World Heritage Scanned Nomination

File Name: 915bis.pdf **UNESCO Region:** AFRICA

SITE NAME: **Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai, and Environs**

DATE OF INSCRIPTION: 1999 / 15th July 2005

STATE PARTY: SOUTH AFRICA

CRITERIA: C (iii)(vi)

DECISION OF THE WORLD HERITAGE COMMITTEE:
Excerpt from the Decisions of the 29th Session of the World Heritage Committee

2. Approves the extension of the Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai, and Environs (South Africa) to include Makapan Valley and Taung Skull Fossil Site, on the basis of the existing *criteria (iii) and (vi).*
3. Notes that the State Party of South Africa is in the process of finalizing the new name for the serial property.

BRIEF DESCRIPTIONS

These sites have produced abundant scientific information on the origin and evolution of human beings over the past 3.5 million years, their way of life, and the animals with which they lived and on which they fed. The Taung Skull Fossil Site is the place where in 1924 the celebrated Taung Skull – a specimen of the species Australopithecus africanus – was found.

1.b State, Province or Region: Gauteng, Limpopo and North-west provinces

1.d Exact location: S24 09 31.0 E29 10 37.0

WHC Nomination Documentation

File Name: 915.pdf **UNESCO Region:** **AFRICA**

SITE NAME: The Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai, and Environs

DATE OF INSCRIPTION: 4th December 1999

STATE PARTY: SOUTH AFRICA

CRITERIA: C (iii)(vi)

DECISION OF THE WORLD HERITAGE COMMITTEE:
Excerpt from the Report of the 23rd Session of the World Heritage Committee

The Committee inscribed this property on the World Heritage List on the basis of criteria (iii) and (vi):

Criteria (iii) and (vi): The Sterkfontein area contains an exceptionally large and scientifically significant group of sites which throw light on the earliest ancestors of humankind. They constitute a vast reserve of scientific information, the potential of which is enormous.

In response to the Delegate of Thailand, ICOMOS indicated that criterion (vi) was proposed due to the importance of the site for the history of humankind, like the Peking Man Site at Zhoukoudian (China) and the Sangiran Early Man Site (Indonesia).

BRIEF DESCRIPTIONS

The many caves in the Sterkfontein Valley have produced abundant scientific information on the evolution of modern man over the past 3.5 million years, on his way of life, and on the animals with which he lived and on which he fed. The landscape also preserves many features of that of prehistoric man.

1.b State, Province or Region: Gauteng, North West Province

1.d Exact location: 25°55' S, 27°47' E

APPLICATION FOR INCLUSION ON THE WORLD HERITAGE LIST

THE FOSSIL HOMINID SITES OF STERKFONTEIN, SWARTKRANS, KROMDRAAI AND ENVIRONS, SOUTH AFRICA

GAUTENG PROVINCIAL GOVERNMENT

DEPARTMENT OF AGRICULTURE, CONSERVATION AND ENVIRONMENT

APPLICATION FOR INCLUSION ON THE WORLD HERITAGE LIST

THE FOSSIL HOMINID SITES
OF
STERKFONTEIN, SWARTKRANS, KROMDRAAI AND ENVIRONS
SOUTH AFRICA

SIGNED Z. Pallo Jorda. on behalf of State Party

FULL NAME ZWELEDINGA PALLO JORDAN.

TITLE MINISTER of ENVIRONMENTAL AFFAIRS and TOURISM

DATE 16 June 1998.

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ACKNOWLEDGEMENTS

The following personnel and organisations have been instrumental in compiling the information for this Application. Their valuable input is acknowledged, not least in the time and energies that have been expended to achieve this report in a limited timescale:

South African Government - Department of Environmental Affairs and Tourism
South African Government - Department of Land Affairs - Chief Directorate of Surveys and Mapping
South African Government - Department of Land Affairs - Deeds Office, Pretoria
Gauteng Provincial Government - Department of Agriculture, Conservation and Environment
Gauteng Provincial Government - Department of Sports, Recreation, Arts and Culture
Gauteng Provincial Government - Office of the Premier
North - West Provincial Government - Office of the Premier
Western Gauteng Services Council
Magaliesburg Rural Council
National Monuments Council
Westour
University of the Witwatersrand - Palaeo-Anthropology Research Group
The Landowners and Residents of the Area
Bell Dewar and Hall - Attorneys
Environmental Design Partnership - Environmental Planning Consultants

SECTION ONE

1.0 IDENTIFICATION OF THE PROPERTY

a.	Country	Republic of South Africa
b.	State, Province or Region	Gauteng North-West Province
c.	Name of Property	The Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai and Environs
d.	Exact Location	Centre of WHS - 27° 47'20"E,25°55' 45"S SW corner - 27° 42' 50" E, 26° 01' 40" S NE corner - 27° 51' 45" E, 25° 49' 45" S
e.	Maps	See Appendix B Map 1 - Physical and Visual Enclosure Map 2 - Existing Land Uses Map 3 - Proposed World Heritage Site and Buffer Zone 1:50 000 ref. 2527 DC Hekpoort 2527 DD Broederstroom 2627 BA Randfontein 1995 2627 BB Roodepoort 1995 Maps 4 to 9 - Orthophotos showing main fossil sites 1: 10 000 ref: 2627 BA 5 - 1987 1: 10 000 ref: 2627 BB 1 - 1993 1: 10 000 ref: 2527 DD21- 1989 1: 10 000 ref: 2527 DD11- 1989 1: 10 000 ref: 2527 DD12- 1989 1: 10 000 ref: 2527DD 8 - 1988
f.	Area of Property proposed for Inscription:	25,000 hectares approximately
	Area of Proposed Buffer Zone:	28,000 hectares approximately

SECTION TWO

2.0 JUSTIFICATION FOR INSCRIPTION

a. Statement of Significance

The Sterkfontein Valley landscape comprises a number of fossil-bearing cave deposits which are considered to be of outstanding universal value, because they encapsulate a superbly preserved record of the fauna, including an invaluable record of the stages in the emergence and evolution of humanity, over the past 3.5 million years. This makes it, without doubt, one of the world's most important sites for human evolutionary studies and researches.

For over sixty years the sites in the Sterkfontein area (of which there are 12 main sites and many subsidiary sites) have played a most important role in the establishment of Africa as the cradle of mankind. The juvenile status of the Taung child skull and some other factors militated against the acceptance by anthropologists that the species represented had any relevance to the origin and evolution of mankind. It was not until adult specimens started to emerge from Sterkfontein from 1936 onwards, and especially after World War II with the resumption of excavation at Sterkfontein by R.Broom and J.T.Robinson, and the initiation of a new phase of excavation by P.V.Tobias with A.R.Hughes and R.J.Clarke, that the crucial clinching evidence was presented to the world of science. Above all, historically, it was the skulls and teeth and postcranial bones from Sterkfontein that established the truth of Dart's (1925) claim that these upright, small-brained creatures with small canine teeth, were primates which were knocking upon the door of humanity.

It was the Sterkfontein adult specimens that finally converted the opponents of this view and permitted the conclusion to be drawn that *Australopithecus* could legitimately be regarded as a member of the Hominidae (the family of humans). Moreover, it was these southern African fossils (which were discovered earlier than the finds in East Africa), that helped to establish Africa, rather than Asia, as the cradle of mankind, as Charles Darwin had predicted in his 1871 work, "The Descent of Man".

Hence, from both an historical and an heuristic point of view, the Sterkfontein discoveries gave rise to major advances, factually and conceptually, in the understanding of the time, place and mode of evolution of the human family. This seminal role has continued to the present with the excavation and analysis of more specimens, representing not only the skull, endocranial casts and teeth, but the bones of the vertebral column, the shoulder girdle and upper limb, and the pelvic girdle and lower limb. The Sterkfontein assemblage of fossils has made it possible for palaeo-anthropologists to study not merely individual and isolated specimens, but populations of early hominids, from the points of view of their demography, variability, growth and development, functioning and behaviour, ecology, taphonomy and palaeo-pathology.

Another major conceptual advance that stemmed from the work in the Sterkfontein Valley came with the discovery at Kromdraai in 1938 of a second type of apeman (members of the robust group). Then, for the first time, it became clearly realised that not all early hominids were ancestors of later hominids including modern humans *(Homo sapiens).* Some of the earlier hominids, it now emerged, were 'out on a limb' and made no demonstrable contribution to later hominids of the genus *Homo.*

There is also a unique feature at Swartkrans, which is close-by to Sterkfontein, in that it has revealed to C.K. Brain signs of the controlled use of fire by the early inhabitants of the cave over one million years ago - the oldest well attested signs of the mastery of fire by ancient hominids.

As regards human prehistory, the Sterkfontein Valley cave deposits provide unique testimony of the presence, the structure, functioning and behaviour of one of the crucial phases in the history of the hominids on planet Earth, namely that represented by members of the species *Australopithecus africanus.* This species shows many ape-like features but also a number of indisputably human-like traits. Many scientists consider that it represents the immediate predecessor of the genus *Homo.* It may well be the predecessor of *Homo habilis,* which is considered by many palaeo-anthropologists to be the earliest species of *Homo.* On the other hand, it may be ancestral to the robust australopithecines, such as the species known as *Australopithecus (Paranthropus) robustus* or *Paranthropus robustus,* fossils of which have been recovered from Kromdraai (from 1938 onwards) and from Swartkrans (from 1948 onwards). Thus, two viewpoints hold that *A. africanus* represents the ancestor of early *Homo* but not of the robust apemen; or the ancestor of the robust apemen but not of early *Homo.* For a third group of investigators, the Sterkfontein species *Australopithecus africanus* may represent the last common ancestor of both early *Homo* and the robust australopithecines.

Whichever of these interpretations is adopted, it is clear that the very rich population of *A. africanus* individuals whose remains have been dug up at Sterkfontein constitutes the biggest single population of ancient hominids available to date. It thus serves as an invaluable baseline for the study of the variability of a single (fossil) species. Such studies on variability are critical for the identification of new fossil specimens such as those that have come to light, in the last six years, from Gladysvale, Drimolen and Gondolin.

Another facet of the exceptional testimony to significant stages in human prehistory is afforded by the appearance, in the Sterkfontein Valley, of fossils of the genus *Homo* from about 2.0 million years onwards. Specimens testifying to these ensuing stages in human evolution have come from Sterkfontein Member 5, which is superjacent to, and geologically younger than, Member 4 (with its prolific content of *A. africanus*). Both Sterkfontein Member 5 and Swartkrans contain testimony of early stages in the stone tool cultures of Africa.

