act of 1999	• Consultant • SAHRA • SANParks
Creating regulations to govern activities in the buffer zone	• A stakeholder buy in is essential for the regulations to work • A workshop must be conducted	1 year to allow for full consultation	Consultant to submit reports to DEA, SANParks and SAHRA	• SANParks • SAHRA • Consultant
Co-management with land claimants	• Co-management agreements must be entered into with descent communities • Ways of benefiting communities must also be mapped out	1 to 2 years, ongoing thereafter	Consultant to submit report to SANParks and DEA	• SANParks • Consultant • DEA
Stakeholder engagement on management of resources on Vele	A continuous stakeholder engagement process must be done to ensure that views of interested and affected parties are respected	Ongoing	Consultant to submit reports to SANParks and SAHRA.	• Consultant • SANParks • LCC • SAHRA

7.5. Monitoring and Review

A management plan is a statement of intent and relies upon implementation supported by a system of monitoring and review. It is envisaged that annual meetings of all stakeholders be done to bring together the different people involved in the overall management and to confirm that objectives are being followed, monitor progress and identify any changes in circumstances.

7.6. Management Guidelines

The management plan presented here is designed to enhance the OUVs of Mapungubwe by minimising impacts identified, protecting the integrity of sites and promoting awareness of the elements of the MCL. To be successful, the participation and cooperation of all stakeholders is required. The following management guidelines are recommended:

Developer or Limpopo Coal Company (Pty) Ltd

a. The developer must fully implement the recommendations of specialist reports with regard to heritage, dust, noise, pollution and visual impact (refer to Annexures 5, 8, 9, 10 & 11).
b. The developer must also demonstrate commitment to the MOA signed with SANParks and the DEA.
c. Must engage an experienced archaeologist to advise on a day to day basis and to monitor development, implement briefs and coordinate research. This appointment should be at a management level to guide the planning team on heritage matters during the planning sessions.
d. Carry out Phase II HIAs as a matter of urgency.
e. Liaise with SAHRA to ensure that recommendations of HIA have been complied with. This can be done by way of periodic reports submitted by LCC Limpopo Coal Company to SAHRA and relevant provincial heritage authorities.
f. Engage with local communities in disseminating heritage information and in managing and protecting both the tangible and intangible heritage. The programmes should aim to empower local communities such that they can actively be involved in the protection of heritage sites on the Vele licensed mining portion.
g. Vele to consider commissioning research, and publications on managing the MCL and to be circulated to the wider public.

State Party: Department of Environmental Affairs (DEA)

The State Party has a greater role to play in ensuring an effective management programme for Mapungubwe that guarantees that the OUVs are enhanced. To achieve this, the following is recommended:

a. Implement to the full the outstanding issues in the nomination dossier, involving (i) the completion of the consolidation of properties, and (ii) developing guidelines for governing development activities in the buffer zone.
b. Commit to fully implement the terms of the MOA with the SANPARKS and LCC.
c. Realise the urgent need to fix a workable and practical buffer zone and to develop regulations that relate to all mining activities and any other development with full participation of all stakeholders.
d. Develop guidelines for mining activities in the broader MCL with full participation of all stakeholders.
e. Liaise with all stakeholders on issues relating to the management of the WHS.
f. Establish a specialist committee to coordinate the conservation of heritage, as part of the EMC Biodiversity and Heritage sub-committee. This may include representatives from NHC, SAHRA, SANParks, traditional authorities, etc. The committee should meet annually to review progress on conservation issues that relate to the mining.
g. Conduct regular condition assessments to monitor the possible impact of mining induced factors on the elements of the MCL and the impact of mining should be included in the periodic reporting by the State Party on the application of the World Heritage Convention at Mapungubwe.
h. Liaise with relevant institutions in Botswana and Zimbabwe on common issues associated with the management and protection of the MCL.
i. Enter into management agreements with land claimants.

j. Identify and quantify all heritage objects recovered from the MCL that are held or displayed at other institutions in the country.
k. Through its management authority, the State Party must create a repository for all archival research material that relates to the MCLWHS and broader landscape.
l. Conduct stakeholder engagement and consultations to make sure that all stakeholders benefit from developments around the MCLWHS.

Department of Mineral Resources (DMR)

a. The DMR must liaise with DEA, SANParks and SAHRA before awarding prospecting, exploration and mining licences in the broader MCL.
b. The DMR and DEA must develop a MOU regarding the level and intensity of extractive resource use around MCLWHS.

South African Heritage Resources Agency (SAHRA)

a. As part of their legal mandate, SAHRA must ensure that Vele complies fully with the provisions of the National Heritage Resources Act of 1999 and associated guidelines.
b. For impact assessments in sensitive areas such as the MCL, SAHRA must conduct a physical inspection before any authorisation.

Repositories of Cultural Objects from Mapungubwe

a. Holders of the objects from the site of Mapungubwe and associated cultural landscape must facilitate their restitution to the newly established Interpretive Centre to enhance the OUVs.

Traditional Leaders, Local and Descent Communities

a. Actively participate in activities that enhance the tangible, intangible and living heritage of the broader MCL
b. Communities through their leadership must meaningfully contribute to the management and protection of the MCL, and engage fully.

