APPENDIX N:
INTEGRATED MANAGEMENT PLAN

Barberton Makhonjwa Mountains

World Heritage Site Project

Integrated Management Plan

January 2017

Table of Contents

List of Figures

List of Tables

List of Acronyms

BATOBIC	Barberton Tourism and Biodiversity Corridor
BGB	Barberton Greenstone Belt
CARA	Conservation of Agricultural Resources Act
CPA	Community Property Agency
DAC	Department of Arts and Culture
DARDLEA	Department of Agriculture, Rural Development, Land and Environmental Affairs
DEA	Department of Environmental Affairs
DMR	Department of Mineral Resources
GSSA	Geological Society of South Africa
IDP	Integrated Development Plans
IMP	Integrated Management Plan
KNP	Kruger National Park
LED	Local Economic Development
MA	Management Authority
MDEDT	Mpumalanga Department of Economic Development &Tourism
MoA	Memorandum of Agreement
MOUNTAINLANDS NR	Barberton Nature Reserve, Phase 3
MTPA	Mpumalanga Tourism and Parks Agency
ND	Nomination Dossier
NEMBA	National Environmental Management: Biodiversity Act
NEMPAA	National Environmental Management: Protected Areas Act
NGO	Non-Government Organization
NHRA	National Heritage Resources Act
NR	Nature Reserve
OUV	Outstanding Universal Values

PA	Protected Area
PHRA	Provincial Heritage Resources Authority
SAFCOL	South African Forest Company Limited
UNESCO	United Nations Educational, Scientific and Cultural Organization
WHCA	World Heritage Convention Act
WHS	World Heritage Site

1 Introduction and Background

The Barberton Mountain Land is deserving of World Heritage Site Status because it contains the best preserved, oldest sequence of volcanic and sedimentary rocks on Earth. The justification for WHS status and all descriptive detail of the sub-region and the Property itself, its resource base, component parts and boundaries, are set out in more detail in the WHS Nomination Dossier (ND).

History of the Property and Scope of this IMP

- The geological, biodiversity and cultural resources of the area have been fully described and motivated for WHS status in the ND.
- The WHS inscription process is set out in the UNESCO Operational Guidelines (as revised) and in the 2012 guidelines published by Department of Environmental Affairs in terms of the SA World Heritage Convention Act, no. 49 of 1999.
- Formal planning for WHS status started in 2009. After delays caused by shortage of funds planning resumed in 2015 with a project review, and full resumption in 2016 with a completion date set for Nomination Dossier submission to UNESCO in January 2017.
- The project review changed the planning approach to one focused firmly on the area's geological assets and values, thus relegating biodiversity and cultural-historical features to secondary but significant roles for supporting regional tourism development.
- The new geologically based approach has provided a WHS boundary that includes three distinct land-use types: conservation in proclaimed Nature Reserves; timber production from corporate-owned plantations, and communally and privately owned livestock and general small-scale farming properties.
- Linking these three traditionally incompatible land uses through tourism, based on their shared geoheritage resources, provides special challenges for management and development.
- A focus on protecting and presenting inanimate geological outcrops to the public, simplifies the management task; there are less influencing factors to manage and the spatial requirement for buffer zones, especially around the boundary, becomes virtually redundant.
- During the five year interval between 2010 and 2015 related tourism developments took place in the form of several BATOBIC managed projects, including: the Barberton Gateways; Barberton-Makhonjwa Geotrail; and the Genesis Route tourism signage project, all of which are related to the OUVs of the Property. At the same time the momentum created by the area's nature based tourism developments also attracted a range of private tourism and nature based investments (refer to **Table 6 and Table 7).**
- BATOBIC also used this interval to ensure that the WHS project was formally included in all levels of government planning from national through provincial to local and district municipal IDP's and SDF's.
- The hiatus in compiling the ND was turned into a significant positive when the process was taken forward by the landowners themselves through a resolution to support and revitalize the WHS project in July 2013 (find copy attached as **Appendix J**).

Comparison with other SA WHSs: Included in the first round of WHS planning was a series of study tours by the planning team to existing South African WHSs. These visits proved to be most instructive; a number of key lessons were learned in terms of the planning process and the practical functioning of the

resulting protected area (ref **Appendix T;** Summary of Study Visits, 2009). Highlights of the lessons learned on these planning visits are summarised in **Table 1**.

A most important factor identified is that the Property can expect to depend increasingly on its ability to attract investment, both for once-off development projects and for more sustainable business opportunities. This characteristic will depend on effective management and development of the Property which is best guaranteed by full representation of included landowners in the decision-making structure of the Management Authority. The pro-active support from landowners is a key feature of the BMM WHS project. This support and the landowners' individual preparedness to have their land incorporated within the WHS, is conditional on them being effectively represented within the decision making structure of the Management Authority.

Table 1. Highlights of the lessons learned on planning visits.

LESSONS LEARNED	RESULT
1. Need for top level political and institutional support, "Project Champions" –	OBTAINED.
2. Project needs re-formatting into a "Developmental Initiative" –	INCORPORATED
3. Importance, style and control of communications during implementation –	NOTED& IMPLEMENTED
4. Need for a variety of investment opportunities to balance short-term (developmental) job creation with long-term sustainable business –	NOTED FOR FUTURE
5. Governance and Management Authority structures require both National links and accountability through effective landowner representation –	DISCUSSIONS INITIATED & PROGRESS MADE ito LANDOWNER AGREEMENTS AND RESOLUTIONS
6. Practical / legal IMP issues must make /allow for the WHS to be made (more) operational –	MAKE PLANNING 'ADAPTIVE'
7. Integrity of Songimvelo NR in the light of contested land claims	NOTED, ONGOING.

ADMINISTRATIVE PROCEDURAL NOTE: The Property is designed specifically to protect its geological assets, which has resulted in a composite Protected Area made up of three quite different types of land use and many owners. As such, it falls between legal and administrative stools, requiring three legislative Acts to provide the necessary legal framework for its administration and management:

- NEMPAA - National Environmental Management: Protected Areas Act, No. 57 of 2003
- NHRA - National Heritage Resources Act, No. 25 of 1999
- WHCA - World Heritage Convention Act, No. 49 of 1999

NEMPAA and NHRA are used for two separate heritage registrations to provide for UNESCO's requirement for pre-existing national recognition of the value of these resources before proposing WHS recognition. These apply respectively to geoheritage features within proclaimed Nature Reserves (NEMPAA) and those outside protected areas (NHRA). The Department of Environmental Affairs and the South African Heritage Resources Agency are responsible for Protected Areas and National Heritage Resources respectively. Both are aware of their separate mandates and functions and are actively collaborating to integrate their roles for this Property.

This IMP is written taking into account this circumstance as if a duly mandated Management Authority (MA) is in place. As a result it is a little speculative and sometimes vague where no legal guideline or administrative agency fits the need. With these uncertainties the IMP is more adaptive in its style than would be the case otherwise.

'Adaptive Management' relates to the planning of landscape management systems that are inadequately known and require decision making based on significant uncertainties. Decisions and subsequent actions are therefore implemented and results monitored, partly to inform decision-makers of the need for adaptation and therefore changes to future actions, to better achieve the objectives. Ultimately this process serves to review and reset the objectives themselves.

This WHS project was always intended to be **developmental** in that its purpose is to achieve environmental, economic and social sustainability through a developmental approach. In this case it applies to a site and a region that are characterised by a significant lack of development and very high unemployment. A developmental future for the sub-region based on sustainable outdoor tourism has been the basis for rural planning for over 15 years due to its acknowledged high potential in this regard.

2 Vision and Purpose

The justification for this property as a WHS is best summarised by its statement of Outstanding Universal Value, quoted from the Nomination Dossier:

"The Barberton Mountain Land contains the best-preserved, oldest and most diverse sequence of volcanic and sedimentary rocks on Earth. These well researched outcrops provide a globally unique source of information about the earliest measurable conditions of the Earth's gradually solidifying oceanic crust, from 3.5 billion years ago. From these rocks we have learned more than from anywhere else about the surface processes at work as the Earth cooled from a molten body, to the creation of the primitive biosphere. This is the field repository for the genesis of life.

"Protected from beneath by rising plutons of granite, and later buried by a thick layer of Transvaal sediments, this 340 million year sequence of Archaean lavas and sediments has escaped both subduction and erosion for all of that time. They provide earliest evidence of the chemical nature of our oceans and atmosphere and of the way continents are formed – all unique attributes of our planet. Their outstanding universal value lies in both their remarkable state of preservation and in the variety of sites conveniently grouped together. That they occur in attractive surroundings with a comfortable climate, easy to access by researchers and the visiting public, enhances their remarkable geoheritage value. Combined, they form a growing outdoor education facility at many levels of learning and for many aspects of our present and past environments. There are literally hundreds of geosites of interest which, when their information is combined, allow the Barberton Mountain Land to tell a richly consistent and as yet only partially explored story of how life on earth began".

The purpose of protecting the Property and its geological and/or natural heritage is to safeguard their globally outstanding scientific and educational values, and to promote them and provide access to them by the public. Once protected, their information content will be presented and interpreted for easy understanding by all, especially local residents and visitors.

The vision is to protect and publicize the natural geoheritage sites and landscapes to maximize their combined scientific and educational value for all humanity, and through creative development of this specialized niche in the tourism market, to benefit local residents with a tourism-linked source of benefits, including sustainable income and education.