These sites are valuable, also, for the study of extinctions of communities of animals and the conditions under which the ancient faunae of Africa have either adapted or become

extinct. The cave deposits contain outstanding examples of ecological and biological processes in deep time, and over an extended period of time. In other words they provide a series of ecosystems, each frozen or fossilised at its moment in time. This succession leads right up to the current, on-going, ecological processes within the present cave system (where we have bats, lake-dwelling shrimps in the underground lake, owls and other birds that nest in the caves and other extant fauna) and in the ecozone surrounding the cave sites.

b. Comparative Analysis

The fossil hominid sites of the Sterkfontein Valley constitute the South African equivalent of a number of World Heritage sites that are of palaeontological and palaeo-anthropological importance. These include the following:

The Sangiran Early Man Site in Java, Indonesia (listed in 1996)
The Peking Man Site at Zhoukoudian, People's Republic of China (1987)
Australian Fossil Mammal Sites: Riversleigh/Narcoorte (1994)
The Lower Valley of the Awash, Ethiopia (1980)
The Lower Valley of the Omo, Ethiopia (1980)

Four of the above-listed sites have yielded the remains of ancient hominids together with those of other fossil mammals and non-mammal vertebrates (Sangiran, Zhoukoudian, Awash and Omo). In this respect, they may be likened to Sterkfontein and Swartkrans. The Australian fossil sites have yielded fossil mammals and in this respect may be likened to Bolt's Farm, Plovers' Lake, Haasgat and Minnaar's Caves in the Sterkfontein Valley. The Sangiran, Awash and Omo sites are "open" sites, accumulated in sediments on the shores of lakes or on river banks. In this respect, the sites are most extensive, especially the river valleys of the Awash and the Omo, while the conditions for the protection and preservation of bones and teeth are not as satisfactory, in general, as those obtaining in cave deposits, such as those of Sterkfontein and Swartkrans and the other caves in the Sterkfontein Valley landscape. Of the comparative sites listed here, that of Zhoukoudian is the most similar to the Sterkfontein Valley sites in that it comprises a series of fissures and caves in a karstic formation. Within the Zhoukoudian cave deposit, the preservation of the remains of *Homo erectus* is excellent and comparable in quality with those of the South African australopithecine deposits, although much younger in geological age (0.5 million years and younger) than the Plio-Pleistocene fossil deposits of South Africa.

While the Zhoukoudian caves are the world's richest source of fossil remains of *Homo erectus,* the Sterkfontein Valley sites are the richest sources of two different species of early hominids, namely *Australopithecus africanus* and *Australopithecus (Paranthropus) robustus.* In addition, for many of the reasons cited under Section 2 a. above, Sterkfontein is even more worthy of being listed in the World Heritage list than Zhoukoudian. Similarly, Sterkfontein and Swartkrans have yielded a larger haul of fossil hominids than has Sangiran in Java, Indonesia. In numbers and significance of the specimens recovered, each of the two most important South African sites, Sterkfontein

and Swartkrans, is perhaps to be compared with the Lower Awash Valley in Ethiopia and, possibly, the Lower Omo Valley in Ethiopia, although these sites, especially Awash, have yielded some geologically older hominids than any in South Africa.

It is clear that, if Zhoukoudian, Sangiran, Omo and Awash have been deemed worthy of listing by the World Heritage Centre, then a very strong case exists for the listing of Sterkfontein and Swartkrans and also for the listing of the other Sterkfontein Valley sites. Basically, the two sites of Sterkfontein and Swartkrans are intrinsically better than the two Ethiopian landscapes in that the former are cave deposits containing extremely well-preserved concentrations of remains. They are especially rich for their time levels, and in respect of certain stages in the human story, as compared with any of the other sites already listed by the World Heritage Centre, or indeed than any other sites in the world. The property which includes Sterkfontein and Swartkrans is possessed of more features than obtains in any other hominid sites, among those on the World Heritage List or not yet on the list. These features include a succession of stages in the development of humanity, biological and cultural, the oldest signs of stone tools in a sealed cave deposit and of hominid-controlled fire, diversity of palaeo-habitats represented from the well-watered, wooded and partially forested ecology of sub-Tropical southern Africa that prevailed before 2.6 million years ago, to the drier and probably cooler, less wooded, more open savanna conditions that supervened from 2.6-2.5 million years ago onwards, all of these features being encapsulated in a succession of strata in two cave formations.

c. Authenticity

As regards **authenticity,** the sites contain within their deposits all of the key interrelated and interdependent elements in their natural palaeotological relationships. Thus, the breccia representing the cave fillings contains the fossilised remains of hominids, their lithicultural remains (from about 2.0 million years onwards), fossils of other animals, plants and pollen, as well as geochemical and sedimentological evidence of the conditions under which each member of the deposits was laid down. They represent, in a word, a succession of palaeo-ecosystems. Within the Sterkfontein Formation, for instance, the six Members that have been characterised represent at least six different ecosystems, vertically superimposed upon one another.

The excavations that have revealed this information have been in progress for 62 years (intermittently) in the case of Sterkfontein and 50 years (intermittently) in the case of Swartkrans. In these periods a considerable amount of the breccia in the cave formations

has been removed by controlled excavations. In neither of these caves, however, has the entire breccia body been removed, nor is it the intention that it should ever be removed. In the archaeological tradition and ethos, a large proportion of the deposit in any cave is left as a *temoin* or witness section for posterity, for the later application of new techniques of dating and analysis, or as part of the record of our heritage.

The excellence of the cave breccias as depositories for the preservation of ancient bones is also remarkable, to the extent that even immature baby skulls of about 8 and 12 months respectively have been found at Drimolen in 2.0 million year old deposits.

d. Criteria under which Inscription is Proposed

It is submitted that the Sterkfontein Valley Sites meet the criteria for the inclusion of **cultural properties** in the World Heritage List, in particular that part of Article 1 of the Convention which reads:-

"sites: works of man or the combined works of nature and of man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological points of view."

The cave sites of the Sterkfontein Valley represent the combined works of nature and of man, in that they contain an exceptional record of early stages of hominid evolution, of mammalian evolution and of hominid cultural evolution. They include in the deposits from 2.0 million years onwards *in situ* archaeological remains which are of outstanding universal value from especially the anthropological point of view.

If the Sterkfontein Valley landscape is considered as a **cultural property,** under the definitions of the World Heritage Guidelines, it is submitted that these cave sites are of outstanding universal value from the point of view of science, archaeology and anthropology. They contain exceptional testimony to significant stages in human prehistory and to the development of cultural traditions. Further they fulfill the criteria and test of authenticity under Section 24(a) (iv) as "an outstanding example of a landscape which illustrates significant stages in human history."

As a **cultural** property, the distinctive character and components reside in:

(i) the concentration of a number of different sites in a relatively small area, sites that differ in their geological ages, hominid contents, and palaeo-ecology;

(ii) the duration of the evolutionary stages represented in this one small area and even within a single cave formation (Sterkfontein);

(iii) the historical significance of the finds made before and after World War II (in the case of Sterkfontein) and since 1948 (in the case of Swartkrans), finds which provided the world of science with fossil evidence which convinced scientists that archaic hominids that lived in Africa marked the first emergence on the planet of the hominid family;

(iv) the revelation that some of the early hominids (the robust australopithecines from Kromdraai and Swartkrans) had developed specialised features which seemingly removed them from being on the lineage of later forms of man - a concept which, although commonplace for other mammals, had not up until the time of Robert Broom's discovery of the Kromdraai robust form in 1938 and of the Swartkrans robust form from 1948 onwards, been applied validly to hominid evolution.

For these reasons, the Sterkfontein Valley Sites meet the criteria for a **cultural property**.

Of additional interest is the mode of formation of the caves and fissures in karstic formation which is the case for the dolomitic limestone formations of the Sterkfontein Valley. This is vividly illustrated in the preserved parts of the caves, their fillings and their relationship to the water-table of the region. The contents of those caves contain outstanding examples representing major stages of earth's history from the Pliocene through to the later stages of the Pleistocene. The geological processes involved in cave formation, the accumulation of deposits within the caves once they have extended towards and holed through to the land surface, the extension of caves and their intersection with independently formed caves, the secondary de-roofing of caves and the decay of the breccias thus exposed by decalcification and by the formation of sinkholes (probably in relation to the roots of vegetation that have penetrated into the de-roofed breccia) , these processes may not only be inferred from the study and reconstruction of the cave histories, but to a certain degree may still be detected in operation today in some parts of the cave systems.

SECTION THREE

3.0 DESCRIPTION

a. (i) General Description of the Property and the Buffer Zone

- Location

The proposed World Heritage Site and its buffer zone is located some 45 kms north - west of the centre of Johannesburg, and some 5 kms north of the closest urban area. The area is rural and in some parts remote, but with the increasing pressures to provide housing, commercial and industrial developments, areas such as this, which are on the edges of the conurbation, are inevitably coming under pressure. Parts of the area have attractive scenic value whilst the areas to the west and north can be considered of high scenic value. To the west and north are the Magaliesburg Protected Area and Hartebeespoort Dam both of which are important scenic, scientific and recreational resources in Gauteng.

The proposed area of the World Heritage Site is made up of a number of private farms ranging from small plots of a few hectares to farms of several thousand hectares. The area consists of a number of valleys and sub-valleys of which the main accessible valley runs from the Sterkfontein Caves in the south to extensive farming and conservation areas in the north which are enclosed by the granite outcrops of the Swartkop and associated ridge line. This main valley is a recognisable unit being well defined and enclosed topographically, except on its southern edge where topographical enclosure is less well defined. There are other ridges and valleys to the west and north which contribute to a more complex landform with many discrete valleys, often steep sided, with rivers and springs within them, and hilltops with panoramic views. These areas are generally remote with few roads and often only accessible from tracks which require a four-wheel drive. Many of these areas have been designated as Nature Reserves, Game Farms or Natural Heritage Sites and are utilised for Conservation. The edge of the proposed buffer area to the north-west is the Witwatersberg range of mountains which, as well as their scenic beauty, have an exceptionally high diversity of plant and animal species. A number of Red Data (IUCN) and vulnerable species have been recorded in the area. These include four Rare species of mammal (Brown Hyaena, Leopard, African Civet and South African Hedgehog). Of the 234 bird species recorded, three are Rare (Little Bittern, White Stork, Peregrine Falcon), two are Indeterminate, (Black Stork and House Martin) and three Vulnerable (Cape Vulture, Lappet faced Vulture and Wahlbergs Eagle). There are 19 species of plant which are either endemic or Red Data species, and the area also contains examples of Bankenveld vegetation of which only 1,6% is presently under conservation. The area has been described by the Gauteng Department of Nature Conservation as the 'best area for Conservation in Gauteng outside existing Provincial Nature Reserves.'

- Geology

A dolomite band runs through the area in a north-east to south- west direction and

underlies large areas. It is these dolomites and the associated breccias that contain the internationally significant palaeo-anthropological sites, which are the primary reason that the area is being nominated for World Heritage status. South African scientists have been actively studying the origins of man in this area for many years. Many of these breccias were found as a result of lime mining activities. This dolomite band contains some of the best known australopithecine sites in the world of which 12 are well documented and it is estimated that there may be at least another 25 (Berger-Chronos Project). These dolomites have revealed examples of hominids from over 3,5 million years ago to Early Stone Age hominids, Middle Stone Age, Later Stone Age, Early and Late Iron Age right through to present day. The sites have also revealed many thousands of fossils including previously unknown species such as the 'Dog Bear' bones discovered at Gladysvale. Further details of the scientific significance of the site are included in the Section 2 and in the following section on History and Development.