Researchers

a. Researchers (past, present and future) are encouraged to submit their field notes, databases and publications to the responsible authority.

Local Businesses and Tourism Groups

a. Promote awareness of the MCL.
b. Ensure that all developments associated with their activities are subject to HIAs as per relevant legislation.

Table 10 summaries the action plans to enhance the OUVs of the sites that make up the MCLWHS and to protect and rescue the associative sites on Vele Colliery. The actions will assist in maintaining the integrity and authenticity of the sites on the world heritage property and

also meet local legal compliance and best practice. The implementation mechanisms proposed by concerned stakeholders are of particular importance. These mechanisms should be viewed as part of the broader mitigation measures recommended in this study.

Table 10: Summary of action plans to enhance the OUVs and to meet local legal compliance requirements

Mitigation Measures	Implementing Authority	Implementation Mechanisms	Timeframes
Establishment of buffer zones	State Party, DEA in liaison with SAHRA and SANParks	Convene an indaba to review current buffers; Ecosystem value analyses (Refer to Fig 33) to inform alignment of the buffer zone Appoint consultant to redraw new buffer zone	Immediate
Dust control and monitoring	LCC	Continuation of the dust fallout monitoring through accredited service provider; Evaluate and upgrade if necessary, control measures currently in place	Continuous – entire lifespan of mine
Noise control and monitoring	LCC	Appoint consultant for noise control and monitoring; Evaluate and upgrade if necessary, control measures currently in place	Continuous – entire lifespan of mine
Mitigation of affected sites at Vele Colliery	LCC, SAHRA	Appoint consultant to manage process	Immediate
Stakeholder Engagement on heritage aspects	LCC, DEA, SANParks	DEA/SANParks to appoint a consultant to facilitate stakeholder engagement processes	Urgent and ongoing for the entire duration of the mine
Research and public awareness	LCC	Promote research in archaeology, cultural heritage conservation, natural biodiversity and related disciplines	Immediate

One approach to delineating a buffer zone for the listed property is through ecosystem service value analyses (Refer to Fig 33) that will allow for informed and holistic decision making based on sound ecological evaluation.

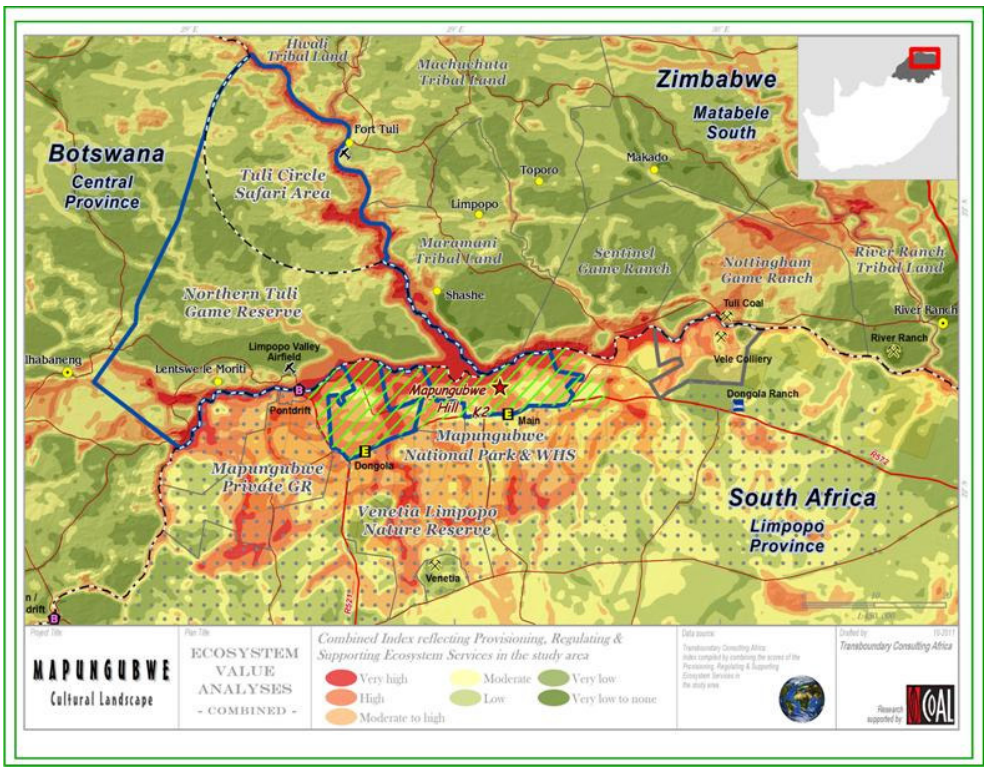

Figure 33: The ecosystem value analyses that could be used to inform a possible realignment of the buffer zone

8. MONITORING THE IMPACT OF VELE COLLIERY ON THE MAPUNGUBWE CULTURAL LANDSCAPE

"Monitoring of World Heritage properties should focus first on indicators linked to their outstanding universal value, authenticity and integrity (OUV-AI), as this is the very reason why those properties have been inscribed on the World Heritage List" (Selfslagh 2004, 10)

This chapter provides a framework for monitoring developments at Vele Colliery to ensure that the identified sites are not negatively impacted. The monitoring programme is also part of a proactive mechanism to ensure that the adverse impacts that may emanate from the mining activities in the Vele Mining Lease Area do not extend to the core and buffer of the listed MCL property. This chapter on monitoring the possible negative impacts of Vele Colliery on the attributes that convey OUVs of the MCL was informed by the Monitoring World Heritage Publication produced by the UNESCO WORLD Heritage Centre and ICCROM in 2004. Comparative cases were also drawn from the monitoring of the Stone Henge World Heritage Site in England (Young, Chadburn and Bedu 2008), several cases from the United States (Hargrave 2003) and New Zealand (Walton 2003).