Within the Property's Nature Reserves normal biodiversity management will be more than adequate to protect and manage their included geosites. Such management standards and procedures are well established in South Africa, both in law and in practice. State managed reserves, Songimvelo NR and Barberton NR, as well as the privately owned Nkomazi Wilderness Game Reserve, each have a comprehensive management and development plan which, to a greater or lesser extent are being implemented **(Appendices D, E & F)**. The shared objective of these plans is to protect and enhance biodiversity and the sustainable functioning of ecosystems for the use, enjoyment and education of visitors. Collectively and economically they serve to provide sustainable tourism-based benefits to local people. Currently these shared objectives provide scope for a wide range of developmental and improved management opportunities **(**see **Section 11).**

3 Administrative and Legal Framework

Legislation under which Protected Areas are established and managed include:

National Legislation:

1. CARA - Conservation of Agricultural Resources Act, No. 43 of 1983
2. NEMBA - National Environmental Management: Biodiversity Act, No. 10 of 2004
3. NEMPAA - National Environmental Management: Protected Areas Act, No. 57 of 2003
4. NHRA - National Heritage Resources Act, No. 25 of 1999
5. WHCA - World Heritage Convention Act, No. 49 of 1999

Provincial Legislation:

6. Mpumalanga Nature Conservation Act No. 10 of 1998
7. Mpumalanga Tourism and Parks Agency Act, No. 5 of 2005

Ancillary National Legislation:

8. Animal Diseases Act No. 35 of 1984;
9. National Water Act No. 36 of 1998;
10. National Veld and Forest Fire Act No. 101 of 1998;
11. National Forest Act No. 84 of 1998;
12. National Environmental Management Act No. 107 of 1998;
13. National Monuments Act No. 28 of 1969;
14. Public Finance Management Act, No. 1 of 1999.

Of the principal legislation, Acts 2, 3, and 5 are the responsibility of the National Department of Environmental Affairs, and Act 4 is the responsibility of the National Department of Arts and Culture through its management agency, SA Heritage Resources Agency (SAHRA)

All Protected Areas, including WHS's, are managed by the authority or agency appointed by the Minister or MEC (at Provincial level) as is relevant upon proclamation. This may be an agency of state, a private body or a specially created Management Authority.

Both Provincial Acts (6 & 7 above) are the responsibility of the Mpumalanga Tourism and Parks Agency (MTPA). The ancillary National Acts listed are administered by various National Departments and their agencies. All state agencies or state appointed agencies responsible for managing PAs are independently responsible for their own budgets, management plans, performance monitoring and reporting.

3.1 General Considerations for Managing the WHS (basis for contractual agreement)

- Management of the Property is focused firmly on **protecting and promoting its geological OUVs.** Such management is carried out in terms of the WHC Act (1999), the NEMPA Act (2003) and the NHR Act (1999). NEMPA Act (2003) provides for the protection of all natural resources including geological outcrops within PAs; the NHR Act (1999) provides for the protection of geological sites outside of PAs.
- **Involvement of landowner representatives** in all decision making structures of the WHS Management Authority is a clearly stated condition of landowner participation and the commitment of their individual properties to inclusion within the BMM WHS.
- **Protection** (and maintenance) relates to the hundreds of known geosites and their immediate localities, together with the wider geological landscapes in which they naturally occur.
- **Promotion** (advertising and understanding) relates to attracting visitors and interpreting geological science for their better understanding, enjoyment and appreciation of geoheritage as well as encouraging research, science and education.
- **For local people** it relates to creating benefits from tourism and related developments and a sense of ownership and pride in the area's remarkably valuable and interesting natural assets.

These points reflect the main issues and management functions of the WHS Management Authority (MA). These functions are to be integrated with the relatively unaffected pre-existing management activities of each of the three different land-use types included within the WHS, namely: nature conservation with tourism; timber production; and small-scale farming and livestock production. These separate land uses are each governed by their own relevant legislation and are in principle encouraged to continue unaffected by the over-arching management for geoheritage.

Administratively the WHS has global relevance which requires it to be managed within the following framework as further encapsulated within South African legislation, set out below from international to local levels of involvement **(Figure 1).**

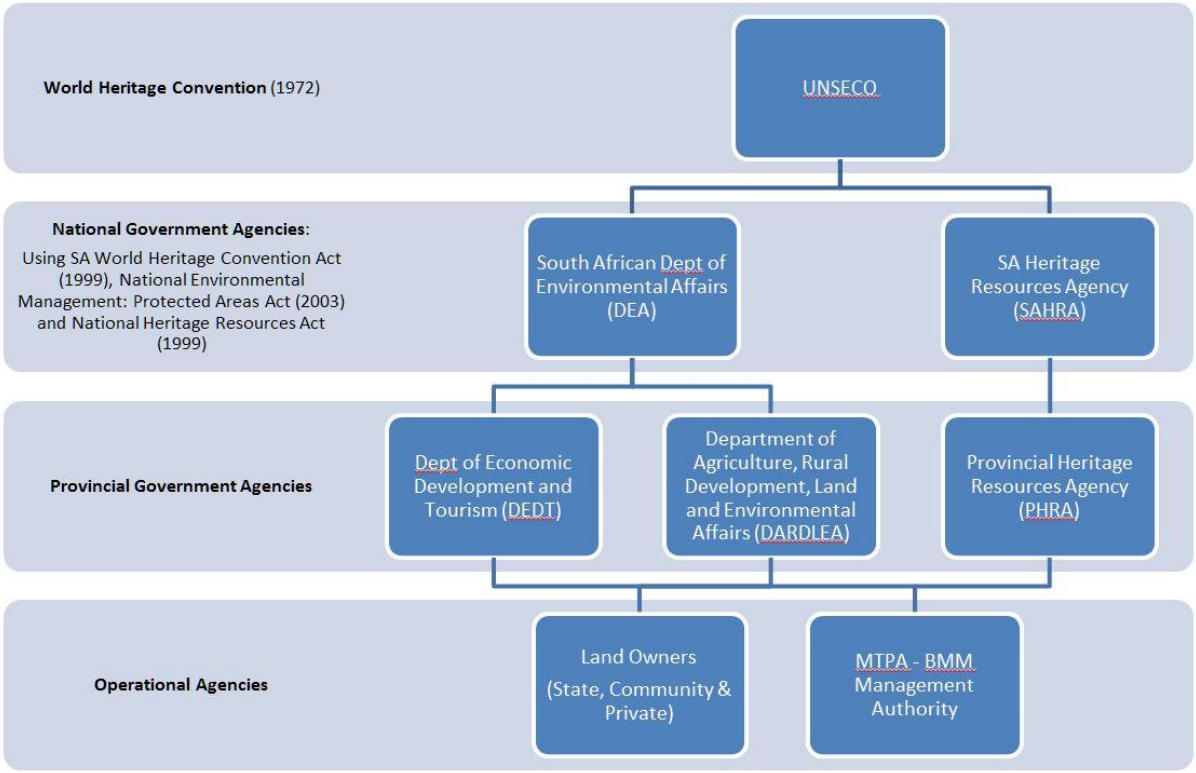

Figure 1. Administration management framework

Operationally, the key participants in management are the **Management Authority** (MA), the **Owners/ Custodians of land** and **WHS visitors**. In practical terms there are only three types of across-the-board management functions that require elaboration in this Management Plan, all relating to these key participants:

1. **Protecting Geoheritage** – physically protecting and maintaining known geosites and managing access, both to them and to the wider geological landscape, for visitors and researchers;
2. **Promoting Geoheritage** – interpreting and presenting the scientific stories these rocks contain for the better understanding and enjoyment by visitors and the general public, for them to learn from and enjoy the out-door experience through encouraging and supporting research and education;
3. **Ensuring the benefits of tourism and related development accrue to local people** – including, besides employment, education and outreach programmes and encouraging sustainable tourism-related entrepreneurism and business.

These management functions, because they deal only with rocks and geology, are not particularly complex or onerous for landowners, who will obviously be concerned about infringement of their rights and limitations to their use of their own land. The Stakeholder Engagement process has dealt with these issues with the intention of negotiating Memoranda of Agreement (MoA) between the landowner and the relevant Minister or MEC. These signed agreements will provide for long-term incorporation of included land units under terms and conditions that are endorsed into the Title Deeds of each property as provided for in the applicable legislation. This will be achieved via two separate laws involving all included land-owners or custodians:

a) For WHS inclusion: all included properties will be recorded in terms of a legally binding Memorandum of Agreement (MoA) signed with the Minister of Dept Environmental Affairs, as required by the World Heritage Convention Act (1999);
b) For registration of geosites, especially those outside proclaimed Nature Reserves, landowners will be required to register in terms of a separate MoA signed with the Minister of Dept Arts and Culture (DAC) in respect of National Heritage sites as required by the National Heritage Resources Act (1999).

These MoAs are in the process of being developed through discussion and agreement with the relevant stakeholders. Generally they will apply only to issues concerning the protection of known and registered geosites and their access by the public, including researchers. In June 2016 the SA Heritage Resources Agency (SAHRA) agreed to register fifty one (51) high value geosites occurring within the WHS property, but outside the existing Protected Areas, in a single serial application. Processing this request will provide a considerable challenge as such a large number of Natural Heritage Sites in a single declaration is unprecedented. Expectation is that this process will be completed within the first half of 2017. Ultimately all registered geosites are intended to be registered as National Heritage Sites – at present 47% of all WHS geosites occur outside PAs.

3.2 Summary of Main Conditions for Inclusion in the MoAs for this WHS

- Current legal land uses and rights of owners and occupiers will not be diminished.
- All included properties will be managed for their own separate purposes by their current legal owners/custodians, save only that landowners shall not undertake or permit any actions that will compromise the Outstanding Universal Values (OUVs) of the WHS.
- Management to protect and promote the site's OUVs will be co-ordinated by the appointed Management Authority in conjunction with each property owner, in terms of the World Heritage Convention Act and any MoA signed by the land owner and the Minister DEA and/or DAC.
- Natural resource use and related activities on all included properties (whether planned or not) such as tourism, production of wildlife, timber, livestock or crops will remain the responsibility of the land-owner/custodian of each separate land portion, in terms of existing applicable legislation.
- Such legislation will continue to apply to all land and land-uses, save only for the above limitations relating to not compromising the WHS OUVs.
- This means that each land-owner/custodian undertakes to protect and not damage or deface known geosites on their land and agrees to allow reasonable and controlled access to pre-defined areas based on agreed conditions for specific purposes.
- The representation of landowners on the MA and participation in decision making processes.