- Vegetation

Typical Highveld grassland occurs over much of the area with riverine trees in the valleys and *Cussonia* and sugarbush on the higher slopes. There is also Sour mixed bushveld in some areas and 'Central variation of the Bankenveld', which is a particularly wiry, sour grassveld.(Bankenveld is not well conserved at this stage.) It was noted that in the southern main valley there is more disturbance to the vegetation and the riverine vegetation has been invaded by some undesirable species such as poplars and wattle.

- Land Uses

The land uses in the area are predominantly Agriculture and Conservation with a small proportion of commercial and light industrial. These activities are generally small scale although there are concerns that any such activities could increase the risk of water pollution, where they occur on the dolomites. There are also a number of eco-tourism venues in the area. Activities of this nature and the more intensive forms of market gardening, dairy farming, fishing venues, wedding venues etc are concentrated in the south-east part of the valley. There is a high degree of multiple land use in this part of the Valley and this can be expected to continue. Although there is a move towards greater use of land for conservation and tourism purposes, conservation uses generally do not generate income (except game farming) and therefore other land uses need to occur as well, such as farming and eco-tourism in order to sustain this use.

(ii) Detailed Description of the Cave Sites (see also Appendix A)

Sterkfontein

The important Sterkfontein fossil hominid cave site is located near the summit of a low hill to the south of the Rietspruit river valley. The exact position is 26°01' 54" South and 27° 44' 06" East. Along with the other sites in the Sterkfontein Valley, Sterkfontein lies

in the sub-Tropical or Temperate zone, approximately 300km south of the Tropic of Capricorn.

At Sterkfontein is the geologically earliest record of any hominid in southern Africa (**Sterkfontein** Member 2, at close to 3.5 million years ago); the historically earliest discovery of an adult *Australopithecus* by Robert Broom in 1936 (Sterkfontein Member 4), following Raymond Dart's revelation in 1925 of the first-discovered African early hominid, the child of Taung; the richest source of the ancient species *Australopithecus africanus* (Sterkfontein Member 4 with fossils of about five hundred fossil specimens of this species, including juveniles and adults, males and females); the most perfect cranium of an adult of the same species, catalogued as Sts 5, known colloquially as 'Mrs Ples', also from Member 4 of the Sterkfontein Formation; two partial skeletons of the same species catalogued as Sts 14 and Stw 431 respectively; the oldest stone tools recovered from a sealed cave deposit (Member 5 of the Sterkfontein Formation 2.0-1.5 million years); the first fossil evidence of the presence in South Africa of ancient members of the genus *Homo* (Sterkfontein Member 5), probably of the same species *Homo habilis* as L.S.B. Leakey, P.V. Tobias and J.R. Napier had recognised and named from Olduvai Gorge in Tanzania in 1964; fossil signs of the presence of a robust apeman, possibly of the species *Australopithecus (Paranthropus) robustus,* from the same Member 5 as yielded the oldest stone tools and the early *Homo,* dated to between 2.0 and 1.5 million years ago.

Approximately 500 catalogued specimens of hominids have come from Members 2, 4 and 5 of the Sterkfontein Formation. The majority (from Member 4) fall into the species *Australopithecus africanus,* and this Member 4 is the greatest source of *A. africanus* fossils. A small number of specimens from Member 5 have been identified as early *Homo,* probably *H. habilis,* and a few from Member 5 are probably of *Australopithecus (Paranthropus) robustus.* The list is too great to include in its entirety, but the following are some of the more significant specimens: they are listed by their Member of origin.

Member 2:			
Stw 573	Leg-bones and foot-bones ("Little Foot")	*Australopithecus* species uncertain	1994, 1997
Member 4:			
TM 1511	Skull	*A. africanus*	1936
Sts 5	Skull	*A. africanus*	1947
Sts 71	Skull	*A. africanus*	1947
Sts 14	Partial skeleton	*A. africanus*	1947
Sts 52	Upper & lower jaws, face	*A. africanus*	1949
Stw 14	Mandible and teeth	*A. africanus*	1971
Stw 8/41	Partial spinal column	*A. africanus*	1969, 1975
Stw 252	Skull and teeth	*A. africanus*	1984
Stw 431	Partial skeleton	*A. africanus*	1987
Stw 505	Skull	*A. africanus*	1989

Member 5:			
SE 255	Maxilla with teeth	*Homo c.f. habilis*	1957
Stw 53	Skull with teeth	*Homo c.f. habilis*	1976

In addition, there are some 465 other catalogued specimens of *Australopithecus*, early *Homo* and ?*A. robustus*, comprising crania, mandibles, teeth, post-cranial bones, and endocranial casts, from deposits dating from 3.0-1.5 million years ago.

There are also thousands of other large animal remains, including sabre-toothed cats, many extinct carnivores, large monkeys and baboons, and hundreds of thousands of small animal fossils such as rodents, insectivores, reptiles and birds.

More than 300 fragments of fossil wood include liana of a tropical forest species which testifies to the forested tropical environment of the apeman.

Over 9,000 stone tools represent two cultural phases, the Oldowan industry of about 2.0 million years ago (the earliest artefacts in southern Africa) and the early Acheulean handaxe industry of about 1.5 million years ago.

Swartkrans

An almost straight line connects Swartkrans (coordinates 26° 01' 00" South, 27° 43' 26" East) to Sterkfontein and Kromdraai.

An even more robust and large-toothed form of australopithecine was recovered from Swartkrans about 1.2 km West-North-West of Sterkfontein. To this species Broom gave the name *Paranthropus crassidens,* although several other taxonomic names have subsequently been applied to it. Swartkrans is the richest source of this South African species of robust apeman, some hundreds of specimens having been excavated by Broom, Robinson and Brain. In the same cave deposit and even in the same members of the Swartkrans Formation, there have been found remains of a second species of early hominid, which was contemporary with the robust apemen: this is most commonly regarded today as representing the species *Homo erectus.* Swartkrans is one of several African sites that illustrate the synchrony of different forms of hominid about 2.0 million years ago. Swartkrans has yielded remains of ancient tools from the same time period (1.8-1.0 million years), including bone tools. A unique feature of Swartkrans is that it has revealed to Brain signs of the controlled use of fire by the early inhabitants of the cave over one million years ago - the oldest well attested signs of the mastery of fire by ancient hominids.

This site contains the greatest concentration of specimens of *Australopithecus (Paranthropus) robustus* available. Of 105 catalogued specimens, 63 are identified as belonging to this species, and they are derived from Members 1, 2 and 3. Seven specimens are of *Homo* and they are derived from Members 1 and 2. In addition, 35 specimens are of postcranial bones and their assignment to either of these hominid species

is more problematical. In addition, Member 5 has yielded 5 specimens assigned to *Homo sapiens.*

The following are some of the more important specimens:

SK 48	Cranium & teeth	*A. robustus*	1949-1952
SK 46	Cranium & teeth	*A. robustus*	1949-1952
SK 23	Mandible with teeth	*A. robustus*	1950
SK 847	Partial cranium	*Homo c.f. erectus*	1949-1952
SK 15	Mandible	*Homo c.f. erectus*	1949

Also represented are many thousands of fossils of baboons and monkeys, carnivores of the cat, hyaena, dog and other families, antelopes, zebras (including a 'giant horse'), elephant, hyrax, pigs, giraffes, hippopotami, hares and rodents. Nearly 900 stone tools have come from Members 1, 2 and 3 and, according to J. Desmond Clark, the three assemblages show no significant difference. All can be categorised as belonging to the core/chopper/flake tradition. In addition, some 68 fossil bones appear to have been used as digging tools; they stem from each of Members 1, 2 and 3.

From Member 3, 270 pieces of fossil bone were recovered that showed signs of having been burnt. C.K. Brain concluded from his analysis that fires had been tended repeatedly in the Swartkrans Member 3 gulley during its period of infilling. Brain points out that Member 3 has produced remains of nine *A. robustus* individuals, but he is unable to say whether it was these hominids, or *H. erectus*, who were responsible for the control of the fires. It is interesting to note that cut-marks on a number of bones appear for the first time in the Swartkrans sequence in Member 3. This has led Brain to suggest that, "with the management of fire, hominids started the habit of eating meat there as well". These are the oldest well-attested signs of the control of fire by hominids from anywhere on earth.

Kromdraai

The Kromdraai fossil hominid cave is situated 1.6 km ENE of Sterkfontein, coordinates 26° 00' 38" South, 27° 45' 01" East.

From this site came the first-recognised specimen of another species of apeman, different from *Australopithecus africanus* as represented at Taung and Sterkfontein Member 4. This was the type specimen of a form to which Broom in 1938 gave the name *Paranthropus robustus.* Later, further specimens of the robust species were brought to light from the same cave exposure (known as Kromdraai B), while, from Kromdraai A, a fossil fauna and tools were recovered.

The Hominid Site, Kromdraai B, has a low concentration of fossils. The most important hominid specimen is:

TM 1517	Adult cranium and mandible, teeth, upper & lower limb-bones	*A. (Paranthropus) robustus* (type specimen of *Paranthropus robustus*	1938

Other hominid bones from Kromdraai B have all been assigned to *A. (Paranthropus) robustus.* Only two stone tools have come from Kromdraai B.

Kromdraai A, the Faunal Site, is rich in bones of many different non-hominid species, including antelopes and sabre-toothed cats. As yet no hominid bones have emanated from Kromdraai A, but the Transvaal Museum, the University of the Witwatersrand and Harvard University, have found stone tools resembling those of the Oldowan industry.

Both Kromdraai A and B probably date to a period between 2.0 and 1.5 million years ago, and it is considered that the Hominid Site (B) is probably a little older than the Faunal Site (A)

Wonder Cave

Wonder cave is located at 25° 58' 13" south, 27° 46' 19" east. The site has a high fossil density and there are a high number of primates present, but no hominids to date, in the exposed breccias. The site is presently being excavated by the Geological Survey and the University of Pretoria. It has the added advantage of being easily accessible as it is also a tourist attraction with the caves having spectacular geological formations.

Drimolen

The hominid-rich site of Drimolen was discovered by Andre Keyser in 1992. The coordinates of this new site are 25° 58' 08" South, 27° 45' 21" East and it is located about 7 km NNW of the Sterkfontein caves.

Apart from Kromdraai and Swartkrans, this is one of two more sites in the landscape have recently yielded robust apeman fossils. The other site is Gondolin. Drimolen is unique in having given up the fossilised remains of the two youngest apeman individuals found to date, namely two baby skulls of about 8 and 12 months respectively. The preservation of two such immature individuals in the 2.0 million-year-old deposits testifies to the excellence of the cave breccias as depositories for the preservation of ancient bones. Although these sites have been known to be fossiliferous for some time, it is only in the 1990's that hominid remains have for the first time been found in them (Drimolen 1992; Gondolin 1997). Drimolen holds high promise of being perhaps as rich a robust australopithecine site as Swartkrans.