These international standards of best practice clearly indicate that effective monitoring is fundamental to protecting heritage assets in short to long term (Walton 2003; World Heritage Centre 2004, Young, Chadburn and Bedu 2008; Hargrave 2009). Increasingly, heritage assets are vulnerable to both intentional and inadvertent damage from many sources, and the level of risk to individual sites is not static (Hargrave 2009). A wide range of natural processes and cultural actions can damage sites. For example, infrastructure development, access road construction, intensive agriculture and game hunting activities are some of the activities that can expose archaeological resources to considerable vulnerability. Given the universal significance of the MCL it is important to continuously monitor the impacts of the proposed mining at the Vele Mining Lease Area on the integrity of the individual attributes and on the whole ensemble of attributes that convey the Mapungubwe Cultural Landscape's OUV.

According to Walton (2003: 6), monitoring is the process of quantifying changes in the condition of heritage resources. It involves the continuous collection of information over time and analyzing the results to detect the changes that are occurring. Given that the attributes that convey Mapungubwe's OUV are varied, monitoring is essential for detecting negative changes and quantifying the rate of such changes. The impacts need to be monitored to ensure that the OUV is not negatively affected. Strong emphasis must be placed on mining activities because of their landscape changing nature. According to Hargrave (2009), heritage place monitoring consists of periodic visitations and inspections to detect change in a site's integrity, authenticity and condition. In heritage rich sub-surface areas, monitoring involves inspecting the removal of top soil during earth moving activities to detect presence of sub-surface archaeological resources. An initial, baseline visit that involves the collection of detailed information is important to provide guidance on the type and amount of information to be collected during subsequent monitoring visits (Walton 2003:8). The most important aspects of a monitoring strategy are "ease of recording, repeatability, cost-effectiveness and the avoidance of subjective assessment" (Walton 2003:7). The monitoring programme suggested here is simple to implement, and allows for both periodic and reactive monitoring. It is suggested that all stakeholders and interested and affected parties must be given access to all periodic reports and monitoring information.

The baseline data for developing the monitoring protocols was generated using field results collected during impact assessment surveys and desktop studies. Photographs, field notes and maps were all combined into a database for monitoring purposes. It is recommended that all future monitoring expand this baseline data set and integrate heritage information into wider biodiversity conservation programmes.

8.1 Legislative Requirements for Monitoring

Local and international legislation identify monitoring as one of the key components of integrated heritage resource management. The South African National Heritage Resources Act 25 of 1999 provides for the identification, evaluation, and protection of heritage resources. It also calls for continuous monitoring to identify any threats to long term survival of heritage places. The legislation also stipulates that any threats identified must be mitigated. Similarly, the duty of care enshrined in NEMA, 1998 provides for sustainable management and protection of environmental and heritage assets. Monitoring is part of the duty of care and is one of those aspects that are contained in surveys and management plans. However, there is need to give monitoring a more prominent role in practice as this holds the key to sustainable heritage conservation.

Internationally, the 1972 UNESCO World Heritage Convention calls for prudent management of world heritage places so that their OUVs are not eroded or compromised (Selfslagh 2004). UNESCO has also entered into agreements with the ICMM to ensure that a balance is achieved between development and sound heritage stewardship. Furthermore, ICOMOS has published guidelines to help its members and interested parties assessing impact on World Heritage Properties. According to ICOMOS, it is mandatory for impact assessors to generate strategies of monitoring observed impacts. In summary, compliance with both local and international laws and conventions requires heritage resource managers to monitor changes in the condition of heritage places over time. For World Heritage such as the MCL, it is important to continuously monitor the changes in the condition of the attributes that convey OUV. This will ensure that the mining on Vele Colliery does not erode the OUV of the place over time.

8.2 Monitoring aims

The success of any monitoring exercise depends on clear and concise goals (Young, Chadburn and Bedu 2008; Hargrave 2009). Without goals, it is easy to lose focus. The main goal of proposed monitoring of the attributes that convey OUV individually and collectively is to detect changes in the condition of heritage sites inside Vele Colliery and in the listed area of the MCL in order to protect the integrity of the Mapungubwe World Heritage Site. This monitoring is initially aimed for a five year period.
The following sub-aims apply:

1. To collect baseline data on the condition of sites inside Vele Colliery and those inside the buffer zone and core area.
2. To identify sources of risk to heritage sources.
3. Try and predict impacts to provide an early warning system.
4. To monitor and detect changes in the condition of sites continuously over a five year period.
5. To create a GIS database for storing baseline data that can be used for prediction and monitoring.
6. To develop monitoring strategies for different attributes that convey OUV of MCLWHS.
7. Develop a reliable reporting mechanism to government and UNESCO.

