



THE
Genesis
OF LIFE
MAKHONJWA HERITAGE PROJECT

BARBERTON
TOURISM
MPUMALANGA
SOUTH AFRICA



3.5 BILLION BC

Genesis of L I F E

Tucked away in the most ancient corner of our land, hard against South Africa's border with the kingdom of Swaziland, lies a hidden wilderness. The Makhonjwa Mountains in Mpumalanga are not well known by their original name; maybe that's because Swazi folk-law has it, that pointing at them brings bad luck. Well, things are about to change!

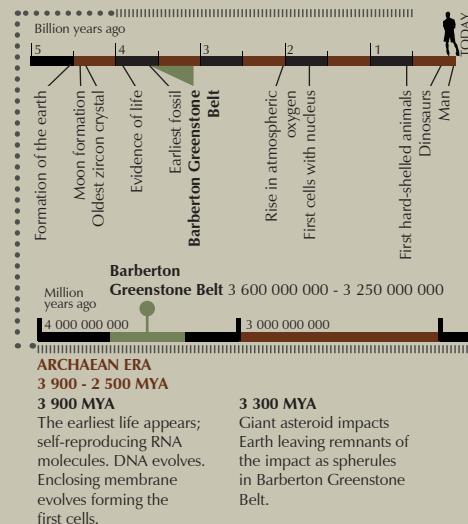
A major drive for international recognition, started many years ago, is finally bearing fruit. The recently

launched 'Makhonjwa Heritage Project', enjoys wide stakeholder support, and seeks to establish this unspoiled treasure house of geological history as a World Heritage Site.

In March 2008, the 'Barberton-Makhonjwa Mountain Land' made it to the 'Tentative List' of UNESCO's World Heritage Site programme. The planning team for the project, an experienced local consortium headed by Barberton's Concession Creek Consulting, has been given the go-ahead and it's all-systems-go towards World Heritage Site status.

Barberton Makhonjwa Mountains –
a tentative World Heritage Site

For centuries these impossibly steep hills have defined the edge of Swazi influence. In 1883 they first made world headlines with the discovery of gold, and the establishment of a miner's camp called Barberton. Over the last half century they have been quietly building a scientific reputation as a unique geological remnant of the newly formed Earth at the dawn of life.



What makes it SPECIAL

The Makhonjwale comprise the oldest and best-preserved sequence of volcanic and sedimentary rocks on Earth. Known as the Barberton Greenstone Belt, these highly accessible ancient exposures present a continuous 350 million year sequence of rocks, beginning 3 600 million years ago. Their physical and chemical characteristics provide an unparalleled source of scientific information about the early Earth. The outstanding value of these rocks lies in the large number of sites and features that, when combined, provide a unique, and as yet only partially explored, scientific resource.

These ancient mountains, older even than the bulging granite domes around Nelspruit and Mbabane, provide the best source of information about the early Earth anywhere in the world. As required by the World Heritage Convention, they are 'the best of the best' examples of this form of most ancient (Archaean) geology.

The outstanding value of these rocks is due largely to their remarkable preservation. Enclaves exist where original components are intact for most rock types in this long Archaean sequence. From these rocks,

geologists and palaeobiologists have learned more about the Earth's early history, than from any other comparable site.

It is for these unique attributes that the area has been accepted onto the World Heritage Site Tentative List by UNESCO. This formality is a prerequisite to full World Heritage Site status. This certification process is regulated by the international World Heritage Convention of 1972, to which South Africa is a signatory, and by our own World Heritage Convention Act (No 49 of 1999).



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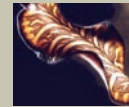
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PROTEROZOIC ERA 2 500 - 544 MYA

2 500 MYA
Blue-green algae forming biomats and stromatolites plentiful. Algae change atmosphere to one that supports more diverse life forms.

1 500 MYA
Cells with nucleus appear, setting life on its evolutionary path.

1 200 MYA
Sexual reproduction evolves leading to faster evolution.

900 MYA
Single-celled choanoflagellates, ancestors of the entire animal kingdom, appear and still survive today.

850 MYA
Colonial Proterospogia (primitive sponges) appear and are the best living examples of how the ancestor of all animals may have looked.