Incorporated landowners/custodians and tourism service providers undertake to support the purpose of the WHS and cooperate openly with each other to jointly achieve the vision of a sustainable scientific and tourism enterprise. The management of other natural and agricultural resources on each land portion will not be affected, except for the above proviso concerning not compromising the OUVs of identified geosites and the WHS as a whole.

3.3 Administrative Oversight – Need for a National Geoheritage Agency

The need for a National Agency for World Heritage and/or Geoheritage has recently been identified by some of the state agencies involved. The need for an oversight function is recognised specifically by the

Department of Environmental Affairs (DEA), where responsibility for the SA World Heritage Convention Act (1999) currently resides. Establishing such an authority in future requires political support, the agreement of landowners and a fair amount of administrative planning and budgeting, all of which will take time. Part of the process yet to be determined is the role and function of this proposed National Agency vis-a-vis the MA functions of WHS's and related National Heritage properties and how their functions may be incorporated into such an agency. Key stakeholders will need to be constructively involved in the process and encourage its successful conclusion. Resolution of this matter should greatly assist the implementation of all aspects of management of this Property (and other geological WHSs) develop the capacity to protect its OUV's and potential for economically sustainable tourism. Until such a national agency has been established, measures to provide for the establishment and management of this WHS are agreed to by all the affected parties (DEA, MTPA and landowners) and will be implemented as outlined herein.

4 Zonation

The Property includes several different landowners and three major land uses that manage for: nature conservation; timber production; and livestock grazing with small-scale farming. These are natural resource management zones that have little relevance for geoheritage or geosite protection as they do not deal with geological outcrops or landscapes. The nature of land-use in each of these zones is described in more detail below.

The issues dealing with buffer zones and equivalent buffering mechanisms are discussed in **Sect. 2.a** of the ND. There, the need for a buffer zone is demonstrated to be unnecessary and neither practical nor cost-effective for geoheritage protection. Within the included Nature Reserves, normal conservation management activities provide for geosite and landscape protection and for enabling and controlling tourism and research access. Outside the Nature Reserves, geosite protection is achieved by individual geosite-registration based on precise coordinates documented for each site, surrounded by a legally defined protection area (buffer zone) prohibiting development, damage or interference with access to the site. These provisions, together with the agreed endorsement of landowners' title deeds, and incorporation of known geosites into the planning and EIA procedures required of all municipalities, will be sufficient to protect registered rock outcrops within the Property. Significant outcrops identified in the future will be added to the list.

Large areas of land without registered geosites are included within the Property's boundary. These less-surveyed areas represent potential locations for outcrops to be identified in the future; their anonymity and lack of commercial value provides sufficient protection until identified and brought to the attention of park management by ongoing geological survey and research work.

The following is relevant for each of the three types of land use, especially for visitor management:

Nature conservation, as a legally defined land use backed by strongly framed legislation, includes the protection of geological sites and landscapes as part of its legal mandate. This means that all geoheritage sites and related activities such as geotourism are potentially catered for in all included PAs, whether public or private. Giving effect to this geoheritage mandate is not well advanced; this is due to lack of knowledge and awareness, leading to lack of publicity, marketing and therefore limited demand. Geoheritage is automatically protected 'by inclusion' through nature conservation laws, so it will not

place extra or unwelcome responsibilities and costs on the land-owner. Each property will have at least its hi-value geosites identified and made known to the owner/manager, who will also be made aware of all developments and other activities that may have negative impacts, so that conflicting actions can be prevented.

Management for nature conservation involves a long list of standard resource management tasks and routines aimed at particular species or localities and at a landscape-scale. Such management will guarantee effective protection of the substrate (landscape-scale geology) and its geosites. Such routine management as detailed in the annexed PA Management Plans will be more than sufficient to protect non-biological components, so long as these are identified and actively monitored, both at specific sites and at the landscape scale (scenery).

Commercial timber plantations are managed according to precisely documented management plans and FSC standards which in general will not be affected by achieving WHS status. To the contrary, timber companies may benefit from WHS status and the recognition it brings in terms of FSC compliance. Timber planting limits have already been reached in these river catchments and as defined in trans-boundary international water management agreements as indicated in the ND. A key aspect of timber growing that relates positively to the functioning of this geological WHS is that river lines and the rocky crests of ridges are not planted. River lines are required by law to be kept free, both of timber species such as pines and eucalypts, and of invasive alien plants such as lantana, black wattle, bugweed and guava. As river lines and rocky ridges are where underlying geology is best exposed, adhering to these management rules will be positive for the environment, timber production and geological visitation.

The main consequence of integrating geoheritage needs with those of timber production lies in the increased risk of wildfires. This is already managed by a system of access permits for visitors, which already exists. Under certain weather conditions such permits may be refused due to extreme risk of fire (as may apply in NR's as well).The permitting system involves public liability insurance against the risk of visitors being involved in wildfires, either as potential initiators or as victims, both of which need to be reduced to a minimum. Timber growing companies already have experience in managing these risks, and access control procedures are well established. They are currently being reviewed as part of stakeholder engagement with Sappi, the dominant timber growing landowner. When this exercise is completed, the resulting access control system will be offered to all timber growing properties within the WHS.

Livestock grazing and small-scale farming takes place in naturally vegetated (untransformed) landscapes. These land uses include both commercial livestock farms and communally owned small-scale general farming properties. For the latter, besides providing residence and livelihoods for the residents, the landscape also presents sensitive issues and places that have been identified as requiring respect or even complete avoidance by visitors. These include grave sites and places of worship and spiritual or cultural significance. Apart from some structures being built out of lose rocks that are very interesting geological specimens, these traditional features have not yet presented problems for geological exploration or other visitation that have been ongoing for many years. Protocols of common courtesy and pre-arranged visitation areas and times will avoid invasions of privacy or misunderstandings around such features. Through the stakeholder engagement process, local residents were consulted about future visitors and their interest in the outcrops on their land, so their responses have usefully informed the access agreements that are being drafted.

These land-use zones may be referred to as such but their different uses have little impact on managing geoheritage or geo-tourism, which is the main purpose of this WHS. The tasks and functions around

geoheritage will be conducted similarly across all components (land-use zones) of the Property, and even extended outside its borders where valuable geosites occur.

5 Natural resource Assets

The WHS Property is located almost entirely within the geologically defined Barberton Greenstone Belt (BGB) as described in detail in the ND and its Appendices. The whole geological formation is about 120 km long by 10-30 km wide and the proposed WHS includes about 40% of its total extent. The distribution of important geological landscapes with hundreds of registered and described geosites, extend more-or-less randomly across all land use types (see **ND Section 2**). The total complement of all natural resources within the Property, especially those attractive for tourism such as wildlife and wilderness, are also detailed in the ND.

Access to geosites, and other natural and cultural tourist attractions, is a factor of ownership and land use, to which the following is relevant:

5.1 Proclaimed Nature Reserves– (Songimvelo; Mountainlands; Nkomazi)

Two State-managed Nature Reserves, Songimvelo (protected since 1984) and Barberton (Mountainlands; protected area since 1985) have complex ownership. Parts of the former are subjected to a land claim that has not been fully resolved. The State remains the landowner until the situation is settled. The law requires the property to be managed as a Nature Reserve in perpetuity anyway, no matter who the owner is. The owner may benefit from such goods and services as the land may generate, but only insofar as its nature conservation purpose is not compromised (see box below).

> ***NOTE: F****or PAs that are formally proclaimed, an inter-ministerial memorandum between the Dept of Environmental Affairs and the Dept of Land Affairs has entrenched the policy that protected areas will continue as such when land restitution claims are resolved in favour of the claimants. Successful claimants become the new beneficial owners, who may benefit from the use of the area, but only for conservation and tourism purposes. Several remarkably successful examples of this arrangement exist throughout the country.*

The Barberton NR is owned by four parties and consolidated via a management agreement signed by all four, namely the State (MTPA), two private companies and a Community Trust. The four parties all have conservation entrenched in their founding documents and thus understand the priority of managing the reserve for conservation purposes according to their signed agreements. Long established mining rights existed over parts of this area before it was reserved for nature conservation in 1985. These mining rights areas have been recognised and excluded from the WHS Property. Additional prospecting rights within Mountainlands have been applied for and are being contested through the courts as the NEMPA and MPRDA Acts do not permit such land use in protected areas.

These Nature Reserves have great potential for tourism and nature based development. Both have professionally drafted and currently relevant IMPs to guide development. A third major Nature Reserve is Nkomazi Wilderness Game Reserve (PA since 2001) owned by two entities: a hi-end commercial tourism operator, Dubai World, is the dominant owner, and a totally 'included' property Komati Springs,

operating as a scuba training and recreational facility, is owned by separate private tourism operators. The privately managed eco-tourism businesses within these three Nature Reserves are the only ones to have come anywhere close to economic sustainability.

5.2 Timber Plantations

Farms in the high elevation grassland separating the three large nature reserves have become timber plantations in the last 50 years, growing mainly pines for the pulp and cellulose market. There are three corporate owners involved: listed companies Sappi Limited and York Timbers; and Komatiland Forests (SAFCOL), a wholly government-owned parastatal. All three manage their land similarly to produce fast-growing, short-cycle trees for the pulp and sawmill / structural timber markets. While such timber growing may be harmful to the environment and to biodiversity in particular, it has little impact on rock outcrops other than concealing them from view. Komatiland Forests administers the Queen's River (Catchment) NR specifically for its catchment and water conservation functions. This property provides for the Queen Rose Hiking Trail, one of the busiest and most popular trails in the region.