Of the 49 catalogued hominid specimens recovered from the Drimolen deposit, between 1992 and 1998, the following are some of the most important:

DNH 7	Cranium and mandible with dentition	?*A. (Paranthropus) robustus*	1994
DNH 18/19	Mandible with cheek-teeth	?*A. robustus*	1996
DNH 20	Partial skull	*?A. robustus*	1997
DNH 32	Distal humerus	?	1996

DNH 33	Body of thoracic vertebra	?	1997
DNH 46	Juvenile mandible & teeth	?	1997
DNH 47	Juvenile face, upper jaw	?	1997
DNH 48	Fragmentary juvenile cranium	?	1997

Although most of these specimens are considered to belong to the robust australopithecine species, *A. robustus*, one or two specimens suggest the presence of a second hominid species, perhaps early *Homo*. All of the specimens await detailed description.

The associated fauna 3 monkey and baboon species, an elephant, hyrax, hyaena, sabre-toothed cat, dog family, a dozen antelopes (including 5 of extinct species), porcupine, about 20 species of mice, rats and other rodents, 3 species of shrews and elephant shrews, a tortoise, lizard and millipedes.

Coopers B

Another dolomitic cave deposit, Coopers B, lies between Sterkfontein and Kromdraai (coordinates 26° 00' 46" South, 27° 44' 49"East).

Only two hominid specimens have been found in Coopers B breccias. One was a hominid molar tooth found by J. Staz in 1938 and described as an Australopithecus molar by J.C.M. Shaw in 1939. The other was an upper central incisor tooth which M. Pickford recovered from a box of material from Coopers B, stored in the Transvaal Museum. Pickford, Berger and Thackeray considered this tooth to be an australopithecine incisor.

Many non-hominid fossils have been extracted from Coopers B, as well as from other sites known as Coopers A and C.

Gladysvale

Gladysvale is a highly stratified cave deposit some 13 km NNE of Sterkfontein and Swartkrans (coordinates 25° 53' 42"South, 27° 46' 23" East). Known as a richly fossiliferous site since 1936, the site did not yield any known hominid remains until 1992 when a party of students led by Lee R. Berger brought to light two hominid teeth.

Later a hominid phalanx came to light. Much work lies ahead at Gladysvale, but already it is clear that a rich sequence of mammalian remains are entombed in the stratified deposit. Their excavation and analysis are likely to throw light on the sequence of faunae and of biotic change in the Sterkfontein Valley over at least two million years.

The highly stratified Gladysvale deposits have yielded numerous large horse fossils, small and medium-sized antelopes, large and small carnivores, abundant microfauna, bats, primates including hominids.

Many of the fossils recovered from the Pink Breccia exhibit extensive porcupine and carnivore damage, suggesting that the agents of accumulation were probably not hominid. This fauna from the Pink Breccia is dominated by forms that are adapted to grassland and savanna conditions. An early Middle Pleistocene date has been inferred for this infilling.

An apparently more ancient Stony Breccia has revealed the fossilised seed of a sub-Tropical wild date palm, which along with some other evidence, suggests wetter and more wooded conditions.

Several hominid remains have been recovered from the dumps. GVH 1 & 2 comprise two upper teeth which are referred to *A. africanus*, while GV 4336 is an isolated finger bone. It is not yet clear from which *in situ* member these hominid remains have stemmed. Some traces of the presence of *Homo* have also come to light from an Upper Breccia which is considered to be early Middle Pleistocene in age.

Gondolin

The coordinates of Gondolin are 25° 49' 49" South and 27° 51' 49"East and this places Gondolin (along with Haasgat), in the North West Province, whereas all of the other sites listed herein are located in Gauteng Province. Known as a fossil-bearing site at least since 1979, Gondolin yielded its first hominid remains (an isolated premolar tooth and an isolated molar tooth) in November-December 1997. These teeth appear to belong to the robust australopithecines. Gondolin is thus the most recently discovered ancient hominid site in South Africa.

The hominid specimens which were recovered by K. Kuykendall and his assistants from Gondolin Dump A in November 1997 comprise two isolated teeth:

GDA 1	Fragmented permanent premolar tooth	c.f. *Australopithecus (Paranthropus)*	1997
GDA 2	Complete permanent left mandibular second molar	c.f. *Australopithecus (Paranthropus)*	1997

It is not yet clear whether the breccia from which these two hominid teeth were extracted is the same as that from which E. Vrba removed fossils from *in situ* breccia in the Gondolin cave in 1979.

The fauna which was removed by Vrba and described by Watson in 1993 comprised fossils of 27 different species including antelopes, hyaenas, dog family, porcupines, hyraxes, hares, horses, pigs, hippopotamus and rhinoceros. The fauna suggested the former presence of a rocky, contoured environment with fair tree cover and with more open grassland plains in the vicinity.

Apart from the seven hominid-bearing deposits mentioned, at least four other cave sites

in the Sterkfontein Valley landscape have yielded fossil faunae but not, as yet, hominid remains: these are **Bolt's Farm,** (coordinates 26° 01' 38"South, 27° 42' 58" East) close to Swartkrans at the south-south-western end of the line of deposits; **Minnaar's Caves,** a series of caves, the coordinates of which are 25° 59' 24" South, 27° 46' 23" East. One of the cave deposits yielded to R. Broom, among other fossil bones, a well preserved skull of an extinct jackal of the same species as that found at Sterkfontein.

Plover's Lake, (coordinates 25° 58' 37"South, 27° 46' 35" East) is another fossiliferous cave deposit situated about 6 km NNE of Sterkfontein between Kromdraai and Drimolen, which has a fauna based not on human occupation, but probably on the lairs of leopards; and **Haasgat,** the approximate coordinates of the **Haasgat** cave are 25° 51' 31" South, 27° 50' 09" East. The cave was discovered by J.E.J. Martini and investigated by A.W. Keyser. At this stage it is not considered a 'hominid deposit', but it has been indicated that it was probably a carnivore and porcupine deposit. It has yielded to A. Keyser many fossils of baboons and monkeys.

It is likely that, with further excavation, one or more, or all of these latter four sites will yield hominid remains, but even without hominids, they preserve a valuable cross-section of the animal and plant life of this part of southern Africa over the space of a few million years.

- Elevation of Cave Deposits

Most of the cave deposits in this area lie between 1,450 m and 1,500 m above sea level. For example, at Sterkfontein, the main fossil cave (Member 4 and above) lies at an elevation of about 1,480 m; the highest point of the Sterkfontein hill attains an elevation of 1,486 m, while the extensive system of underground caves is developed at an elevation of about 1,450 m. The highest cave deposit in the area seems to be that of Haasgat which lies on the steep western slope of a north-south trending valley excavated by the Witwatersrandspruit, a tributary of the Skeerpoort River. A.W. Keyser and J.E.J Martini report that the Haasgat limeworks occur "immediately below the 1,500 m contour line on the 1:50,000 map" .

- Mode of Formation and Filling of Caves

All of the caves, fissures and tunnels which constitute the sites listed in the Sterkfontein Valley landscape were formed as a result of karstic solution in Archaean or pre-Cambrian dolomitic limestone of the Malmani Subgroup, Chuniespoort Group, of the Transvaal Sequence. It is considered that, in almost all cases, the caves started as solution cavities in the phreatic zone (below the water table). Cavitation extended in various directions while the original cave was still sequestered from the land surface. Only after the cave "holed through" to the land surface did it become possible for surface-derived materials such as sand, stones, bones, pollen, to gain access to the interior of the cave. Even within a small area, different caves "holed through" at various times: as a result older and younger deposits may be found within a circumscribed area like the Sterkfontein Valley

landscape, some deposits extending back in time to 3.5 million years, while others may have a maximum age at their deepest of 2.0 million years or even of Middle Pleistocene age (1.0-0.1 million years). The oldest deposits in the Sterkfontein Valley thus far identified are those of Sterkfontein Member 2 (close to 3.5 million years) and this is probably the deposit that contains the oldest signs of hominid remains from anywhere in southern Africa.

- Modification of Caves and Deposits by Human Agencies

Apart from natural processes, such as weathering, de-roofing, and roof and wall collapse, the geologically pristine state of the completely or partially filled caves has been considerably altered by lime operations. Almost every one of the caves in the Sterkfontein Valley was originally the scene of a limeworks. The demand for lime was very great, especially after the introduction to the Witwatersrand of the Macarthur-Forrest cyanide process for the extraction of gold from the auriferous conglomerate in 1889.

An Englishman, Hans Paul Thomasset started quarrying for lime in the Sterkfontein area about 1895. Gladysvale was mined for limestone and bat guano from 1902 onwards. Other sites that were worked at various times for lime included Haasgat, Gondolin, Swartkrans, Kromdraai.

A second kind of human intervention in the altering of the caves was that inflicted by vandals and souvenir-hunters, especially from 1896 onwards when Guglielmo Martinaglia blasted through into the previously sealed underground caves at Sterkfontein, festooned as they were with myriad stalactites and stalagmites, said to have been of singular beauty. Within a short time of the opening of these underground caves and the attendant press publicity, in the 1890's, much vandalism had been perpetrated, stalactites had been broken off and collected. It took a year or two before an effective control mechanism was introduced, as a result of the serious interest taken in the site by the Geological Society of South Africa from 1897-1898. Over the ensuing century, there were innumerable, often unauthorised visits to the caves. Fossil souvenirs, rock specimens and other mementoes were removed. A greater sense of responsibility has been evident in the second half of the 20th century and strict control is maintained, especially at the three sites which have been proclaimed as national monuments, namely Sterkfontein, Kromdraai and Swartkrans.

A third kind of human modification of the cave sites and their deposits has been that by scientists. Palaeontologists, archaeologists and palaeo-anthropologists have conducted excavations at most of the sites listed herein; only at Minnaar's Caves has little or no systematic excavation been carried out, but some surface collecting has been made. At present systematic excavations are being carried out at Sterkfontein, Gladysvale, Drimolen and Gondolin, with sporadic, systematic work at Kromdraai and Cooper's B, while major excavations at Swartkrans and Haasgat have been largely completed.

Digging at Sterkfontein has so far extended from 1936 to 1998, at Kromdraai

intermittently from 1938 to 1994, at Swartkrans from 1948-1949 and from 1965 to 1992, at Gladysvale from time to time between the 1930s and 1948, and more intensively from 1988 to 1998, at Drimolen from 1992 to 1998, at Gondolin in the early 1980's and again during 1997-1998. The extraction from the excavated breccia of hundreds of specimens of hominids and thousands of other animal fossils, under careful laboratory conditions, has revealed the immense scientific importance of a number of the sites in the Sterkfontein Valley landscape.