600 MYA
The first multicellular animals, the sponges, appear, no muscles, nerves or internal organs.

580 MYA
Cnidarians appear. Most have nerves and muscle.

550 MYA
Flat worms appear, the first animals to have a "brain".

PALAEOZOIC ERA 544 - 245 MYA

505 MYA
First vertebrates appear.

400 MYA
Coelocanth appears. . . and all this, some 397 million years before the appearance of humans!

The Landscape

AND MAN

The Barberton–Makhonjwa Mountain Land is set in deeply folded mountainous terrain, straddling the Swaziland border and stretching from the Lochiel Plateau in the south, to the Nelspruit-Komatipoort area in the north. It includes part of the Komati River catchment in the south-west, the de Kaap catchment in the north, and the Mahlabanyathi and Crocodile rivers in the northeast. The hills are steep and rocky, with moist grassy uplands and forested valleys.

Oral history suggests that through the 1700s and 1800s the land was sparsely occupied

by Swazi and other local pastoral people, but the steep and rocky landscape did not provide well for human livelihoods and so occupation fluctuated both seasonally and according to the ebb and flow of local conflicts. Substantial settlements were rare, being limited mainly to the larger river valleys.

At the time of European settlement in the 1860s the region became a contested border zone. Land deals were struck between the Swazi king and Transvaal colonists, the echoes of which remain to this day.

CULTURAL TREASURE HOUSE

Interesting cultural features, include:

- Lion Cavern (Bomvu Ridge) at the abandoned Ngwenya iron ore mine in NW Swaziland is the oldest ancient mining site ever dated. It was initially dated at 41 250 BC – some seven times older than the oldest known flint mines of Western Europe. Later and more accurate C14 dating, astonishingly suggests a more likely age to be 70 000 to 80 000 BC.
- An extremely high frequency of stone-age tools and related artifacts as well as San cave paintings.
- A rich contemporary history of dynamic local African cultures, colonisation and early gold mining.

The region is culturally and historically important
and is the site of South Africa's first real gold rush.



HOT ROCKS

The region burst onto the world's stage when alluvial gold was found at Kaapsehoop in 1875. This was followed by the Moodie's and Barber's Reef gold strikes, and the 1883 gold rush into the hills above the Suid Kaap River.

Barberton's gold rush was soon dwarfed by the discoveries on the Witwatersrand in 1886 but mining persists to this day. The Sheba Mine, founded in 1883, is reputed to be the oldest continuously producing gold mine in the world and it continues to yield the world's oldest gold.

After the South African War, the country's mineral wealth, derived mainly from diamonds and gold, grew enormously. A direct by-product of this affluence was the development of geological science to support mining. In the first half of the 20th century, technical expertise and geological exploration expanded rapidly.

In 1969, twin brothers and student geologists, Richard and Morris Viljoen, described distinctive Archaean lavas from the Komati River valley, now known throughout the world as komatiites. This landmark discovery identified the oldest volcanic rocks of a hitherto unknown chemical and crystalline composition formed at temperatures approximating $1\,650^{\circ}\text{C}$ – the hottest ever described for volcanic rocks at the Earth's surface.

BRIGHTER THAN GOLD

A growing global network of geologists descend annually on Barberton to search for clues to the Archaean era. Over 30 years of research have helped to define, among other things: the evolution of Earth's atmosphere; the origins of life; the growth mechanisms of continents and the composition of the earliest oceans. Although rocks of similar age and even older are known from other parts of the world, none combines the outstanding and diverse characteristics of the Barberton Greenstone Belt – a fame more significant and longer-lasting than its colourful gold-rush past.

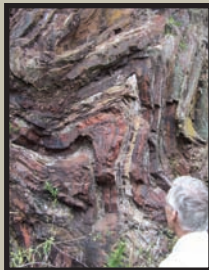
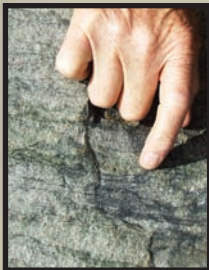
Beyond geology, the area has many other attractions. Trails through unspoiled mountain scenery stretching in all directions; clear mountain streams tumble and cascade through wooded kloofs; biological diversity abounds. The area is especially rich in locally unique and specialised plants and has an abundance of birds. Good infrastructure and a comfortable year-round climate make these attractions easily accessible to visitors.