All properties are planted up to their legally permitted limit so there will be no increase of areas planted to timber trees (average +/- 60% of surface area). The plantation 'compartments' are provided with tightly packed road networks to facilitate their intensive management and harvesting tasks (Ref to ND Sect 5.2 for more detail).

5.3 Commercial and Communally Owned Farms

In the southern part of the BGB in the Komati River valley, lies an extensive area of privately owned cattle farms and land made available over the last 50 years to rural communities as Government sponsored settlement schemes. These latter properties are involved in the often contested and slow process of formal land restitution. Regardless of slow legal processes these areas are occupied by disadvantaged people engaged mostly in subsistence agriculture and livestock grazing. Residents fall under various administrative structures from Traditional Leadership to registered Communal Property Associations (CPAs). Four properties are managed as commercial cattle farms. The wider landscape within which these properties are located, is largely open and untransformed with development confined to loosely prescribed peril-urban centres in the process of becoming villages and towns. More detail on all land use features is presented in **Sect 5.b** of the Nomination Dossier.

6 Tourism Assets

The Eastern Mpumalanga "Lowveld" is a very important tourism region in SA. It is dominated by Kruger National Park (KNP) and related public and private properties that offer hi-end wildlife experiences for a mixture of local and foreign visitors. The equivalent natural attractions in the BML are unable to compete, in part due to the lack of infrastructure and related visitor facilities. The mountainous and scenic BML terrain offers different attractions to the Lowveld. For tourism to grow the area requires carefully planned developments and services to suit the specialised market that it can attract. Considerable effort has been made over the last 10 years to plan and provide such infrastructure, but other than an improving main access-road network progress has been slow. The Property's location, slightly off the main tourist traffic routes, also contributes to competitive disadvantage with the most active areas located to the north, up and down the western edge of KNP. The busy N4 through Nelspruit to Maputo in Mozambique, passes 50 km north of the WHS. Access within the sub-region is provided by the already planned and signposted "Genesis Route" linked into the national road network. Short sections of this 220 km 'figure-of-eight' circuit road are yet to be tarred but the work is in progress and access is improving steadily. Given the current progress and planning the above challenge can be turned into an advantage through niche products centred on the area's geoheritage and natural unspoilt wilderness.

Wildlife and scenic assets. Protected Areas within the property contain high biodiversity, very attractive wildlife and mountainous scenery. Tourism attractions and facilities in the two State managed reserves, Songimvelo and Barberton, are listed in their separate IMPs. Internal access to Mountainlands is not thoroughly developed with no overnight facilities or staffed entrance gates at present. In Songimvelo there is about 50km of gravel game-viewing roads and two lodges; one a private concession camp of 10 luxury tents and the other equipped and managed by MTPA at Kromdraai, comprising 20 fully furnished log cabins with 80 beds. However this camp is not connected to any of the internal road network so has limited functionality.

The Nature Reserves with good road networks and competitive accommodation are privately owned (Nkomazi and Cradle of Life) and have entry conditions and limitations based on their commercial objectives. Outdoor tourism generally focuses on guided game-viewing and limited angling in the Komati River. None is yet adapted to cater for a specific geo-tourism market. Komati Springs conducts scuba training and other outdoor recreational activities. The state managed nature reserves are in early stages of development with emphasis on attracting third party investment and tourism operators. Detailed geological interpretative facilities are provided as part of the Geotrail and the informal museum component at Cradle of Life.

Access to the farms in the Komati Valley is provided by a network of informal tracks, occasionally disrupted by fences and wash-aways. These impediments and the necessary formalities to facilitate access by visitors to private property, are being addressed by the stakeholder engagement process aimed at positive relationships with landowners and the signing of the MoA referred to in **Sect 3** above.

Cultural and Historical Values. Incidental to, but adding substantial value to these main natural (scientific) features, are aspects of cultural significance that enrich overall visitor interest. They include various pre-historic cultural features including: widely scattered stone tools; pre-historic ochre mines; occasional rock paintings and archaeological sites. There are also potential components of the South African Liberation Heritage Route (under planning discussion) deserving of celebration as part of the nation's shedding of colonialism. There is also the location of South Africa's first real gold rush of 1886

focused in and near Barberton, the history of which is immortalized in the very widely read biography of "Jock of the Bushveld". All these attributes, together with its easy accessibility and comfortable year-round climate, make for a Property that holds deeply textured interest for a wide range of visitors.

The **sense-of-place** of the steeply broken terrain of the WHS is characterised by untouched wilderness and a lack of roads and other signs of modern development. For some visitors, rural farming localities with local people, dwellings and livestock in unspoiled communal settings as in the Komati valley, are also very interesting and attractive. The pine plantations in the highlands are attractive to some as well. But the signature views and locations in the Property are its pristine hill-and-valley features; its rocky ridges connecting rounded peaks, flanked by remarkably deep, forested river lines, all threaded through with endless folded bands of rock. All this is set in natural grasslands with their seasonal wildflowers, broken only by clear, perennial mountain streams and forested gullies; bird-song on the breeze and blissful silence. This is a mountain wilderness and biodiversity hot-spot of note. It is the specific role of the Protected Areas within the WHS to conserve this special sense-of-place and to provide the link between biodiversity and the unique geology and soils it is based on. It is a very conducive environment for both recreation and for learning about earth's history.

7 Management of Natural Resources

7.1 Management of the Property

Management and monitoring activities for biodiversity, that are the norms for South African Nature Reserves and that apply to those within the property, include the following (not an exhaustive list):

- Establish by proclamation, maintain and monitor the boundaries, to be effectively fenced and gated if necessary,
- Protect, police and monitor the property by means of internal patrolling by trained and equipped staff,
- Control, manage, monitor and prosecute all illegal activities,
- Investigate and prosecute those who break the law,
- Develop good neighbour relations and negotiate issues of common concern with communities,
- Develop, maintain and monitor facilities and infrastructure for park management,
- Develop, maintain and monitor facilities and infrastructure for visitors and tourism, including manning of entrance gates,
- Provide interpretative displays and facilities, materials and services for visitors and encourage (market) tourism generally,
- Provide for a variety of visitor activities for their enjoyment and education,
- Periodically monitor the status of biodiversity (plants & animals),
- Compile Biodiversity Management Plans for rare and endangered species,
- Monitor and control invasive alien species,

- Record and monitor all management interventions (animal population control, grazing patterns; fires, etc.),
- Control wildfires and manage habitats as required by relevant management plans,
- Provide and maintain fire breaks and erosion control works,
- Revise and update IMPs at regular intervals.

Implementing these management activities guarantees effective protection of both living and non-living assets within the PA. Within the Property's Nature Reserves normal biodiversity management will be more than adequate to protect and manage their geological heritage. Such management standards and procedures are well established in South Africa, both in law and in practice. State managed reserves, Songimvelo and Barberton (Mountainlands), as well as the privately owned Nkomazi Game Reserve, each have a comprehensive management and development plan (IMP equivalent) which, to a greater or lesser extent is being implemented **(Appendices D, E & F)**. The shared objective of these plans is to protect and enhance biodiversity and the sustainable functioning of local ecosystems for the use, enjoyment and education of visitors. Collectively and economically they serve to provide sustainable tourism-based economic benefits to local people.

The actions required to protect rock outcrops specifically, can be reduced to a focus on controlling a limited number of human activities. These include anything involving: construction; excavation; artificial flooding; and any damage to, or defacement of rocks, such as by hammering or painting the outcrop. With the existing controlled entry to Protected Areas these impacts can be effectively minimised for all their included geosites (n = 82; only 57% of included geosites).

Timber growing and production is controlled by the national Department of Forestry under a permit system and is fully subscribed. No new 'compartments' may be planted as the limit, which is set by the Department, ensures sustainable water yields and has already been reached in this region. This means that no planting of timber species in new, virgin land will be allowed.

7.2 Landscape Management

At a landscape scale, uninterrupted views of natural ridges and valleys in mountainous terrain, and ready access to them, are important advantages for exploring and interpreting geology. The untransformed landscapes of the included Nature Reserves and the land used for livestock grazing provide generously for these attributes at a landscape scale. The effect that timber plantations have of masking geological features in the landscape and the occurrence of fencing that prevents direct human access, are two significant impediments to making the OUVs of the Property openly and easily accessible to visitors and researchers.

The Property's rock outcrops occur mostly in their original natural settings. This allows strata to be examined in the field, viewed at a landscape scale as well as through detailed laboratory procedures. With 83% of the proposed WHS occurring in its natural untransformed state (PAs and grazing/farming land) the natural, broad-scale view of these important geological landscapes is provided for.

Rock outcrops are largely immune to the environmental impacts associated with conventional agricultural and conservation land uses; their accessibility and appearance are not dependent on surrounding biodiversity or superficial land management practices. It is the story these rocks tell that is their true value; their natural presence in the landscape and the interpretation of their chemical and physical features, provide the basis for those stories. For planning considerations, they are also virtually immune

from influences like climate change and pollution so their vulnerability to such negative impacts is very low and does not require any management interventions. In southern Africa, being one of the most tectonically stable places anywhere on the planet, even the risk of earthquakes lies beyond the need for disaster planning.

7.3 Management for Protection of Geosites

All registered geosites were assessed by a team of senior geologists and subsequently graded into two categories based on their scientific and educational significance. These are defined as:

a) **"Essential"**(Grade 1) geosites:- the most outstanding and important sites containing exceptional examples of particular geological formations and processes, and
b) **"Important"** (Grade 2) geosites:- sites that are similar to an 'essential' site but providing additional scientific evidence and insight into a particular geological formation or process.

Table 2. Geosite Distribution Table.
below details the statistics of all classes of geosites.