Thus, especially from the activities of limeworkers up to about the middle of the 20th century, and from those of palaeo-anthropologists for a few years before World War II and, following that war, for much of the second half of the century, the external appearance of most of the caves in the Sterkfontein landscape has been considerably altered.

iii. Criteria Used to Determine the Extent of the World Heritage Site and its Buffer Zone

The criteria for determining the area of a World Heritage Site and its buffer zone are clearly set out in the Guidelines for nomination of properties. The area proposed for World Heritage status must have *'outstanding universal value.'* This has been addressed in Section Two. The notes relating to the Buffer Zone are also important : *" in considering whether to propose a buffer zone it should be borne in mind that, in order to fulfil the obligations of the World Heritage Convention, properties must be protected from all threats or inconsistent uses. These developments can often take place beyond the boundaries of a property. Intrusive development can harm its setting, or the views from it or to it. Industrial processes can threaten a property by polluting the air or water. The construction of new roads, tourist resorts or airports can bring to a property more visitors that it can absorb in safety."*

The criteria that have been used in the Sterkfontein Valley are as follows:

1. Topography (See Map 1)

The area consists of large scale undulating lands, rural in character, in which most activities occur in the valleys in the south and east of the site. The underlying geology determines the landforms. Essentially the dolomite area consists of rounded rolling hills but often scattered with small rocks making large areas unsuitable for crop farming. Granite outcrops form some of the more prominent landforms making up the Swartkop and adjacent ridges and creating an important topographical landmark in the area. There are also other prominent hills in the area including the Spioenkop and Eaglekop. Essentially the valley in which the main fossil sites occur is well defined topographically being bound by the granite ridges to the south-east, east and north-east, and a series of ridges to the west. It has a clear sense of identity and sense of place. The greater enclosure of the area is provided by the Witwatersberg to the north-west, and the steeply dissected hill area around Broederstroom to the north. There are views out eastwards

from the north-east parts of the site where these are north of the Swartkop, but the Swartkop Ridge forms the primary horizon in the east, from the southern parts of the valley and is the main visual shield to the urban areas to the east. The Witwatersrand Botanical Gardens sit below the cliffs of an important ridge that screens Krugersdorp to the south and south-east. Urbanisation has already crept over this ridge and further encroachment will impact negatively on the Sterkfontein area. The area to the south-west is less well defined but extends to the hilltop areas of the Krugersdorp Game Reserve and other more minor ridges.

In attempting to define the World Heritage Site and buffer zone, topographical integrity was considered to be an important factor with the enclosing landforms being utilised to visually protect the area from the influence of incompatible uses which may spoil the essential rural character of the Valley.

2. Geology and Palaeo-anthropological sites. (See Maps 2 and 3)

The palaeo-anthropological sites are located in the dolomite band which runs in a south-west to north-east direction through the area. As hominid remains have usually been found in breccias in dolomite in South Africa it is reasonable to assume that the dolomite area should be protected in order to safeguard potential future fossil sites. As well as plotting existing sites based on GPS information, the extent of the dolomites has also been taken into account. It is predicted that there could be many more, as yet, undocumented fossil sites within the dolomitic area.

3. Existing Conservation Areas, Ecotourism destinations etc. (See Maps 2 and 3)

There a number of existing Nature Reserves already declared in and around the Sterkfontein Valley and a number of other sites declared as Natural Heritage areas. There are also sites close by that are protected in some way for conservation including the Witwatersrand National Botanical Gardens and Krugersdorp Game Reserve to the south, The Magaliesburg Protected Area to the north- west and the Hartebeespoortdam, Cheetah Park and Diepsloot Nature Reserves to the north and north-east. There are also other initiatives in and around the area and the Provincial Department of Nature Conservation has already identified the greater area of the site and sites to the north-east and south-west as potential Conservation / Recreation areas. The Kareesbosrand Conservancy to the north-east, is presently working through a public participation process to establish the Rhenosterspruit Nature Reserve in their area. Overall there is potential to create a linked open space protected zone in this area which could amount to well over 75 000 hectares. Some of these proposals are already encapsulated in the Western Gauteng Services Council Land Development Objectives. When looking at the options for the Buffer Zone in particular, the way the buffer might link into these other initiatives was given careful consideration.

There are also a number of farms which have been declared Natural Heritage Sites by their

owners - these include Uitkomst and part of Diepkloof Farms. Plovers Lake on the Farm Kromdraai is also a Natural Heritage Site. These farms, together with declared Nature Reserves, represent a large proportion of the proposed World Heritage Site.

In addition there are a number of eco-tourism, environmental education, and Arts and Crafts destinations in this area. These include the Crocodile River Ramble which is essentially to the north and north-east of the area and there are also facilities within the area itself. These include the facilities associated with palaeo-anthropological sites such as Sterkfontein Caves and the Wonder Cave, educational facilities at Plovers Lake and other attractions such as restaurants, the Rainbow Trout Farm, the Rhino and Lion Reserve (which there are proposals to expand), the Kromdraai Gold Mine, and Moteste Game Reserve. There are also organised hiking and horse trails in the area. In addition several landowners permit scientific personnel access to their properties for the purposes of Palaeo-anthropological and Archaeological digs, Biological and Geological investigations. The more remote farms in the north-west are also often used for film making. There is potential and a desire by some owners to expand ecotourism on their farms, whilst others would prefer to allow limited access only, such as for the purposes of scientific study and education.

In addition an application to build a Casino, Golf Course, hotel and other facilities has been made at the western foot of the Swartkop. To date this has received approval of the Gambling Board but still has to be vetted by Gauteng Province in terms of its Environmental Impact. This proposal includes some initiatives relating to the expansion of Game Farms in the area and funding for interpretation of museum facilities related to the World Heritage Site.

The University of the Witwatersrand presently run a small Museum, Tea Room and Cave Tours at the Sterkfontein Caves in conjunction with the Rotary Club but there are proposals to upgrade this facility in terms of expanding the Museum and interpretation facilities. The Transvaal Museum in Pretoria also contains exhibits from the area. At this stage though, the facilities available in the area for the general public to view its palaeo-anthropological treasures is limited, and does not fulfill the potential that exists.

The majority of ecotourism facilities at present are located in the south- eastern parts of the Valley.

4. Accessibility

The area is rural and although there are some relatively major roads close by, access to and within the site is limited. The area is served by the Krugersdorp Highway (R28) which runs from Pretoria to Krugersdorp to the east of the area. Access from here is through the neck in the terrain past the foot of the Swartkop. This road is unmade at present, but is the main point of ingress. The other main point of ingress is to the south from the Road which accesses from the end of the R28, and from the main road to Ventersdorp, Magaliesburg and Hekpoort (R 563). Part of the road system is tarred but

the road that runs past the Sterkfontein Caves is unmade. There is also a dirt road which runs north and out to the Broederstroom to Lanseria Road (R512) which is also a dirt road. Access from these roads on to farms is by dirt roads. The farms in the north and north-west of the area are extensive and can largely only be accessed by four-wheel drive. There are one or two private farm roads accessing the area from the Hartbeeshoek Road but there are no public roads from the north - west directly into the site.

In determining the World Heritage site, and levels of use within it, accessibility is considered to be an important factor as opening up areas would involve road improvements or even new roads which could well impact negatively on the area. Levels of accessibility can also be used as a tool to manage visitors, encouraging access to areas where roads are better.

Thus new ecotourism facilities that might go with World Heritage status would be likely to be concentrated around existing roads and points of ingress. This is largely the south-eastern part of the area.

5. Present Land Uses (See Map 2)

As previously described, the land uses in the area are primarily rural activities such as farming and conservation with ecotourism on a small scale. There are also some small scale light industrial and commercial uses. The majority of intensive farming uses, such as market gardening and battery-type farming, as well as the better pastures are concentrated in the south-eastern parts of the area, as are the non farming uses. This is also the area where the ecotourism destinations are located as well as the majority of known palaeo-anthropological sites. This no doubt relates mainly to the quality of the soils, presence of water, and accessibility.

The majority of the more extensive uses such as larger scale grazing, game farms and Nature Reserves and Natural Heritage Sites are located in the western and northern areas of the site and are generally more inaccessible.

6. Development Pressures

The area is located on the western fringes of the Greater Johannesburg conurbation and Krugersdorp lies very close to the south. There are already changing land use patterns right up to eastern side of the Krugersdorp Highway (R28) as land uses intensify and the character of the area starts to change to peri-urban. Development of the suburban fringe of Krugersdorp is already starting to impact negatively on the area from a visual point of view, and has also adversely impacted on the Witwatersrand Botanical Garden which is in danger of becoming an island in the suburban sprawl. There is an immediate need to provide protection to the Sterkfontein area from these real and present threats. The other fringes of the area are less threatened mainly because they are well protected by topography. These threats are very pertinent to the positioning and extent of the buffer zone.

7. Cadastral Boundaries

In terms of finally deciding on the delineation of the World Heritage site and Buffer Zone, cadastral boundaries have been taken into account to ensure logic to the inclusion of Farms and Farm Portions into each area.

To summarise therefore the main criteria that have been used in determining the extent of the World Heritage site and its buffer zone are:

- Topography and visual integrity
- Geology
- Location of existing and future Palaeo-anthropological sites
- Conservation initiatives in and around the area and Local Development Objectives
- Accessibility
- Existing Land uses and Ecotourism destinations
- Development Pressures
- Cadastral boundaries

b. History and Development

Sterkfontein

The early history of the Sterkfontein valley is closely connected with the search for gold. Two of the pioneers in the search for gold were the brothers Harry and Fred Struben. Oscar Anthony Jacoby owned the farms Sterkfontein and Zwartkran(t)s and these were sold to H.W. (Harry) Struben at the beginning of 1884 for the sum of £2,800.

From January to March 1884, Fred Struben worked in the Sterkfontein area: on the second day of his prospecting activities there, he found gold-bearing quartz. However, he did not find the site to be promising and turned his attention in April 1884 to the farm Wilgespruit. Although Fred Struben discovered a rich reef, which he named Confidence Reef, on Wilgespruit in September 1884, he continued working intermittently, and with little success, at Sterkfontein for much of 1884.

During a holiday taken by Harry Struben and his family in April 1884 in this area, his wife Mary recorded in her diary, "We all went off on horseback, on donkey and on foot to explore caves, some large vaulted caves and others very narrow and lovely with exquisite stalactities." This may well be the earliest reference to stalactitic caves in the Sterkfontein area.

As far as published records go, the discovery of the bone-bearing breccias at Sterkfontein was made between 1895 and 1897. Hans Paul Thomasset began quarrying for lime in the Sterkfontein area about 1895. There is no precise record of where he worked, nor indeed if it was at the main Sterkfontein cave site. It certainly was at Sterkfontein cave site that

the Italian-born Guglielmo Martinaglia, a gold- and lime-prospector and Rand pioneer, blasted into the extensive underground cave system late in 1896. On 12th July 1897, David Draper referred to these Sterkfontein Caves at a meeting of the then recently established Geological Society of South Africa. The press publicity that followed the revelation of the underground caves led to a wave of visitors, vandalism and souvenir hunting. Thus, Draper told the Geological Society that he had persuaded the directors of the company which owned the mineral rights to Sterkfontein "to place the caves under the protection of their manager who would have instructions to prevent any wanton destruction of their interior".

The opening of the stalactitic caves at Sterkfontein was referred to again by H. Exton in his presidential address to the Geological Society for 1898. Further references occurred in European periodicals such as the *English Mechanic and World of Science* of 27th August 1897 and the French magazine, *Cosmos* (1897 and 1898). In the latter article, one of the Marist Brothers of Johannesburg reported on a visit he and seven colleagues paid to the Sterkfontein Caves and gave what may well be the first detailed description of the caves. Among other interesting features, they referred to their discovery of a fossil jaw with the teeth of a large antelope. This was 100 years ago.