Special geological

INTEREST

The future World Heritage Site will include the best examples of the most important geological exposures, along with an array of tourism assets. These 'universally outstanding' sites are numerous and widespread but will include at least:-

- Various formations containing the first microfossil evidence of life on Earth, some of which, such as stromatolites and biomats, can be seen with the naked eye
- Pillow lava 'balloons' indicating widespread under-water volcanic eruptions
- Spherule beds, remnants of the earliest recorded and probably the largest asteroid impacts on Earth
- Deposits of volcanic lapilli (solidified droplets of molten lava from volcanic eruptions), on the floor of ancient oceans
- 3.4 billion year old shorelines, that have allowed precise tidal and lunar measurements at the dawn of time
- The type locality of the famous komatiite lavas at Spinifex Creek.



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'This region offers a virtual library of information at the limits of terrestrial time and allows us to study and learn about the origins and earliest history of our planet.'


Prof. Christoph Heubeck, Free University of Berlin

A future

IN TOURISM

As well as an exceptional geology, the Barberton-Makhonjwa Mountains support a rich biodiversity. The steep and broken terrain, unusually mineralised soils (e.g. serpentine and talcose soils), high rainfall and extremes of temperature, give rise to a wide diversity of habitats and have resulted in what botanists call a 'local centre of plant endemism', one of 20 such biodiversity hotspots in South Africa.

| NAME AND OWNERSHIP | SIZE ha |
|--------------------------------------|---------------|
| Songimvelo N.R. (State) | 35 800 |
| Songimvelo N.R. 'Panhandle' (State) | 13 250 |
| Mountainlands N.R. (Joint venture) | 16 700 |
| Barberton Municipal N.R. (Municipal) | 350 |
| Barberton N.R. (State) | 2 450 |
| Nkomazi G.R. (Private) | 30 000 |
| TOTAL AREA | 98 550 |



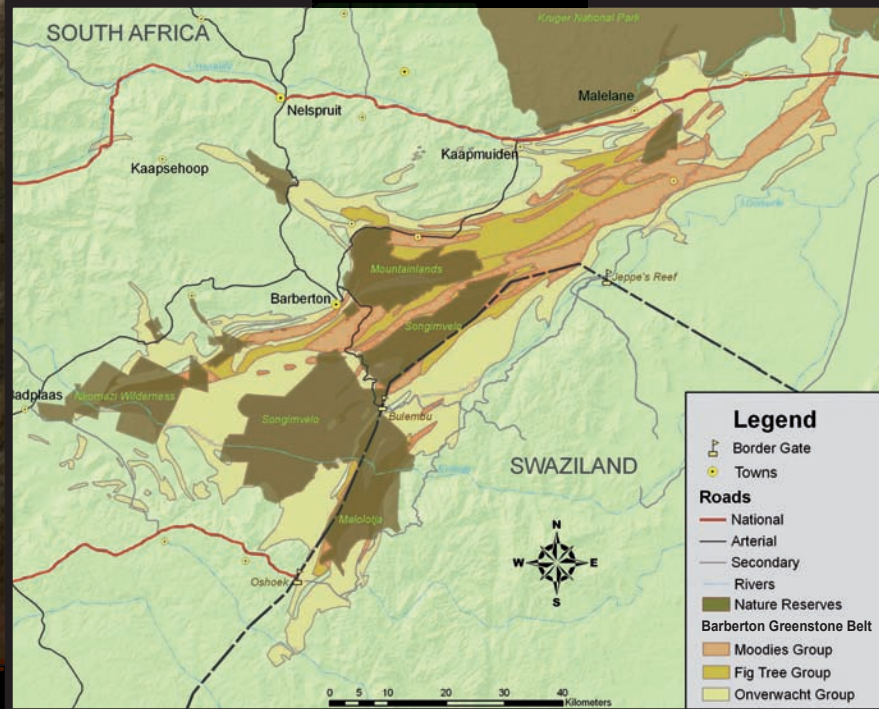
The area's scenic beauty and high biodiversity, has been recognised by conservation authorities through both large and small nature reserves. These protected areas, and the surrounding mountain landscapes of exceptional beauty, provide a foundation for diverse and innovative tourism partnerships and developments: geological, birding, botanical, historical and cultural tours, hiking and off-road trails and many other adventure tourism activities. The World Heritage Site Tentative List motivation provides for all the formally proclaimed nature reserves in the area to be included. These protected areas, are intended to be the minimum complement for inclusion in the future World Heritage Site. There are also several botanical reserves, some Natural Heritage Sites and other protected areas in the region, that will also be considered for inclusion. In all, the Barberton-Makhonjwa Mountainland provides a cornucopia of tourism development opportunities.

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For more information contact:

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