Table 2. Geosite Distribution Table.

GEOSITE DISTRIBUTION TABLE	Total Geosites considered for WHS Inclusion	Total Geosites Included within WHS	Total GeositesExcluded from WHS	Total Geosites located Within PAs	Total Geosites located Outside Pas	Percentage of each class of Geosite within WHS
"Essential"	95	71	24	33	38	71/95 = 75% EssGs
"Important"	205	83	122	49	34	83/205 = 40% Imp Gs
Total	**300**	**154**	**146**	**82**	**72**	**Essential Geosites Located outside PAs (38/71) = 54%**
Total %	100%	154/300 =51%	146/300 = 49%	82/154 = 53%	72/154 = 47%	

- Of 380 geosites in the project database, the most central 300 (95 of them Grade 1 sites) formed the parent population of accessible sites for defining the proposed boundary of the Property.
- Final boundary location included 75% (n = 71) of Grade 1 sites and 51% (N = 83) of Grade 2 sites;
- Grading was requested of the researchers who first identified each site, and later was adjusted by the planning team on practical grounds such as accessibility, visual impact and rarity;
- The planning target was to include 70 to 80% of Grade 1 sites to ensure full representivity and thereby ensure the integrity of the WHS;
- 25% of Grade 1 sites fall within the Property but outside PAs, hence the need to invoke the National Heritage Resources Act to register these as having National Heritage status, to ensure their protection in terms of SA law.

Protecting and presenting geological outcrops to the public and facilitating research and education are the unifying management activities over all landscapes and land uses within the Property. More conventional management of biodiversity is carried out in Nature Reserves, but as this has little specifically to do with geological protection, it plays only a secondary role in supporting the area's geological OUVs. Nature Reserves provide controlled access and protect all things natural, with geological assets specifically being included by law (NEMPA Act, 2003). Management of access to

outcrops can be achieved in timber-growing or cattle-grazing areas just as easily as in Nature Reserves, but by different means.

The outcrops identified and listed as geosites are naturally occurring exposures of bedrock (some exposed by excavation) that have little commercial value (although this may change).Mostly they present resistant and durable rock surfaces with negligible rates of natural erosion (there are a few exceptions). Such geosites are self-protecting and their surfaces need only to be protected from human-induced physical damage and from activities that obscure them from view, or interfere with intended human access. These circumstances indicate that the only management and maintenance needed to protect most geosites from harm, will be to leave them alone and prevent those human activities that damage or obscure them.

Potentially damaging activities and management responses are given in **Table 3** below.

Table 3. Potentially damaging activities and management responses**.**

Damaging activity	Management response
a) Building: especially with masonry, on or around geosites and interfering with access	Location of buildings to be mitigated mainly by good community relations and shared information with local residents to avoid known geosites where possible and by incorporation into land use planning approval processes. All levels of government responsible for infrastructure planning will be informed of geosite localities so that they can be avoided by applying mandatory EIA procedures (NEMA).
b) Mining: excavation blasting, and dumping (includes mine dumps, quarries and borrow pits)	Conservation (NEMPAA) and mining (MPRDA) legislation specifically bans mining and quarrying from taking place within Protected Areas. In other areas such activities require a permit from the Dept of Mineral Resources. The MA will ensure DMR is included in the consultative process required for such permits and planning activities to ensure that no permits are issued in the Property and the DMR and DEA enforce the laws under their mandates.
c) Impoundment: permanent or man-made flooding	As for a) and b) the MA will ensure it is made aware of such intentions at the planning stage to allow the consequences to be properly assessed and necessary protection or mitigation achieved through the relevant land use planning and authorisation processes (e.g.EIA)
d) Road-making: and/or extensive ground levelling	As above, the MA will register its interest in Provincial and local development agencies and their planning processes, to inform developers of sensitive sites and ensure their protection. Bridge sites in particular will be inspected by a locally knowledgeable geologist to avoid compromising an actual or potentially important geosite.
e) Defacement: chipping, drilling, or any physical damage (includes painting) of known (registered) outcrops.	Good community relations and information exchange by the MA will allow for these small-scale damaging activities to be reduced and avoided. Special attention will be paid to identifying and monitoring rock-collectors and geologists, and informing them of the permitting requirements relevant to rock collecting and research sampling. Collaborative research initiatives will be established to ensure that maximum scientific knowledge can be gained and shared when and if sampling is done.

A straightforward and open process to avoid all negative impacts on geosites and geoheritage will be a key function of the MA in both the short and long term. There will not be a great deal to do within PAs as all geosites will automatically be protected by existing conservation legislation, implemented by existing agencies already responsible for them. In non-PA land the dual application of the National Environment Management Act (NEMA) and the National Heritage Resources Act (NHRA) will be vital. The first protects from damage mainly by development via the EIA process and the second protects similarly via the HIA (Heritage Impact Assessment) process but also from direct damage mainly by individuals.

Managing Development through the Mandatory EIA Process. To avoid development that accidentally destroys geosites, the MA will be responsible for ensuring all sites, both within and outside the WHS boundary, are registered on the spatial planning databases of all relevant levels of government, including municipalities, together with their declaration as important universal and National Heritage sites that must be protected. With all geosites registered, the municipal planning procedures (IDPs and SDFs) assisted by NEMA's EIA process will prevent the issuing of a Record of Decision (RoD) that will result in geosite damage or destruction by developers. These EIA provisions apply to the planning and construction of all new developments beyond a certain size (roads; urban expansion; some forms of agriculture) in terms of NEMA and its EIA regulations. Developments are required to undertake Environmental and Heritage Impact Assessments to avoid negative impacts, prior to approval and commencement of all development projects. It will be the Property manager's task to engage with municipal authorities to ensure their geosite database is up-to-date and that their planning provisions are correctly functional in this regard. In some instances it may be possible to create added (unintended) positive results from such developments, such as improved access to geosites. An example of this is being planned at present with the new Pigg's Peak road to Bulembu, where assurances have been given that geotrail laybyes will be built into the basic costs of road construction (potential sites have been identified by Prof C Heubeck, 2015).

Protecting Geosites through National Heritage Legislation. The NHRA provides for heritage sites to be graded (National, Provincial or Local) and declared according to specified conditions of protection and management, as is provided in this IMP. Such protection may be achieved as above through Heritage Impact Assessments (HIA) but also through intensive public participation directed at local people on the ground to prevent small scale impacts as well. For this protection the Property manager will also have to engage in ongoing neighbourhood outreach activities that inform residents about local geosites and their need for protection. This initiative may extend to geosites beyond the Property's current borders where valuable geosites occur deserving of National Heritage status. The most obvious way of using and developing such external geosites is for them to become part of additional geoheritage trails that link geosites within and beyond the Property's borders. Because most such geosites are practically immune to damage there may be no need for further measures to be taken than to simply indicate their location on a linked geotrail and explain their significance.

Permitting System for Research Sampling and Rock Collecting. A clear policy supporting geological research in and around the Property is in the process of being finalized via the WHS Scientific Advisory group and will subsequently be publicised. Among other things, it pays particular attention to controlling rock sampling and collection. It seeks to instil an attitude of care and discipline among geologists, and similarly prevent rock collecting from becoming a problem. Commercial rock collection is not permitted in protected areas in terms of NEMPAA and MPRDA.

In elaboration of point **e)** above (**Table 3**) a permitting system is to be implemented to register and track the activities of geologists, researchers and rock collectors visiting the Property. Nature Reserve staff encourage visitors to take an interest in rocks but as part of their access control appoint staff to accompany visitors as guides who also ensure ethical behaviour. Timber plantations already have a permitting system for public access which will similarly be monitored for effectiveness. As many areas have no access control, the support of local community members will be invited to inform visitors and distribute information about the restrictions that apply, and reporting non-compliance. Until these provisions are in place, vigilance will be maintained to eliminate these selfish and/or careless attitudes. Apart from the permitting system a strongly worded message about considerate and disciplined behaviour by geologists will be widely disseminated to minimise physical damage everywhere, including a total ban on sampling at certain special geosites and consequences for researchers who do not comply. Notices at popular geosites may be required where collection could become a problem.

Incentives to collect loose rock material will be limited, so collection and damage should similarly be limited and therefore manageable. In particular, ways should be found of preventing or avoiding the development of a collector's market for rock specimens that has the potential to encourage collecting. One habit that may need to be controlled is the provision of small rock sample mementoes for tourists. This may have the unintended effect of stimulating demand for trinkets to feed a memento-collecting habit – an issue that managers must be made aware of when working with local residents in a position to respond to such demands. These protective provisions will be incorporated into the MoA documents when compiled.

There are one or two geosites comprising soft erodible surfaces which may deserve protection from the weather and other agents of erosion. Assessment and budgeting for the protection of these features is an early priority for the MA.

7.4 Managing other Natural Resources to Boost Tourism

This section is included because **geotourism** on its own is a small niche-market that will be slow to grow in southern Africa. This is due partly to there being so many spectacular outdoor tourism options available to visitors that will easily out-compete nascent geotourism. A central philosophy for sustainable tourism in this sub-region is therefore, that all component tourism attractions must be developed in harmony and mutual support if local tourism is to thrive. Although this IMP does not deal with conventional nature conservation and biodiversity management per se, it acknowledges its importance as being equal to, or even dominant, in providing for sustainable economic growth through tourism, vital to the success of this WHS. Conservation management is also important for ensuring the integrity and beauty of the landscape, which adds significant collateral value. Such landscape protection is also a vital component of providing for enhanced geological interpretation of outcrops and strata at a landscape scale; a crucial aspect of geological exploration, mapping and research. The following two points relate to biodiversity conservation as much as to geoheritage-based tourism, emphasising the real link between the two.