For over thirty years thereafter, there is no record of any scientific work at Sterkfontein. In 1925, when there was much excitement over the Taung skull (the type specimen of *Australopithecus africanus)*, R.A. Dart who had revealed the Taung child to the world was sent some fossilised bones from Sterkfontein, as well as from Makapansgat in the Northern Province. The Sterkfontein consignment included the skull of a large baboon which Dart considered to be similar to the living form, and so he concluded that, unlike Taung, the Sterkfontein deposit must be relatively recent and he apparently did not follow up with a visit to the site. In 1931 or 1932, the site was visited by J.H.S. Gear and the brothers Goedvolk. They recovered masses of bone-bearing breccia at Sterkfontein and removed some to the South African Institute for Medical Research of which Gear became director. In 1935, Trevor Rubidge Jones collected and studied some fossil baboons from Sterkfontein. In that year, R.M. Cooper of Krugersdorp, then the owner of the Sterkfontein caves, published a little guide book with the prophetic call, "Come to Sterkfontein and find the missing link".

The subsequent history of the scientific study of Sterkfontein may be divided into four phases.

Phase I: 1936-1939

Despite the interest in cave sites following the momentous discovery of the first australopithecine fossil at Taung in 1924, it was not until 1935-1936 that the bone-bearing breccias at Sterkfontein became the focus of a protracted scientific search for hominid fossils. The reason for this apparent neglect probably resides in the fact that Dart had, in the early 1920s, examined a consignment of fossil bones that had been collected at Sterkfontein and sent to him after the announcement of the Taung discovery. From these,

Dart considered that the deposit was relatively recent compared with Taung.

In 1935, one of Dart's students, Trevor-Jones, recovered fossil baboon skulls from the Sterkfontein deposit. Two more of Dart's students, Schepers and Harding Le Riche, visited Sterkfontein in 1936 and recovered a collection of bones that included more baboons. On Dart's advice, they showed these to Robert Broom , who in 1934 had joined the Transvaal Museum, Pretoria. Broom visited the site with Schepers and Le Riche on 9th August 1936 and alerted the caretaker (Barlow) of the Sterkfontein caves, to be on the lookout for fossils that resembled the Taung skull. On Broom's third visit to the site, on 17th August 1936, Barlow handed him part of the skull and natural endocranial cast of an adult australopithecine - the first discovery of its kind since the child skull was recovered from Taung a dozen years earlier.

From 1936 to 1939, Broom found a number of additional remains of these fossil hominids, comprising crania, upper and lower jaws, teeth, and some limb bones. Most of these specimens came from the main Sterkfontein lime quarry, an area that was to be called the "the type site" and from a stratum that the South African geomorphologist Timothy Partridge, who established the stratigraphic sequence of the deposit, later designated Member 4 of the Sterkfontein Formation.

In 1937, Broom was invited to attend the International Symposium on Early Man held at the Academy of Natural Sciences in Philadelphia. Six months later he returned to Sterkfontein and found that Barlow had switched operations to a "lower cave", 10 m lower and a short distance east of "the type site". This part of the deposit belonged to the same formation as the main quarry, and from it Broom recovered some additional australopithecine specimens.

All of the Sterkfontein fossils found in that period provided a picture of what the adult australopithecines had looked like, and, in broad terms, their morphology confirmed for the adult what Dart had claimed for the Taung child. Broom at first ascribed the Sterkfontein form to the same genus, *Australopithecus*, but to a different species, which initially he designated *Australopithecus transvaalensis* . Later, however, after he recovered some diagnostic teeth, such as the lower first deciduous molar, Broom came to believe that the Sterkfontein australopithecine represented a genus different from that of the Taung specimen. To accommodate it he proposed to classify the Sterkfontein apemen as *Plesianthropus transvaalensis*. However, J. T. Robinson, Broom's assistant and eventual successor, lumped the Sterkfontein australopithecines into the same species as Dart had created for the Taung hominid, though as a different subspecies, *Australopithecus africanus transvaalensis*. The name *Plesianthropus* became of only historic interest, although a reminder of it persisted in the nickname, "Mrs. Ples", popularly assigned to one of the most complete crania from Sterkfontein (Sts 5), and "Mr. Ples", the soubriquet given to another fine cranium (Stw 505).

With the outbreak of World War II, scientific excavation at Sterkfontein was suspended. The first phase of activity culminated in the 1946 publication of a monograph by Broom

and Schepers that provided a summary of all australopithecine material found up to that date at Taung, Sterkfontein and Kromdraai.

Phase II: 1947-1949

Encouraged by Field Marshal J.C. Smuts, South Africa's World War II premier and author of *Holism and Evolution*, Broom, assisted now by Robinson, resumed excavation at Sterkfontein in 1947. They were immediately rewarded by the recovery of a complete cranium of an adult australopithecine (Sts 5, or "Mrs. Ples "). This discovery, along with a number of scientific papers from Dart, Broom, Schepers, and Robinson, served to bolster a growing international interest in the South Africa hominids. Among the earliest postwar visitors and converts to Dart's viewpoint on the australopithecines was the British anatomist W.E. Le Gros Clark (1895-1971), whose meticulous studies of these hominids from 1947 onward did most to turn the tide of scientific opinion toward the acceptance of *Australopithecus* as a hominid.

Broom and Robinson continued working at Sterkfontein until 1949. This phase yielded a number of important specimens that included a lower jaw, a complete hipbone, an incomplete femur, a few vertebrae, a partial skeleton, and several incomplete crania. In 1949, Broom and Robinson shifted their efforts to the neighbouring site of Swartkrans.

Phase III: 1956-1958

The third phase opened in 1956 when C.K. Brain discovered stone artifacts embedded in the breccia of an upper level (Member 5) of the Sterkfontein deposit. Prior to this, no stone implements had been recovered from any of the early hominid sites.

The Sterkfontein artifacts came mostly from the West Pit, to the west of the main quarry. This area was at first called the "Extension Site" but the term was misleading since it suggested to some a different cave site from that where the original Sterkfontein discoveries were made. The stone-tool-bearing breccia constituted Member 5 of the Sterkfontein Formation.

In 1957, Robinson returned to Sterkfontein, where he excavated a volume of the artifact-bearing breccia. Apart from more stone artifacts, he recovered during 1957-1958 a juvenile upper jaw containing teeth, some isolated teeth, and part of a neck vertebra. These remains he attributed to *Australopithecus africanus*, which had been found in the subjacent Member 4, implying that *A. africanus* was the stone-tool maker. Later, P.V. Tobias, who had been working on *Homo habilis* from Olduvai Gorge in Tanzania, found that the Sterkfontein Member 5 teeth were morphologically close to those of *H. habilis*, who he proposed was also the Sterkfontein toolmaker. The matter was not resolved until finally a skull attributed to *H. habilis* was found in Member 5 in 1976 (*vide infra*).

After his 1957-1958 work at Sterkfontein, Robinson recognized three breccia units: a lower breccia, which had proved a rich source of fossils of *A. africanus*, yielding 100

catalogued specimens; the artifact-bearing Middle Breccia; and a thin deposit of more-recent, tool-bearing Upper Breccia immediately under the roof of the original cave. Partridge labelled these three breccia deposits Members 4, 5 and 6 of the Sterkfontein Formation, respectively, and he identified three still lower deposits, respectively Members 1, 2 and 3.

Phase IV: 1966-1998

In 1966, Tobias initiated a new long-term excavation at Sterkfontein. From 1966 to 1991, the work was carried out by a full-time team of excavators under A.R. Hughes (1916-1992), who had for fifteen years conducted excavations for Dart and for Tobias at Makapansgat. His experience as an excavator of the intractable dolomitic limestone cave breccias was put to excellent use at Sterkfontein, and for a quarter of a century the work continued at the site under his direction. During this period, nearly 500 more specimens of hominids were recovered, over and above the 100 that had been recovered by Broom and Robinson. Most of these new specimens stemmed from Member 4 and could be assigned to *A. africanus*. A smaller number came from Member 5, along with stone tools. Systematic studies on these hominid remains were begun by Tobias, his collaborators, and research student in the 1990s.

On 9th August 1976 and over the ensuing eight days, Hughes recovered from Member 5 a cranium, including palate and maxillary teeth, and part of the mandible of a hominid. The skull proved to be close in its morphology to *H. habilis* recovered from Beds I and II of the Olduvai Formation in northern Tanzania. The recognition of *H. habilis*, or a form very closely related to it, in the artifact-bearing Member 5 of Sterkfontein appeared to resolve the problem of the authorship of at least some of the stone tools from Member 5.

In 1991, work commenced on the much older, *in situ* breccia of Member 2 of the Formation, as exposed in the Silberberg Grotto, named after H. Silberberg (who in 1942-1943 had discovered in that grotto a very primitive member of the hyaena family, which had led Broom to revise his conception of the dating of the Sterkfontein deposits). Member 2 proved to be rich in fossil remains, and it was hoped that a hominid appreciably older than *A. africanus* of Member 4, would come to light. In 1994 Clarke recognised four articulating bones of a hominid left foot from Member 2: he and Tobias found that it combined human-like with chimpanzee-like features. They called it "Little Foot". In 1997 Clarke recovered another eight bones of the feet and legs of the same individual.

While work on Member 2 continued, Clarke and Kathleen Kuman, delved into the stone implement-bearing Member 5. They found that there were at least two culturally distinct horizons within Member 5. The problem of determining which hominid was associated with each cultural phase became an important objective. Moreover, in 1992-1993, the discovery of a few teeth attested to the presence of *A. (Paranthropus) robustus* in Member 5, contemporaneous with early *Homo.*
Studies of the fauna and the stratigraphy of the Sterkfontein Formation and comparisons

with the well-dated sequences of East Africa have led to the conclusions that Member 2 (with "Little Foot") is between 3.0 and 3.5 million years old, and very likely closer to 3.5 myr; Member 4 is 2.8-2.6 myr; and Member 5, 2.0-1.5 myr. Work at present is concentrating upon the two oldest fossil-rich members, 2 and 3.

Swartkrans

The farm Zwartkran(t)s had been purchased by the pioneering gold-prospector H.W. (Harry) Struben at the beginning of 1884. Then for over sixty years, there is no record of any scientific activities in the Swartkrans cave. In 1948, R. Broom and J.T. Robinson, excited by their discovery the previous year of the excellent cranium of an adult australopithecine, dubbed "Mrs. Ples", were continuing their work at Sterkfontein, when they were approached by Wendell Phillips, organiser of the University of California Africa Expedition. Phillips suggested to Broom that, if he knew of any promising spot, he - Phillips - would help finance its working and the finds could be shared. Broom accepted the proposal with alacrity. In the Introduction to his book, *Swartkrans Ape-Man Paranthropus crassidens*, which appeared posthumously, a year after Broom died on 6th April 1951, appear these words of Broom, "We at once thought of a deposit at Swartkrans, which we had known of for a dozen years and had always intended to work at as soon as a good opportunity arose."