8.3 Methodology

To achieve these aims, an integrated approach that combined information from multiple sources and disciplines was utilised. To begin with, a desktop study was carried out to identify local and international best practice in monitoring. Fieldwork observations were conducted to collect baseline data. This baseline data must be supplemented by information from future monitoring exercises. This is essential for creating a reference point for future monitoring as well as redressing any potential omissions made during the creation of baseline information. It is important to create a relational GIS based database to store baseline and periodic monitoring data. Periodic monitoring reports will be produced to meet local and international legal requirements. The information on monitoring forms and photographs will be used to update the database. After comparing information from different periods, appropriate intervention mechanisms will be developed.

8.4 Baseline Data: Information from Desktop Studies and Field Visits

The process of impact assessment involved collating a significant amount of information relating to the individual attributes that convey the OUV of Mapungubwe. As listed in Table 1, these

attributes mainly include the individual Zhizo, K2, and Mapungubwe type sites that are testimony to the rise and decline of Mapungubwe as a state society that are within the boundaries of the listed property. There are also hunter-gatherer and rock art sites that demonstrate landscape sharing between farmers and hunter-gathersers during the time of Mapungubwe. Although, they have nothing to do with OUV, there are numerous Stone Age sites, as well as post-Mapungubwe Khami, Venda, Sotho-Tswana and historical/recent period sites that show the palimpsest nature of the MCL. These sites were plotted on maps and deserve maximum protection. It is essential to record these in a GIS Database for easy management of information. To create a platform for monitoring, the sources of adverse impacts on the heritage resources on the MCL were noted and recorded. These sources fall into natural and cultural categories. Although not all of these impact sources will be relevant to any particular site Hargrave (2009) recommends that individuals who develop monitoring strategies should be certain that their field protocols are designed to capture evidence for all potentially relevant threats. The baseline data collected during our field surveys and desktop study identified the following sources of impacts:

A. Sources of adverse natural impacts

Heritage resources can be altered by natural processes. These natural processes are as follows:

i. Rainfall

Although the middle-Limpopo region receives little rainfall; occasionally it gets large amounts of rainfall which cause considerable gully erosion and which create badlands. Rainfall washes away the top soil, disturbing archaeological remains and their associated contexts. Rainfall is a major threat to the integrity of sites such as K2, Mapungubwe Hill and Schroda inside the core area. Sites 2 and 15 within Vele Colliery are also threatened with erosion. This erosion also exposes artefacts making it easier for them to be looted.

ii. Period flooding

Period flooding has been reported in the middle-Limpopo during the last and current century, and it is thought that some sites within the Limpopo floodplain may be buried under silt/sediment. Effects of current flooding episodes need to be quantified and assessed in terms of site preservation and (reduced) visibility over time as part of the overall monitoring programme.

iii. Uncontrolled vegetation growth

Uncontrolled vegetation growth also causes destruction of sites. Tree roots grow through archaeological contexts thereby disturbing them by moving artefacts, features and structures. There is a need to clear and monitor vegetation growth on a regular basis, especially for the archaeological sites with a medium to high research and conservation potential..

iv. Fire

Natural and human induced fires destroy ground cover thereby exposing sites to conditions that promote erosion. All sites located in areas with grass and woodland are under threat of fire.

v. Animals

Grazing and burrowing animals are also known to disturb archaeological sites. Mapungubwe is a wildlife sanctuary just like Vele Colliery. There is need to quantify the effect of wild animals on archaeological sites.

vi. Wind

Wind produces dust which affects rock art sites. The effect of wind is however not known as no scientific studies have been undertaken in the Shashi-Limpopo area. Wind is also known to cause erosion, of ground and rock surfaces, posing a serious threat to archaeological sites, including rock art. Its adverse effects can be greatly increased by loss of vegetative cover caused by land use patterns such as agriculture and over grazing.

B. Sources of Adverse cultural impacts

A far greater number of sites are seriously damaged or destroyed by human activity than by natural processes (Hargrave 2009). These culturally induced adverse factors include;

i. Infrastructure development

Infrastructure development is one of the major factors that cause the destruction of archaeological sites. The removal of top soil during access road construction, mining and other earth moving events destroys sites. In the MCL there has been an increase in game farming in recent years. Game view trails expose top soil thus placing sites at risk. The construction of infrastructure for tourism also exposes soil. Open cast mining and other developments produce dust whose effect on rock art sites is unknown, and thus it is important to monitor and study the dust particles to determine their effect on heritage.

ii. Intensive agriculture

The Shashi-Limpopo area is well known for large scale, intensive commercial agriculture which has the effect of destroying sites and homogenizing deposits. There is still some mechanized agriculture within the Mapungubwe National Park. There are also citrus plantations inside Vele Colliery. Activities involving mechanised agriculture generate considerable dust whose effect on the rock art has so far not been quantified.

iii. Mining

The mining activities at Vele Colliery are believed to pose a significant threat to the attributes that convey OUV of Mapungubwe. None the less, there is a need to conduct studies to understand the impact of dust and vibrations on the rock art sites that are within the boundaries of the listed property. Currently, there is a lot of speculation on the subject which is simply unhelpful. This monitoring proposes that detailed studies be carried out to develop suitable intervention mechanisms.