As counter-weight to the negative impact of timber growing and alien invasive plants, there is a positive side to this type of land use as far as both biodiversity and geological appreciation are concerned. For biodiversity, the protection of naturally vegetated firebreak strips, riverine and ridge areas provide vital corridors for wildlife and indigenous species to thrive and move between larger patches of untransformed landscape. In a few instances where moist forest patches are substantial, they serve as viable micro protected areas in their own right. Most river lines provide a network of connectivity for

entire communities of plants and animals. There are many areas in the patchwork of land units within the Property, where this connectivity is of great value for biodiversity conservation. The unplanted firebreak strips and riverine areas perform the same ecological function in timber plantations. They tend to connect the high rocky ridges which are seldom planted and which simultaneously provide rich hunting grounds for geologists/researchers.

A further benefit is the high density of well-maintained logging roads in timber plantations. The benefits of these are two-fold:

a. the road network provides ready vehicle access to virtually every hectare of each timber property, which significantly adds accessibility value to the geosites they contain, and
b. as these roads traverse steep mountainous terrain they inevitably involve vertical embankments or road-cuts that expose new rock outcrops and simultaneously provide easy access.

These are two ironic benefits from a land-use activity (widespread excavation) that would normally be viewed as strongly negative.

These attributes are positive contributions that timber growing can make, both to biodiversity conservation and geosite access and presentation. For these reasons the MA could usefully develop an argument to suggest that these environmentally destructive land uses (timber growing and excavation) deserve a less harsh reputation because they are not totally negative for the purposes of this WHS. These examples show that there are geological and biodiversity benefits that offer a partial counterbalance to the environmental negatives of timber growing. They also suggest that recognition of old mining activity and current public road construction also have positive consequences for discovering and displaying geoheritage features. Since the damage has been done management might as well now capitalise on the positive aspect of these activities.

Three long established mining companies operate mines dating from the 1880'soutside the Property. Two of them claimed to be the holders of newly issued lawful prospecting rights within PA boundaries. These rights are disputed by the MTPA and landowners since they were issued in contravention of the prohibition on new mining or prospecting in PA's as contained in both conservation (NEMPAA) and mining (MPRDA) legislation. Both these prospecting rights have been contested through legal action with one now dismissed in favour of conservation and the second still in the court process. It is worth noting that in recent years a number of prospecting and mining applications were refused by Department of Mineral Resources (DMR) on the very same basis of being in a protected area and the above mentioned prohibition.

In addition, there are currently active deep mining adits that extend about a kilometre below the land surface of Barberton NR. These mining rights are legal as they were issued before 2003 when the prohibition on mining in PA's came into effect. This deep mining shows no tangible impacts on surface features or processes and as such deserves acceptance as part of the wider array of remote human impacts that cannot be rectified or wished away. Notwithstanding their minimal impact on the surface, these areas are excluded from the Property due to the direction received on UNESCO's stance viz mining in WHS's. However, since mining by its nature will be exhausted one day, it is conceivable that these areas may then become part of the WHS after mine closure.

Mountainous country, with long views unmarked by modern man, evokes a pristine (empty) wilderness atmosphere for tourism. Preserving this increasingly scarce sense-of-place implies low visitor densities, undeveloped surroundings and low-impact access and accommodation facilities. However, broken country like this provides ample opportunity for hidden trails and small-scale overnight accommodation,

which, with good planning, management and marketing, can result in quite high densities of use and healthy cash-flows, if minimum inter-visibility rules are observed. A practical approach to developing appropriate tourism facilities is to start with small facilities first, attractive and affordable to an identified market, and then in a step-wise sequence, obtain feedback from visitors and tourism experts that will help to inform the next step and adapt facilities accordingly. Predicting visitor preferences in this IMP in a rapidly changing, hyper-linked world is a risky way of providing for future visitor needs. Exactly such a developmental approach is already contained in the IMP's of the three main NR's attached as **Appendix D, E & F**.

8 Management of Visitors and Tourism

An important feature of geotourism that the MA needs to be aware of is that, whereas wildlife and wilderness assets sell themselves to visitors on aesthetic grounds and popular knowledge, geological assets are meaningless without skilled interpretation. Self-drive touring and self-guided hiking have historically been the norm among most South African tourists; but those options will apply less to geosites, geotrails or geological landscapes. These new tourism assets will all need skilled interpretation and lot of supporting literature, education and building of awareness to be appreciated by visitors and to become a sustainable component of South Africa's Tourism offering.

This WHS management function will be dominated by communication and personal transaction processes to manage multiple stakeholders. The WHS manager will achieve his/her goals by persuading others to join the combined effort to make the WHS work. Local tourism service providers and property owners with tourism interests, have their own staff and budgets for their current businesses and must be encouraged to contribute and integrate their own visitor services and information, aligned to the promotion and appreciation of the OUVs of the Property. Through the drawn-out process of compiling the ND and related stakeholder consultations, local business-owners have shown themselves willing and quick to adopt new tourism products and services.

8.1 Geoheritage Interpretation and Education - links to Scientists, Research and Institutions

Because of the unusual scientific attributes and the rural setting of this WHS, there is very little local experience to guide interpretative and educational outreach programmes to local communities. The success of the Geotrail suggests that communicating to a travelling, highly educated audience is relatively straight forward, but achieving understanding by rural people, with little or no education, will present a very different challenge. Good understanding of the geology and how the evidence these rocks contain can convincingly be told and validated as true and relevant, becomes easier with some tertiary level of learning in science before basic understanding can be passed on to others. Whatever efforts are made, initially they will be experimental and therefore need to be cast within a social/educational research framework (ref, 'Action Research').

Such research requires professional and even institutional guidance. Whether or not these skills and institutions are accessible locally within South Africa, this specialised activity would benefit from external assistance and hopefully funding. To develop suitable interpretative and educational outreach programmes, this WHS needs to establish links with local and foreign science and educational institutions. The purpose of these linkages will be to guide and sponsor programmes to develop a positive relationship between 'a scientifically high-powered but apparently mysterious WHS', and its surrounding population

that may find it difficult to understand its value without specialised educational and interpretive assistance.

A less academic component of social outreach will be to inform residents and other interested parties of the practical aspects of a WHS and how it can achieve sustainability by attracting visitors. This information function is a two-way-street where community reaction, requests and questions need to be dealt with to avoid conflict and resulting problems between visitors, managers and residents. To be effective this programme will require an extension/community liaison supervisor (assistant manager) and at least two field assistants as described in the Staff and Budget **Section 9** below.

Development infrastructure for these important WHS programmes will also benefit from a flexible adaptive approach. All emphasis initially must be made on developing content and activities that contribute to interest, understanding and education, rather than building physical facilities and structures. Initially, and probably for several years, all content and activities can be developed in the field and in leased urban premises. First, programmes must be fully developed and educational procedures established (teachers to learners) and target audiences confirmed and made accessible by appropriate transport arrangements. Fixed structures for community teaching / education and exploration activities (environmental education centres) will be an eventual priority, but should only be provided based on proximity and availability of learners and established demand for the built facilities. The Cradle of Life facility near Badplaas already provides these services as a private sector initiative and will need to be integrated into the programme as a whole.

8.2 Promoting, Interpreting and Presenting Geoheritage for Visitors

The use of the BGB geosites in their natural settings as outdoor education facilities is arguably their most important value. Some specialized guiding and well-crafted interpretive material has already been developed, both in situ and in publicly available literature and marketing materials. These can be built upon to get the rocks to tell their stories. Building ‘a sense of ownership and knowing’ among local and young people instils home pride; visitor interest builds tourism, both of which will attract investment and ultimately create jobs.

The interpretative task for geoheritage is key to the success of the WHS project. Rocks are not like rhinos or wild flowers, self-evidently attractive, exciting or pretty. Without skilled interpretation, rocks are just rocks; this WHS without a strong and creative interpretation capability will not thrive or achieve its goals. These interpretative skills are found mainly in the private sector so most of this work will have to be outsourced. MA capacity to recognise quality interpretive products and manage the contracting and delivery process will require special attention.

Education via skilled interpretation is also apriority for the public awareness and education programmes described in the ND. These will be developed for both outdoor field trips for teachers and learners and for improving the relevance of natural science in the classroom. Here, tourism and education go hand in hand. Developing educational materials from these geoheritage resources will require special skills and personnel because there is no easy fit into the local school syllabus (see **Marketing 8.3** below). This geoheritage education/ interpretative task aimed at young people will provide an opportunity to develop relationships with overseas institutions able to contribute both professional skills and funding to drive such a programme. This should be offered in an ‘Action Research’ format, involving local community groups in ‘learning-by-doing’ activities that will develop creative new interpretative materials tailor-made for local conditions.

8.3 Marketing Geoheritage Tourism

Promoting local tourism generally and geotourism in particular, is already being carried out by product owners and service providers as well as by LTOs (Local Tourism Organisations such as Barberton Community Tourism), RTO's (Regional Tourism Organisations such as Kruger Lowveld Chamber of Business and Tourism) and MTPA (as provincial tourism marketing agency). The WHS MA will need to recognise this existing marketing potential and will have to communicate actively with all parties. Actively using these tourism allies should achieve both the necessary publicity and cement the right relationships to help tourism thrive. In due course, dedicated marketing capacity maybe provided by the MA, by which time past experience will have identified a clear set of priorities for marketing the WHS locally and to foreign visitors.

Past marketing has not ventured into the more tightly prescribed target audience of teachers, trainers and professional educators, which is recognised to be a pre-requisite for working out how the educational potential of the WHS can be realised. This needs to be aimed at the level of teenagers and young adults where its geological/ evolutionary/ environmental message, with its quite advanced technical content and broad relevance to science and the environment, can be fully explained and understood. With international support the situation provides unprecedented opportunities for a focussed effort to use these resources to adapt the science syllabus and improve science teaching country-wide.