From this single reference, it seems that Broom must have known of the Swartkrans site since about 1936, the year in which he first visited the area, when he was taken to Sterkfontein by Dart's students, Schepers and Le Riche.

At the beginning of November 1948, Broom placed a small work party at Swartkrans. Within the first week, the site gave up the remains of what Broom called "a new type of Ape-man". This first phase of the field work lasted until November 1949. The palaeontological work was then interrupted by lime-mining operations for about a year. After Broom's death, Robinson continued working at Swartkrans until 1953. The site proved to be very rich and in this first phase there were recovered remains of at least sixty individuals of the robust apeman, *Australopithecus robustus crassidens*, or, as Broom called it, *Paranthropus crassidens*, that is, he made it a new species of the genus *Paranthropus*. With the remains of the apeman were found fossilised bones of early *Homo* (originally called by Broom and Robinson *Telanthropus capensis*). These remains provided the first evidence from anywhere in Africa that two different hominid species, one an australopithecine and the other early *Homo*, had lived contemporaneously in the same area.

Swartkrans was abandoned by the palaeontologists in 1953.

Fieldwork was started again in 1965 by C.K. Brain of the Transvaal Museum and continued until 1992. The cave and the surrounding farm were put up for sale in 1968 and were bought by the University of the Witwatersrand. The University continued to give free access to the site to Dr. Brain until the end of his programme of excavation.

The operations at Swartkrans by Broom and Robinson in the earlier phase, and by Brain in the later period, revealed an astonishing wealth of fossil hominids, as well as tools of stone and bone, and early signs of the controlled use of fire by the cave-dwellers. The five members comprising the Swartkrans Formation span a time which is co-extensive with the Earlier Pleistocene, namely from 1.8 to 1.0 million years. The later Swartkrans deposits lack *A. robustus* fossils. This suggests that the lineage of robust australopithecines had reached an evolutionary dead-end, or at least was no longer present in this part of Africa. In contrast the lineage or lineages of *Homo* persisted.

Swartkrans is one of the two richest apeman-bearing cave sites in the world, the other being the Sterkfontein cave.

Kromdraai

On 8th April 1895, David Draper reported to the Geological Society of South Africa in Johannesburg on his visit to the Kromdraai Caves, where he had found bone-bearing breccias. He had collected specimens and forwarded them on 1st February 1895 to the British Museum (Natural History), London, now the Natural History Museum. They do not appear to have been studied and the fossil bones had not been extracted from the breccia for over sixty years! The breccia specimens in the Natural History Museum were "re-discovered" by the famous Kenyan palaeontologist, L.S.B. Leakey, in 1958.

Of the excavated trenches known as Kromdraai A and B, it was Kromdraai B which yielded hominid remains. In June 1938, a schoolboy, found parts of an early hominid skeleton. Some pieces came into the hands of Robert Broom, who recovered other parts of the skeleton from the schoolboy and from the site. It comprised part of the brain-case and face, palate, upper and lower jaws, some 16 teeth, and upper and lower limb-bones. Broom recognised that it represented a more heavily built creature, with bigger premolar and molar teeth, than the apeman from Sterkfontein. He made it the type of a new genus and species, *Paranthropus robustus.* Some scientists still use the name *Paranthropus*, whilst others classify this kind of apeman in the same genus, *Australopithecus*, as the specimens from Taung, Sterkfontein and Makapansgat. Tobias has proposed retaining *Paranthropus* as a sub-genus: the Kromdraai hominid would then be known as *Australopithecus (Paranthropus) robustus.*

Further remains were recovered at Kromdraai by Broom in 1941, by C.K. Brain and B.J. Grobbelaar in 1954-1955, by E.S. Vrba in 1977-1980, and one or two additional specimens by J.F. Thackeray, L.R. Berger and C. Menter in the 1990s.

Kromdraai A, known as the Faunal Site, has yielded scores of stone tools, but as yet no signs of the tool-making hominid has come to light. From Kromdraai B, the Hominid Site, only a couple of stone tools have been recovered. The fauna identified from Kromdraai indicates that the Hominid Site (KB) is somewhat older than the Faunal Site (KA), but both deposits fit into the Lower Pleistocene (1,8-1.0 million years ago). This would make Kromdraai of an age with Sterkfontein Member 5, Swartkrans Member 1

and Bolt's Farm: these deposits represent the time of the most recent survival of the australopithecine apemen in South Africa.

Coopers B

This site, between Sterkfontein and Kromdraai, had been worked by lime-miners prior to the 1936-1938 discoveries at these caves. In 1938, a hominid molar tooth was discovered in the limeworkers' dumps. It was described by J.C. Middleton Shaw, as an *Australopithecus* molar. During the period from 1945 to 1950, P.V. Tobias and his fellow-students searched through part of the dumps, to no avail, while C.K. Brain, in 1954, excavated the site extensively, also without success. In his 1958 book, *The Transvaal Apeman-Bearing Cave Deposits*, Brain stated, "... it has been decided not to describe Coopers B as an australopithecine site unless further material comes to light from it."

It was not until 1989 that Martin Pickford, examining fossils stored in the Transvaal Museum, Pretoria, identified among the Coopers B material an isolated upper central incisor tooth which he identified as hominid. Pickford, along with L.R. Berger and J.F. Thackeray, described the tooth and considered it to be an australopithecine tooth.

In the light of these two isolated finds, separated in dates of "discovery" by close on sixty years, Coopers B should be listed among the South African early hominid sites. Accordingly, Berger and Thackeray have obtained a permit to re-excavate Cooper's sites.

Drimolen

This important new and relatively little known hominid site was discovered by A.W. Keyser in 1992. He has been engaged in the excavation of the site since that time, being assisted most recently by C.G. Menter, and others.

The deposit is exceptionally rich in hominid fossils and it has already yielded 49 hominid specimens, mainly of robust australopithecines.

Among the more spectacular finds are two fossil children found in 1997; one is a partial cranium and deciduous teeth of a child, probably of a robust australopithecine, which died at about 8 months of age; the other is a lower jaw, deciduous teeth and forearm bones of a child which Keyser regards as a one-year-old, probably of an early *Homo* individual. These two specimens represent the youngest early hominids ever discovered. Another superb find is the lower jaw, with a full set of milk teeth, of a robust australopithecine child of about 18 months of age. Yet another specimen is the completest *A. robustus* adult skull.

Keyser is continuing to conduct systematic excavations on this site which may well come to rival Swartkrans as the richest site for robust australopithecines in South Africa.

Gladysvale

This site was mined for limestone and bat guano from 1902 to 1910 and then, intermittently, through the 1920's by George Norton of Krugersdorp. It is said that, during the course of these mining activities, many fossils were blasted from the cave, but it seems that only a few specimens were collected by visitors and miners. By 1928, mining operations had ceased. The site was visited by Dr. George van Son in the 1930's and he reported to R. Broom that he had seen what he took to be a fossilised human-like jaw in the exposed breccia of the Gladysvale cave. On a subsequent visit the jaw could not be found. Broom's visit to the site, as a result of Van Son's report, led to the recovery of fossils during a few short visits in 1936: these included remains of a small monkey or baboon, a large member of the horse family, an extinct hyrax or dassie, and other animals.

P.V. Tobias organised two collecting trips by Witwatersrand University students in 1946 and 1947. Much breccia from the limeworkers' dumps was broken up, and the fossils collected included a fine, nearly complete cranium of a small baboon which was identified as representing an extinct species, *Papio c.f. izodi.*

After these preliminary visits, Peabody and Camp of the University of California, Berkeley, excavated intensively in 1948. The fossils they recovered from Gladysvale were identified and featured in various check-lists of mammals. The list published by H.B.S. Cooke in 1963 featured no fewer than 30 species from Gladysvale. These included insectivores, a primate, rodents, carnivores, a hyrax, a horse and a rhinoceros, and a multitude of antelopes.

A later phase of excavation at Gladysvale was begun in 1988 by A. Keyser of the South African Geological Survey, Pretoria, and several of his colleagues. They mapped the subterranean chambers of the cave and collected fossils, mainly from the dumps. In October 1991, Keyser was joined by L.R. Berger, a PhD student in the Department of Anatomy and Human Biology at the University of the Witwatersrand. Berger's activities at Gladysvale led to the discovery of many species which had not previously been reported from Gladysvale, including the first signs of hominid remains.

In April 1993 Berger embarked on a long-term survey and systematic excavation under the Palaeo-Anthropology Research Unit at the Witwatersrand University. He was joined in this in 1996 by a team from the University of Zurich in a major international collaborative research programme at Gladysvale. These intensive studies are still in progress. Already they have provided evidence that more than a single depositional event is represented in the Gladysvale deposits; the younger of these appear to belong to the earlier part of the Middle Pleistocene (1.0-0.1 million years). The as yet sparse hominid remains seem to compare most closely to remains of *Australopithecus africanus* or of early *Homo* from other African sites.

Bolt's Farm

In the 1930's, from 1936 onwards, Broom made a number of references to fossils he had identified from "Bolt's workings". Some of the forms he had earlier identified are referred to in the important 1946 monograph by Broom and Schepers. These include a small herpestine carnivore *(Crossarchus transvaalensis)*, a large fossil golden mole, *Proamblysomus antiquus,* and a sabre-toothed cat *Machaerodus transvaalensis.*

In his *Finding the Missing Link* (1950), Broom again refers to Bolt's workings. Meantime, on Broom's advice, P.V. Tobias (then an undergraduate) and his fellow-students visited Bolt's Farm in May 1945. A well-preserved hyaena mandible was obtained by Tobias: the specimen was taken to the Witwatersrand University Department of Anatomy.

By the time H.B.S. Cooke compiled his tables of the fossil mammals in the cave breccias of South Africa in 1963, he was able to list no fewer than 58 different mammalian forms from Bolt's Farm, mostly those that Broom had identified. Cooke considered them to belong to the "Swartkrans stage" of South African fauna. Today this would be equated with Sterkfontein Member 5, Swartkrans and Kromdraai, but unlike these other cave sites in the area, no remains of *Australopithecus* or of any other hominid had come forth from Bolt's Farm.

Until today, no systematic excavation has been carried out on Bolt's Farm and it remains up to the present a "non-hominid" site.

Haasgat

This cave and abandoned limeworks is on the farm Leeuwenkloof in the Brits District. The site has given up fossils of extinct small baboons and a species of extinct colobus monkeys; an extinct hyaena and fox; two species of hyrax; 18 species of antelope; an extinct suid (pig family); a large variety of mice, rats and moles; a porcupine; ostrich and francolin. In the opinion of Dr. Andre Keyser, both carnivores and porcupines (but, on present evidence, not humans) were the accumulating agents for the bones, and tooth marks of both kinds are to be seen in the bone fragments. This site was actively excavated in the late 1980's and early 1990's, but is not at present being systematically dug.

The age of the site may be close to the junction between the Pliocene and Pleistocene epochs, that is, about 1.8 million years of age.

Minnaar's Cave

Little is available on the history of this series of caves across the Rietspruit Stream from Sterkfontein and Kromdraai. Broom reconnoitred these sites and recovered a well-preserved skull of an extinct jackal of the same species as that found at Sterkfontein. A number of caves in this area have been explored but they remain to be excavated.