It is important to consider the cycle of activities for the duration of Vele Colliery. The first activity involves opening up access areas and establishing plants and working spaces, the second involves open casting mining and supporting infrastructure, the third involves underground mining and supporting infrastructure. The fifth involves closing down the mine and rehabilitation.

Each of these activities affects the individual attributes of sites in the Vele mining Lease Area that are related to those sites that convey the OUVs of the listed MCL:

1. **Infrastructure development**
   The construction of access roads and construction of working areas removes top soil and poses a danger to the survival of archaeological sites. All top and sub-soil removal activities must be monitored continuously. Adequate documentation must be produced to aid the work of evaluators.
2. **Open cast mining** destroys sites and produces dust whose effect on rock art sites is currently unknown. The open cast mining must avoid significant heritage resources such as graves and individual sites which contain attributes related to those in the UNESCO listed MCL. Furthermore, open cast mining produces spoil heaps with a negative visual impact. All these negative impacts of mining at Vele must be monitored continuously.
3. **Underground mining** causes vibrations due to blasting and may affect the stability of ground surfaces. The clearance of an area in preparation of the mining work can affect the archaeology. Furthermore, it is not just the mining pits that affect cultural landscapes, access roads and other supporting infrastructure also leads to the destruction of sites and must be continuously monitored. The levels of dust and vibrations must be continuously monitored over time to develop predictive models for management purposes.
4. **Rehabilitation** has potential to cover archaeological sites. The process of mine closure must be carefully monitored to avoid this impact. Un-rehabilitated mine tunnels can also cause death and injury to wildlife resources and people.

If the adverse impacts are not monitored and mitigated as suggested in the previous chapters, archaeological sites related to those in the listed property will be destroyed thereby compromising the landscape value of the broader MCL. Continuous and periodic reporting to the State Party and UNESCO is an absolute prerequisite. It might also be a good idea to predict the impact based on a few episodes of mining. This will allow a proactive and adaptive mitigation strategy.

iv. Game ranching

Game ranching is now one of the most popular businesses being carried out in the middle Limpopo region. It results in the creation of game viewing trails and viewing points, some of which have been established without proper heritage impact assessments. This affects individual sites which are part of the cultural landscape.

v. Archaeologists

Archaeologists often excavate sites to generate scientific information to address a number of research questions. However, un-backfilled excavation trenches are causing preservation problems at sites such as K2 and Mapungubwe. All previous excavations must be properly rehabilitated. Archaeologists should also return objects taken from some of these sites should a suitable holding facility be developed.

vii. Human beings

Through a wide variety of actions human beings are the major cause of destruction of archaeological sites. Their uncontrolled actions compromise the integrity of archaeological

deposits. Some visitors or tourists loot objects from sites. Looting is also one of the major threats to the integrity of archaeological deposits.

In summary, although a distinction can be made between natural and cultural factors, in practice these factors are intertwined causing damage to sites. For example, un-rehabilitated archaeological excavations may combine with rainfall and wind to create massive erosion. Although a holistic approach is emphasized, the negative impacts associated with mining require extra attention because the damage is immediate and robust. Impact-specific monitoring is very important. Strategies have thus been developed to detect change in the condition of an ensemble of sites that are related or convey the MCLs OUVs over a five year period.

8.5 The Monitoring Process

An initial, baseline visit that involves the collection of detailed information is important to provide guidance on the type and amount of information to be collected during subsequent monitoring visits. Monitoring visits typically conform to a schedule and, if site condition is stable, may involve little more than an updating of records. A monitoring form which captures all the important variables such as land use, vegetation, soils, slopes, erosion, “visitor pressure,” and agricultural and livestock issues is a critical part of the process. The New Zealand, England and United States monitoring forms “require an assessment of what is causing damage and the extent and seriousness of the problem” (Walton 2003:10-11). Location details must also be captured. Photography plays a central role in the monitoring strategy. Standard (ground-based) photographs taken during monitoring visits provide a basis for detecting changes in site condition. It is important to create fixed photo points where photographs will be taken during successive monitoring visits. A series of photographs taken of the same subject from the same position provides an effective way to detect change. Photo-points should be numbered and unobtrusively marked. “The monitoring programme should generate a substantial body of archive material including checklists, condition reports, and photographs” (Walton 2003:16).

All the above information is stored in a user friendly GIS database. Periodic reports must be produced and archived as well as being deposited with the local authority. Baseline monitoring procedures include a general evaluation: walk the site, locate the boundaries, search for human and natural impacts, and take photographs from each corner of the site and elsewhere as needed. Erosion, agricultural, grazing, and construction impacts will be documented using GPS and photography: “Photographs will be taken from the same position on the site, oriented the same direction every year to ensure comparability of results” (Omaha District 2005:7). For management and implementation purposes, it is important to create a GIS database system based on maps and existing data sets. This database will provide vital desktop monitoring and predictions.