The Barberton Makhonjwa Geotrail, established in May 2014, presents geosites along a motorised geotrail with outdoor interpretive panels and a guide book. This three-year-old self-guided tourism product sets a good standard for presentation to visitors and interpretative material, but it is in a unique location with special circumstances. As such it does not necessarily provide a good model to replicate elsewhere where population densities and road traffic conditions are not suitable. Other motorised and hiking trails are being considered around the BGB, but without the expensive outdoor facilities and hardware. Once developed, these will require active marketing and monitoring to give them the best chance of growing into useful and sustainable tourism products.

The Geotrail is currently the centre-piece of Barberton Tourism's marketing effort. In all marketing material its context is described as being a first tourism product within a proposed WHS, which has wider features and attractions to look forward to. This marketing has been aimed at the general visiting public, involving various media from international to local television, radio and print material, to presentations and guided tours for local interest groups. Barberton Tourism will continue to perform this function into the future, providing an ongoing marketing service for the WHS until the MA has the funding and skills to contribute independently.

A future development that has existed only as a concept for many years is a substantial Visitor Information Centre intended for construction in Barberton's Rimer's Creek. This structure will need to be designed and equipped pre-eminently as an interpretive centre with facilities for indoor and outdoor display, teaching, research and archiving functions. In due course this facility will provide a local hub and source for interpretative and educational materials relating to the OUVs of this WHS.

8.4 Msauli Village – Tourism Development Priority

The 65 year old Msauli Village was developed as a mining settlement for the Diepgezet Asbestos Mine. It is situated in a picturesque valley at the foot of the Ngwenya Mountains where the Komati River flows into Swaziland, and is located completely within the boundary of Songimvelo NR. The mine was formally closed in 2001 and rehabilitated; the residential village and related services and infrastructure survive,

their value having been recognised for future tourism development. The mine property was the subject of an early land restitution agreement in 2004 and since then the infrastructure has been looked after by community caretakers with very limited means. It has been the subject of efforts by BATOBIC and others to find an investor to develop the village into a viable tourism entity. A list of assets and other features is provided in Appendices to the ND (**Appendix U**).

The village is provided with power from ESKOM through a 12.5 MW, 22 km overhead power line from Barberton, providing all accommodation units with power at a nominal 220 V. Development of Msauli for tourism linked to Songimvelo NR is the logical choice, which was also part of the conditions attached to the restitution agreement. As such it is ideally placed to provide work for some of the local people retrenched from mining employment.

Specific objectives for Msauli's development include:

- Convert the village into a sustainable tourism/conservation/recreation facility via a three-party agreement between an investor, the owners and MTPA;
- Sign up a suitable tourism investor to re-furbish and lease the village before the existing infrastructure falls into complete disrepair;
- Link future use to specified rights and access to neighbouring parts of Songimvelo NR;
- Use the refurbishment and tourism development process as the basis for local job creation;
- Use the development momentum gained to boost tourism in Songimvelo NR, the WHS and the wider region as a whole;
- Generate new revenue streams to support sustainable conservation and socio-economic projects in the immediate area;

9 Implementation Plan, Staffing & Budget

The current Management Authority (MTPA, in some cases in collaboration with private Nature Reserve owners) is implementing a set of conventional nature reserve management plans on two thirds of the Property in a co-operative management programme that has been in place for over two decades. This combined management activity has successfully protected not only the BGB's exceptional natural ecosystems and biodiversity but the area's equally exceptional and directly linked geology as well. This continuity and inter-connectedness as a basis for protecting environmental resilience and geoheritage together, provides the Management Authority with a proven track record. These integrated programmes will continue with their current staff and budgets contributing solidly to the achievement of common goals when the BMM WHS is inscripted. They will continue to provide the very foundations of nature based tourism up to and beyond the date of achieving WHS status.

The new geoheritage component of PA management, implemented across the entire property, is a relatively small and inexpensive addition to the current overall management effort. Its staffing requirements and funding needs are outlined below as an indicative overarching plan to extend the management effort to protect and promote all geoheritage and to provide access to and interpretative

services for the development of sustainable geotourism. This is a new field in South Africa with very limited precedents and successes to learn from. So the guidelines for implementing the geoheritage component of future WHS management are left deliberately open and adaptive to learn from doing, on the job.

An indicative budget is provided below as an initial staffing and functioning assessment for the limited new responsibilities involved in the expected fully functioning WHS Property.

9.1 WHS Management Authority: Increased Staff Requirements, including Work Facilities

The initial MA staff compliment will be headed by an experienced Manager who has ultimate responsibility for the MA's functions. The Manager will be joined by two experienced middle-management staff: an adaptable assistant manager with good Community Liaison, Extension, PRO and Marketing experience; and a project administrator/book keeper with appropriate financial skills. Together the two founding managers will then collaborate in the hiring of two or three junior extension/ liaison/ information staff to work as field communicators, 'eyes and ears' on the ground, monitoring geosites, visitors and local residents. If the budget allows, a team of two Field Assistants will also be needed for physical management, maintenance and monitoring field work. This skeleton staff will grow organically as the WHS becomes established and additional tasks and volumes of work materialise. These staff will collaborate, and integrate operationally with existing MTPA structures and functions and other parties involved with promoting geoheritage.

All staff will have to deal with the special circumstances of having to work on land owned and occupied by partners in this venture; and with visitors from far and wide who will be complete strangers and therefore vulnerable to unusual circumstances, especially in non-NR areas. Every employee of the MA will have to have particular understanding and/or competence in human relations and communication with all parties. Tact, empathy and understanding will be key attitudes required. Field staff will also have to have the self-confidence to be firm and decisive when it comes to their law-enforcement role in the protection of geosites and the supervision of access by people (many will be senior professionals), such as special permit-holders who don't want to be supervised.

Other more specialised skills and functions such as interpretation services, social outreach and Action Research capabilities may be added as required. The latter in particular maybe accessed through academic and social aid institutions, NGOs and/or aid agencies. Preparing the groundwork and motivation for this type of input will be the responsibility of the Manager in consultation with the property's Scientific Advisory Committee.

Fuller personal details, character attributes and selection criteria are listed in the Training Needs Analysis (**Appendix Q**)

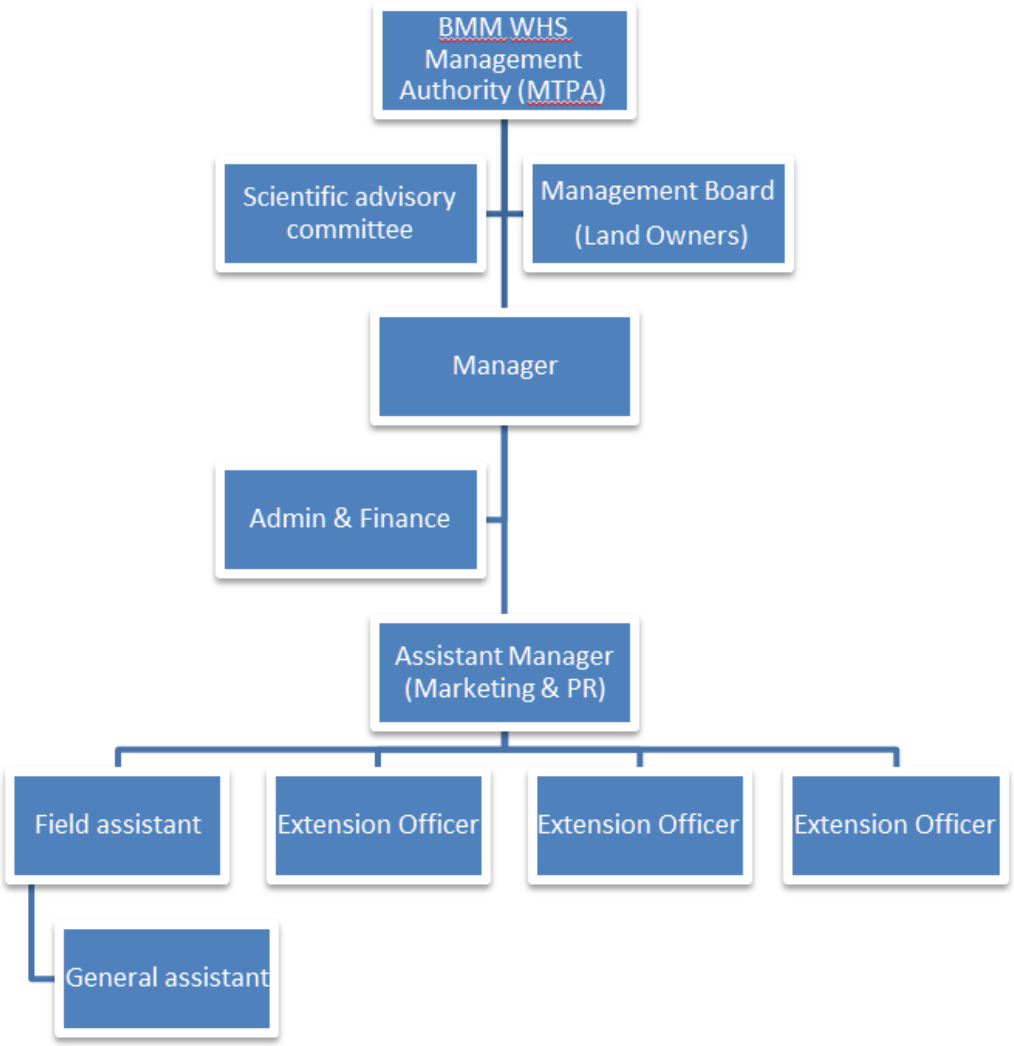

Figure 2. BMM WHS initial staff organogram.