8.6 Strategies for Monitoring

A consideration of international best practice in monitoring has revealed the certain strategies for monitoring changes in the condition of archaeological sites. When implemented at Mapungubwe, this will result in the safeguarding of attributes that convey OUV. The strategies for monitoring are as follows:

a. Defining goals

There is a need to define clear monitoring goals. In the case of the MCL, the main aim is to detect any changes which compromise the integrity of the attributes conveying OUV. The monitoring must also consider all the sources of impacts singly and collectively at intervals to develop remedial action.

b. Generating a monitoring form

Monitoring forms are essential for collecting data needed to detect and measure changes in relevant aspects of site condition. Forms should be well-organized; for example, locational information should not be interspersed with aspects of site condition. Forms should use a "multiple choice" format where possible and convenient to minimize the amount of narrative writing. Short "essay" answers are, however, preferable when it is important to elicit observations that are difficult to quantify or categorize. The form should be designed and updated as needed to ensure that no ambiguity or errors are introduced when data from the form are entered into an electronic database or other software tool.

c. Development of standards of practice

Detecting change, particularly when it concerns the subtle, initial stages of site deterioration, demands consistent observations through time and among different individuals. The only way to achieve such consistency is to develop detailed, written guidance in the form of a standard of practice. The standards of practice will generate information on how to inspect sites, take photographs, etc. Also essential are clear descriptions of the characteristics of various types of impact. For example, many sites exhibit at least some evidence of erosion. If a monitoring form requires "erosion" to be marked as present or absent, it is critical to define how much erosion is observed (Hargrave 2009). Ideally, the Standards of Practice should specify necessary and sufficient conditions to help monitoring personnel make consistent, useful observations.

d. Baseline monitoring

Baseline monitoring (an initial site visit that involves collection of relatively detailed information) is perhaps the most important phase in monitoring (Hargrave 2009). It allows the collection of detailed data about the condition of a site. A priority scale must be developed that requires immediate attention and intervention must be made in very important sites. The baseline monitoring visit must ensure accurate information on site location, vegetation and surface conditions, and existing impacts (Hargave 2009). The baseline data regarding site characteristics and condition is the point of departure for future efforts to detect change, so it is essential that all observations are consistent. Highly experienced individuals must collect baseline data.

e. Routine monitoring

A well designed form is a pre-requisite for routine monitoring. The form should contain all the necessary information ranging from locational details to possible impacts which can enable consistent observations to be made. Those responsible for monitoring must be well trained. Routine monitoring must take place at regular intervals, in this case after every 3 months. Sites threatened with destruction will however require intervention and constant monitoring. Frequent monitoring will minimize "drift", i.e. the variation over time in how monitoring personnel use and apply relevant terms (Hargrave 2009).

f. Reactive monitoring

In very rare cases there should be reactive monitoring , a process by which the State Party would be asked to report significant changes or proposed developments to the World Heritage Committee. On the basis of these reports and on the advice of the relevant Advisory Body to the Convention (ICOMOS International) and from the UNESCO World Heritage Centre, the Committee can offer advice to the State Party. In very serious cases, the advice and decision of the Committee, normally based on Operational Guidelines should be followed.

g. GPS data

It is important to collect high resolution GPS data for recording areas of sites that are degrading for monitoring purposes. These can be plotted onto maps or integrated into a GIS programme to support the development of remedial activities. The GPS coordinates of areas which are exhibiting changes in condition can be uploaded on the GIS system to create maps of the areas. This is important for management purposes.

h. Photography

Photography plays an important role in monitoring. A comparison of two photographs taken at different points are useful to detect changes in site condition. It is recommended that the photographs be taken from the same points during successive monitoring visits. The photographs must be placed in a photographic database and be numbered and dated according to site visits.

i. Recommendations for treatment

After monitoring visits and comparison with baseline information, recommendations for interventions must be made. Only experienced personnel must be allowed to make treatments or interventions.

j. Data management

It is important to store and manage monitoring data. A good GIS or Microsoft Access Database is important for such purposes. The database must provide for different options to find the most important sites and those that need urgent intervention. There must be a section on the actions taken on a site.

k. Reporting the results of monitoring

For the monitoring to be effective, there is a need to produce reports which must be evaluated by external assessors. The LCC must submit monitoring reports to the State Party, SANParks and the SAHRA. The State Party will generally submit state of conservation reports as part of its reporting requirements to UNESCO. Interested and affected parties may also be given the reports.

8.7 Monitoring Plan

Based on these strategies, an impact specific monitoring plan has been drafted. It will be implemented by LCC and overseen by the State Party and the SAHRA. The State Party must also periodically update UNESCO on the results of the implementation of monitoring.

Table 11: Comprehensive 5-year plan for monitoring impact of mining related activities on attributes that convey OUV in Vele Colliery

Activity	Adverse Impact	Baseline Monitoring	Routine Monitoring	Treatment	Reporting Frequency	Duration	Actors
Open cast Mining	Dust	Monitor levels and type of dust in Vele Colliery and core of listed property Analyze chemistry of dust in core area and compare with Vele Colliery	Bi-monthly readings of dust in Vele Colliery and core of listed property	Mine during specific times of the day	Baseline report, bi-monthly thereafter, there is need for annual report	Intermittently for five years	LCC, Consultant,SANParks, SAHRA
	Destruction of sub-surface materials,	Monitor excavations	Monitoring when top soil is to be removed	Salvage if sites are of significance	Baseline report, bi-monthly reports thereafter	Intermittently for five years	LCC, Consultant, SAHRA
	Removal of top soil	Identify sites in mining footprint	Monitoring when top soil is to be removed	Erect buffers around sites, Modify mining plans to save sites, mitigate where possible	Baseline report, bi-monthly reports thereafter	Intermittently for five years	LCC, Consultant, SAHRA
	Spoil heaps	Baseline monitoring	Routine monitoring to ensure they do not cover sites	Erect Buffers to protect sites and to flag danger, Keep height of spoil heap to maximum of twenty metres	Baseline report, bi-monthly reports thereafter	Intermittently for 5 years	LCC, Consultant, SAHRA
Underground Mining	Dust	Baseline monitoring of levels and type of dust inside Vele and in core area	Bi-monthly monitoring of the levels and types of dust inside Vele and in core area	Mine during specific times	Baseline report, bi-monthly report, annual report	Intermittently for 5 years	LCC, Consultant, SAHRA, SANParks

	Spoil heaps	Baseline monitoring	Bi-monthly monitoring	Keep spoil heap to a maximum height of twenty metres	Baseline and bi-monthly reports	Intermittently for 5 years	LCC, Consultant, SAHRA, SANParks
	Vibrations	Baseline recording of vibration to quantify ,maximum effect	Bi-monthly monitoring of vibration levels	Avoid mining in areas where impact is adverse	Baseline report, bi-monthly report	Intermittently for five years	LCC, SAHRA, SANParks, Consultant
Infrastructure development	Destruction of sites	Baseline recording of sites in development footprint	Continuous monitoring of activities that involve ground disturbance	Carry out impact assessment to determine significance of sites	Baseline and bi-monthly reports	Intermittently for 5 years	LCC, SAHRA, SANParks, Consultant
	Dust	Baseline monitoring of levels and type of dust inside Vele and in core area	Continuous monitoring of activities that involve ground disturbance	Water dust roads to lower dust levels	Baseline and bi-monthly reports	Intermittently for 5 years	LCC, SAHRA, SANParks, Consultant
Mining closure and rehabilitation	Destruction of sites		Continuous monitoring of activities that involve ground disturbance	Avoid covering sites with soil	Mine closure monitoring report	Intermittently for 5 years	LCC, SAHRA, SANParks, Consultant
	Dust	Baseline monitoring of levels and type of dust inside Vele and in core area	Continuous monitoring of dust level - mine closure and rehabilitation	Do not create a lot of dust, if possible water the soil to minimize	Mine closure monitoring report	Intermittently for 5 years	LCC, SAHRA, SANParks, Consultant

Table 12: A 5-year plan for monitoring the impact of non-mining related factors on attributes that convey OUV of MCL

Activity	Adverse Impact	Baseline Monitoring	Routine Monitoring	Treatment	Reporting Frequency	Duration	Actors
Game animals	Mixing deposits	Baseline Monitoring	Bi-monthly monitoring of sites	Erect fences to protect sites	Baseline and bi-monthly reports	Intermittently for 5 years	Developer, SAHRA, SANParks, Consultant
Rainfall & wind	Eroding sites, washing away deposits	Baseline monitoring	Bi-monthly monitoring	Introduce erosion reducing measures	Baseline and bi-monthly reports	Intermittently for 5 Years	Developer, SAHRA, SANParks
Natural Disasters	Destruction of sites	Baseline monitoring	Bi-monthly monitoring	Introduce disaster management mechanisms	Baseline and bi-monthly reports	Intermittently for 5 years	Developer, SAHRA, SANParks, consultant
Agriculture	Dust	Baseline measurement of dust levels and chemical composition	Bi-monthly monitoring	Impact assessment of new agricultural areas	Baseline and bi-monthly reports	Intermittently for five years	Developer, SANParks and Consultant
	Mixing archaeological deposit	Baseline monitoring	Bi-monthly monitoring	Impact assessment of new agricultural areas	Baseline and bi-monthly reports	Intermittently for five years	Developer, SANParks and Consultant

8.8 Implementation Strategies

This plan must be implemented with the full participation of all stakeholders. There is a need to implement training programmes to capacitate LCC staff on the identification of heritage resources and the sources of adverse impacts. This will enable reporting of archaeological materials and sites if and when encountered and prevent destructive activities at or near sites. Furthermore, the development of a GIS database for management purposes is critical. It is recommended that the monitoring plan be evaluated annually. The reports to the State Party and SAHRA should form the basis for this evaluation. Alternatively, a workshop can be conducted with the participation of all stakeholders.