9.2 Advisory Committee

The WHS will require a highly qualified and well-connected Scientific Advisory Committee to provide technical and academic advice relating directly to the Property's geological OUVs. Most of the Committee's functions will be provided voluntarily by members but it will need access to funds to cover expenses and to give effect to their recommendations through the WHS Manager. The members of such a Committee will be required to relate directly to the international scientific community and link the WHS management team with high level leaders and administrators within South Africa and internationally, both for scientific advice and the financial support or sponsorship that technical and social support requires. Four eminent geology academics have in effect been serving this function voluntarily to BATOBIC and the planning team for the last eight years (see **ND Section. 3.1.c**).

9.3 Staff Accommodation and Work Base

Administrative and management facilities for WHS MA staff can initially be found and leased in the nearest urban centres of Barberton and Badplaas. Until such time as the centres of activity for management and tourism reveal themselves, it would be premature to predict the staff's office and residential needs within the site (if any). For some years to come, access to the WHS will be provided by

public roads and therefore unrestricted and difficult to monitor. With geotourism being a small niche-market and provision of infrastructure slow and unpredictable, caution is advised in predicting trends and providing on-site facilities before demand is evident and specific locations indicated.

Initially visitor use of the area will be most manageable by providing prescribed and defined geotrails (by vehicle and/or on foot) and more generalised Geo-Tourism Routes, linking independent geoheritage sites or other features. None of these models suggests that an on-site base for WHS staff and their management paraphernalia will be required for several years. The most likely option for providing these facilities will be to associate them with the WHS Visitor Information Centre, being planned separately by BATOBIC, for location in Barberton. This facility will be deliberately urban or peri-urban based, allowing for easy access by visitors and for residential and other facilities to be readily available nearby.

9.4 Indicative Budget for MA Staff and Operating Expenses

The additional budget for geoheritage will initially have to cover salaries of staff and their operational expenses for travel, office rental, equipment and supplies, communications, goods and services, including advertising and PR materials (**Table 4**). There will also have to be an appropriate maintenance budget to fund small-scale piece-work and contractors. An additional and more substantial budget will be needed for design & placement of outdoor WHS signage which will be mandatory once WHS Inscription is achieved. For staff complement **Section 9.1** above and Staff Training Needs (see **Appendix Q**) for more detail.

Table 4. Initial WHS Management Authority Budget.

Expense	Amount
Establishment Cost	R 1 600 000.00
Salaries	R 2 800 000.00
Office Rental	R 24 000.00
Insurance	R 12 000.00
ISP	R 8 400.00
Marketing and Branding	R 1 200 000.00
Telephone, Cellphones, internet	R 125 000.00
Repairs and Maintenance	R 420 000.00
Travel, Parking and Subsistence	R 930 000 .00
Security and Cleaning	R 48 000.00
Stationery	R 24 000.00
TOTAL	**R 7 191 400.00**

10 Monitoring and Review

10.1 Monitoring of Management and Tourism activities

This section describes the task of getting the necessary feedback on all resource management and tourism management and development functions within the WHS. Monitoring is necessary to provide the balanced spread of information that management needs to guide and report on progress towards achieving its goals. Monitoring involves continuously measuring change so that progress is documented step by step while identifying the positive and negative influences at play.

Along with demonstrating progress, monitoring must also be sensitive to its opposite, any lack of progress in achieving the MA's goals. This requires realistic goal setting as a pre-requisite. The following general activities are the most important for monitoring and regular reporting:

a) **The physical aspects** of geosite protection, access control, applying the rules in terms of the MoA, and approving and monitoring developments, contractors and service providers.
b) **The social aspects** around feedback on tourism numbers, their responses, marketing efforts, interpretative tasks, education and outreach activities, including all stakeholder management at both corporate and community levels.

The outcomes of all monitoring activities depend on routine record keeping and reporting. This is normally included in the formatting of regular periodic progress reports, structured in such a way that all measures of progress are listed and *required* to be reported on repeatedly. The overall monitoring process should be designed to inform management about the decisions they have to make, the adjustment of priorities and, when necessary, the taking of remedial action. Once a full schedule of monitoring activities becomes established then it should be planned as a routine annual diary of activities for identified staff and linked to the format of their periodic progress reports.

10.2 Priorities for Monitoring Physical Assets:

- Record and report on the most used geosites first: SAHRA National Heritage Sites in relation to their closest residents; institute some measure of routine visitation if possible and establish issues resulting from visitor use and issues concerning community members;
- Monitoring programme for the Geotrail as currently done by BATOBIC – record management and maintenance needs and responses (litter, landscaping, upkeep and visitor reactions) and the general use (and abuse) of geosite lay-byes by the public;
- Monitor damage to geosites by rock collectors and geologists and to built walling, signage and panels along the Geotrail. Look for dangerous or awkward traffic problems, especially at geosite lay-byes that may indicate the need for modification;
- Collaborate with various law enforcement functionaries be they branches of the SA Police Service or MTPA environmental law enforcement on any of the visitor facilities (eg. Geotrail, other geosites and Nature Reserves).

10.3 Priorities for Monitoring Key Stakeholders (social assets):

Identify sensitive issues for local residents and landowners and monitor according to significance. Connect with local traditional leaders, decision makers, planning authorities, and municipal officials responsible for delivering rural services. Also connect with managers of all included business properties to monitor their issues and attitudes regarding visitor and access problems. In effect this is an ongoing stakeholder engagement and public relations programme. Staff doing the monitoring should act as helpful community liaison persons, involving themselves ultimately in Action Research procedures if possible.

11 Tools for implementation

11.1 Priorities for Implementation - Indicative Outline

Implementation priorities for this IMP are focussed specifically on aspects related to geo-tourism. Other developments and activities that have little consequence for tourism are not considered. The main agencies that have local tourism promotion and development capacity are MTPA and BATOBIC and those private sector stakeholders whose business is tourism and who have the resources to implement their own plans. In this Property there are a number of tourism businesses who have made significant tourism investments already, with several others in the planning stages. Because tourism in this sub-region has been slow for some years, and state-agency funding particularly tight, limited planning has been done beyond those listed in the ND and below.

MTPA has State responsibility for tourism at a Provincial level. However its plans have been limited and flexible over the years due to funding constraints. A Tourism Growth Strategy for Mpumalanga was developed in 2007 and revised in 2011 to unlock those activities that were seen to have the greatest impact in growing tourism in the Province. These strategies identified the Barberton area and the possible WHS as having significant development potential. Each of the two MTPA managed Nature Reserves, Songimvelo and Barberton NR, have their own IMPs, each with identified management and development priorities and listed in **Table 5** below.

The only other significant development plans for the wider WHS/BGB area are those identified by BATOBIC listed below (**Table 6**). The Barberton Chamber of Business (BCoB), BATOBIC's parent agency, has been involved in promoting the development needed to grow nature based tourism in the area since 2001. It created BATOBIC as a project implementation unit in 2010 and their combined influence has been substantial. These are set out in BATOBIC's "Multi-Year Development Programme" (2001) and effectively revised their "Tourism Development Strategy for 2011-2014" (**Appendix U**).

Table 5. MTPA's Existing Development Priorities within the BMLWHS (2016)

Songimvelo Nature Reserve	Barberton Nature Reserve
Replace 32 km of existing perimeter fences	Construct Conference Centre for 100-150 persons
Upgrade 20 km of internal gravel roads	Construct Park Entrance Gate, Office Complex and Reception Facility with bus and visitor parking
Replace water purification/ reticulation system	
Construct Environmental Centre for 80 persons	Construct staff accommodation
Construct field ranger picket at Mbhejeka	Internal road construction
Upgrade two existing field ranger units of accommodations	Develop rhino sanctuary
Renovate nine (9) staff quarters & one animal processing facility	
Unlock the commercial tourism potential of both Songimvelo and Barberton NR in the next year Consultant has been appointed, work has commenced.	

Table 6. Past and Present BATOBIC Tourism Development Plans & Projects

Project	Date	Budget
Upgrade and rebuild of 30km of R40 from Sappi Highlands to Swaziland border (planned & implemented)	2007/8	R170 m
Clearing of alien vegetation in Lomshiyo (implementation)	2012	R0.75m
Lomshiyo investor mobilisation (facilitation)	ongoing	R1.5m
Songimvelo/ Msauli investor mobilisation (facilitation)	ongoing	R1.5m
Upgrade of Msauli to Josefsdal Road (planning)	ongoing	R28m
Barberton Gateways (planned & implemented)	2011/12	R2.5m
Genesis Route road signage (planned & implemented)	2011/12	R0.5m
Barberton Makhonjwa Geotrail (planned & implemented)	2012/14	R5.5m
Visitor Information Centre (planning)	ongoing	R200m

BATOBIC will continue in this role for the foreseeable future, with the following items **(Table 7)** on its future priorities list.

Table 7. Anticipated Future Planning and Development needs, related to Achieving WHS Inscription.

Project	Value
BML WHS Visitor Information Centre and Biopark in Rimer's Creek	Prospective value R200m; planning ongoing;
Barberton CBD Master Planning for increased traffic flow resultant on 1. above	To be determined
Marketing and branding of the WHS	To be determined

Private sector investment project pipeline	R350m, ongoing
Lomshiyo Trust Game Breeding and Ecotourism project	Prospective value R60m
Subsequent to WHS Inscription additional planning and development implementation will be required with the following priorities:	
Internal WHS road access network & geosite protection	To be determined
External and internal WHS signage and branding	To be determined
Packaging and funding of private sector investment opportunities	To be determined
Packaging and funding of infrastructure projects	To be determined

MTPA and BATOBIC collaborate on all tourism and development activities in the region and have entered into a Memorandum of Understanding (MoU) to facilitate this collaboration. Batobic has similarly entered into MoU's with various government departments and local and district municipalities, to foster collaboration through identifying priorities and funding and implementing projects.

For all references see Nomination Dossier