Conclusion

This chapter was drafted based on the foundation established in the preceding chapters that outlined the attributes that convey the OUV of MCL and its integrity and authenticity. The monitoring programme recommended is part of a proactive mechanism that should ensure that adverse impacts from the Vele Mining Lease Area do not extend to the core and buffer areas of the listed MCL. The fieldwork and desktop studies (baseline data) highlights enable measurement of change over time. This baseline information also contains information on the threats, their source and effect on OUV. A series of mitigation measures have been developed. It is believed that sufficient mitigation and monitoring measures have been developed to guarantee the safeguarding of the property.

There must be recognition on the part of all concerned that the impact of time and circumstances on the heritage values defined during the inscription process is central to monitoring. The process of monitoring must have a clearly defined reporting mechanism. The

submission of a series of bi-monthly and annual monitoring reports to the State Party, SANPArks, and the SAHRA is recommended. Furthermore, because impact specific monitoring is important, the whole process of monitoring must be integrated within biodiversity conservation objectives. This creates potential for people to learn about and value the complete landscape and how humanity has helped shape what we see through time in an integrated way.

9. CONCLUSIONS AND RECOMMENDATIONS

9.1 Conclusions

Based on a synthesis of all the information gathered in this study, the following conclusions have been reached:

(i) The mining activities of LCC impact on the elements of the MCL and its OUVs. However, these impacts are indirect in that the mining activities, which are taking place outside the core and buffer zone, will only affect sites of the same cultural period as those found in the core area of the MCLWHS. These impacts are minimal and can be mitigated.

(ii) Interested and affected parties including stakeholders are concerned about the impact of Vele Colliery on the broader MCL. Feedback from stakeholders indicates that a broad-based and continuous process of stakeholder engagement needs to be facilitated by the State Party.

(iii) LCC, through the initial scoping HIA and HIA for the proposed Vele Colliery, identified most heritage resources inside their premises and have created buffers (fences) around some of the recorded sites. However, the initial HIA study failed to relate these sites to those found in the core area of the MCLWHS. This made it difficult to assess the impact of the mining development on the OUVs. Furthermore, the study lacked a detailed mitigation and management plan to manage and mitigate the impact of the development on archaeological and other heritage resources.

(iv) There is no consensus regarding the meaning, purpose, nature and in some cases extent of the buffer zone of the MCLWHS. Various institutions, I&Aps and other stakeholders have different conceptualisations of what constitutes a buffer zone.

(v) The broader MCL extends to Botswana, Zimbabwe and some areas outside the gazetted National Park on the South African side. Mining activities are either taking place or have been licensed in all these areas and these activities may pose a threat both directly and indirectly to the individual elements of the cultural landscape. The State Party is making efforts to regularize these activities, and with full compliance to local legislation and effective monitoring, the impacts can be minimised.

9.2 Recommendations

Based on these conclusions, this report makes the following recommendations:

(i) Matters arising from the nomination dossier must be resolved immediately by the State Party to enable effective protection and management of MCLWHS. These include; (i) the transfer of targeted land to the managing authority and (ii), the conclusion in the establishment of the Trans-frontier Conservation Area.

(ii) Whilst acknowledging the efforts by the State Party to redefine the buffer zone of the MCLWHS, there is an urgent need to speed up the process and to develop guidelines and regulations to govern the activities within such a zone. This buffer zone should be under the control of the management authority. It is recommended that no mining activities be allowed to take place in the buffer zone. This will ensure adequate protection of the WHS and its associated OUVs in the short to long term.

(iii) In the short to long term, direct and indirect impacts must be continuously measured, monitored and mitigated throughout the life span of the mine. This equally applies to other proposed developments in the area.

(iv) In the short term, all heritage sites to be directly impacted by mining activities on Vele Colliery must be mitigated as required by the South African heritage legislation.

(v) In the short to medium term, heritage sites outside the mining areas on Vele Colliery must be managed and researched during the entire course of the mining operation as an exercise in documenting the OUVs of the WHS and associated cultural landscape. While the sites are outside the gazette property, the information they yield contributes towards understanding of the broader MCL.

(vi) Since I&APs and stakeholders have significant points of divergence, the State Party is encouraged to immediately conduct a comprehensive Stakeholder Engagement Programme with the aim of reaching consensus.

(vii) In the long term, the State Party must consider carrying out continuous stakeholder engagement to address concerns of stakeholders. Such engagement will ensure the successful co-existence of sound heritage and biodiversity conservation with responsible development.

Summary

The proposed mining on Vele Colliery will impact on the individual sites which make up the MCL as broadly defined and thus call for mitigation. The proposed plans to mitigate the negative impacts will ensure that the integrity of the listed property will not be compromised. However, if all the mining license applications are permitted, large-scale industrialisation will develop in the area with the potential to affect the OUVs of the site of Mapungubwe and its associated cultural landscape.

To guard against this, the State Party must, with full consultation of all stakeholders and I&Aps develop regulations that govern land-use activities in the core area, the re-drawn buffer zone and transitional zones and outlying areas. Furthermore, full stakeholder engagement is essential to capture the views of all concerned regarding development and conservation of heritage resources, as well as to devise beneficiation strategies that will translate benefits to local communities and the rest of South Africa.

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Legal Documents

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