Plovers Lake

In the 1980's it was drawn to the attention of P.V. Tobias of the existence of a fossil-bearing cave deposit at Plovers Lake. Test excavations were undertaken by staff of the Transvaal Museum. This work was started under the former Director, C.K. Brain, and was continued by J.F. Thackeray from 1990-1995. The site has yielded many bones of antelope (including an extinct wildebeest), suids (pig family), baboons, carnivores and rodents. It is inferred by Thackeray that it may have been a leopard lair about one million years ago.

Gondolin

After the usual earlier phase of limeworking operations, dumps were left adjacent to the cave of Gondolin. In 1979, the Transvaal Museum worked at Gondolin for a time. From an *in situ* breccia deposit in the wall of the cave were extracted a substantial mammalian fauna. The fossils extracted from these materials were subsequently analysed by Virginia Watson, who reported that they represented an extinct fauna suggesting a "faunal age" of "as old as 2 million years".

A single hominid tooth, attributed to *Homo sapiens*, was recovered, but it was considered not to be contemporaneous with the other fauna and possibly to be intrusive.

In November 1997, the University of the Witwatersrand, re-opened excavations at Gondolin. Apart from more faunal remains two hominid teeth were recovered from Gondolin Dump A. One of these is a complete tooth of large dimensions, similar to the teeth of the robust australopithecines, but bigger than the largest matching teeth recorded from Swartkrans and Kromdraai in South Africa. The dimensions of the intact molar suggest the tooth size of the hyper-robust apemen of East Africa, such as *Australopithecus (Paranthropus) boisei* from Olduvai and Peninj in Tanzania, Koobi Fora in Kenya, and Omo in Ethiopia. More specimens are needed to determine the affinities of the Gondolin hominid with greater reliability. The work is proceeding under the direction of Kuykendall

c. Form and Dates of Most Recent Records of property

Fossil Sites - The most recent records of the fossil sites are maintained at the addresses listed in Section Seven.

Other reports include the Chronos Project Report by Dr L R Berger of the University of the Witwatersrand entitled "The Chronos project - Preliminary Report for the Palaeo-Anthropological Aspect of the Chronos Project" dated June 1996.

Nature Conservation aspects - refer to report of Gauteng Directorate of Nature Conservation, entitled "The Identification of large Conservation Worthy Areas in

Gauteng" dated April 1997 - Appendix C.

d. Present State of Conservation (See Map 2)

There are large areas of the World Heritage Site and its Buffer Zone that are already under Conservation in one form or another, or are proposed as Conservation Areas. Within the World Heritage Site, the northern farms belonging to John Nash, such as the John Nash Nature Reserve on the Farm Uitkomst and part of Farm Diepkloof are registered as Natural Heritage Sites under the SA Natural Heritage Programme. The Gladysvale Palaeo-anthropological site is located within the John Nash Nature Reserve. The Farm Leeuwenkloof is also a Natural Heritage Site and is used as a Game Reserve and has recently been expanded into the Farm Mooiplats. Plovers Lake which is four farm portions on the Farm Kromdraai is also a Natural Heritage Site. The palaeo-anthropological site at Plovers Lake has been partially excavated but the owner would like to use the site to show people what an unexcavated palaeo-anthropological site looks like. Mark Read, the owner, is a trustee of the Palaeo-Anthropological Trust (PAST) which actively funds many digs in Southern Africa. The Rhino and Lion Nature Reserve is located close to Plovers Lake and includes the Wonder Caves site. It is used as an Eco-tourism destination and there are plans to expand it on to adjacent farms by removal of fences.

The Sterkfontein Caves, which are owned by the University of the Witwatersrand, and who also are in charge of the scientific digs, are located on the Isaac Stegmann Nature Reserve, which is a declared Nature Reserve. The Swartkrans fossil site is also located on land owned by the University. Swartkrans, Sterkfontein Caves and the Kromdraai palaeo-anthropological sites are all declared National Monuments and other caves also enjoy a level of protection under the National Monuments Act.

The remaining fossil sites, although not declared National Monuments are protected under the National Monuments Act. Access to the Caves is strictly controlled and therefore the state of conservation remains consistent.

In general there is a move in the area towards greater use of land for conservation although this has to occur alongside other activities which are income-generating.

There are some of the smaller farms in the area where conservation is not a primary aim and these tend to be farms where there is intensive market gardening, dairy farming, piggeries and chicken farms. They tend to occur in the southernmost areas of the site and are generally in keeping with the general ambience of the area. There are community groups in the area, such as the Kromdraai Residents Association, which are self-appointed watchdogs and try to ensure that incompatible land uses do not occur. This is voluntary and relies on the energies of residents to oppose these types of activity.

In and around the buffer zone there are many conservation initiatives. The buffer zone has been demarcated in an attempt to link in with other conservation initiatives such as

adjacent Nature Reserves, Game Reserves, the Kareesbosrand Conservancy, which is aiming for Nature Reserve status, to try and establish a more Regional framework of Conservation areas and other protected areas of compatible land uses. There are also initiatives from the planning authorities to conserve the Witwatersberg as open space which would fit in closely with the idea of including this important ridge within the buffer zone. The buffer zone will also link northwards to the Hartebeespoortdam Nature Reserve. To the south, the buffer zone has been extended along the Witwatersrand Ridge to shield the site from the expansion of Krugersdorp. This Ridge (which is known as the Kingskloof Natural Heritage Site) also includes a number of rare plant species and the buffer zone has been extended up to the Botanical Gardens in order to protect the integrity of this ridge. The extent of the buffer zone is therefore effectively enlarged through other initiatives to create an area which will protect the World Heritage Site and its integrity whilst also protecting other important ecological communities and visual assets.

The catchment area of the Skeerpoort River which feeds into Hartebeespoortdam is defined by Act of Parliament and administered by the Department of Forestry and Water Affairs. This area includes many of the farms in the north-west of the area.

e. Policies and Programmes Relating to the Presentation and Promotion of the Property

The promotion of the property, at present, is low key. There are regional bodies such as the newly established Gauteng Tourism Agency which will play an active role in defining tourism policy in the area. There is also Westour, which is a Section 21 Company which markets tourism in Western Gauteng. The Kromdraai and Magaliesburg area falls within its northern node. Westour markets the Western Gauteng area at various levels from International to Local and also supports owners of tourism product to develop their product to entice visitors into the area.

There is also some coordination of the eco-tourism activities within the area through Conserv Tours, a private initiative, in that centralised booking facilities are available.

The Sterkfontein Caves attract an average of 75, 000 visitors a year, many of which are school parties and other group outings. The Caves are run with the assistance of the Rotary Club. Promotion is low key. Other attractions such as the Wonder Cave attract a large number of visitors but the capacity of the Cave is restricted due to problems with carbon dioxide levels if certain visitor numbers are exceeded.

The Robert Broom Museum was opened in 1966 at the famous Sterkfontein fossil site to celebrate the centenary of the birth of Dr. Robert Broom. The museum and the fossil-bearing caves are situated on a 16 hectare site, the Isaac Edwin Stegmann Reserve, which is owned by the University of the Witwatersrand. The initial set of exhibits was prepared and donated by the Transvaal Museum, Pretoria, at which Broom worked for the last 16 years of his life. C.K. Brain, of the Transvaal Museum, designed and

supervised the preparation and installation of the initial display panels.

The showcases in the museum are devoted to exhibits dealing with the geology of the region and the mechanism of fossilisation; the evolution of the hominids; the life and times of Robert Broom; the discoveries of gracile australopithecines at Taung, Makapansgat and Sterkfontein by R.A. Dart, Broom and J.T. Robinson; the robust australopithecines from Swartkrans and Kromdraai and from Olduvai in Tanzania; some examples of the associated Pliocene and Pleistocene animal remains of the Sterkfontein and related cave breccias; current animal life in the underground cave system; and the fauna of the countryside surrounding the caves today. The exhibits were refurbished and updated in 1996. This is essentially a museum for public education. The University runs the site as a scientific research station, nature reserve and public amenity. The museum falls under the curatorship of the Department of Anatomical Sciences at the University of the Witwatersrand.

The University of the Witwatersrand have, over a number of years, been considering the expansion and upgrading of the Robert Broom Museum. Proposals have been looked at and feasibility studies undertaken. The implementation of such proposals has largely been restricted due to a lack of funding. With the added prestige that World Heritage status would give to the facility, the Museum could obtain the necessary funding and would be expanded and upgraded to international standards. At present the facilities at Sterkfontein are mainly restricted to tours of the Caves plus there is a viewing platform from which to look at the excavation area. It is noted in the Chronos Project Report (1996 - Dr L R Berger, University of the Witwatersrand), which evaluates the fossil sites in terms of their importance and tourist potential, that more "look-in" type facilities are envisaged but that the safety of the fossil bearing deposit needs to be improved as there is some subsidence of material. The site is seen as having high tourist potential in the future, and many more decades of scientific investigation.

The Swartkrans fossil site is also internationally significant and lies only 1 km along a good dirt road from Sterkfontein. Although hundreds of fossil hominids have been recovered from the breccias of Swartkrans, the site's greatest importance most probably centres around the earliest evidence for the controlled use of fire by hominids. There is no doubt that the tourist potential to bring visitors on guided tours through this site is good. There is also potential to provide access on a limited basis to a number of other sites close-by including Kromdraai, Drimolen, Coopers and Plovers Lake for the enthusiast or for educational purposes. Public access should be further improved to Wonder Cave, which is difficult to access by car at present, being some 4 kms from the main road, but is a spectacular Cave as well as having high fossil densities.

Other attractions are mainly promoted on an individual level.

It is intended to promote the area more actively and to provide facilities which will allow the general public, academics and other interested groups much greater access to information regarding the area and its considerable importance from many aspects.

It is proposed to develop a number of facilities within the south- eastern part of the World Heritage Site, due to its good accessibility and infrastructure. Although the majority of the area is in private ownership the Local Authority, which is the Western Gauteng Services Council, own a site of approximately 8 hectares close to the entrance to the Sterkfontein Caves. This site is ideally suited for the siting of an Information/Orientation Centre that could provide general information about the area, places to stay, the available visitor attractions, walking trails etc as well as providing general interpretation information on the significance of the inscribed World Heritage Site. This Centre is envisaged specifically as an Orientation and Interpretation Centre rather than a Museum. Interpretation is taken to mean " the art of explaining to non-specialists the significance of an object, place, historical period or landscape." This facility is intended to complement rather than compete with the Museum facilities at Sterkfontein Caves. Other facilities could include a Conference Centre and a new expanded research centre.

From the Orientation / Interpretation Centre visitors will be directed to various facilities which would range from those Palaeo-anthropological sites which are open to the public, either generally or on a restricted basis, the expanded and refurbished Robert Broom Museum which is located at the Sterkfontein Caves, to the Wonder Caves, restaurants, craft destinations etc. They could also obtain information on sites to visit which might require owner consent, for purposes of scientific study or perhaps to participate in a 'Dig". The WGSC have agreed to this proposal in principle and a plan will be drawn up for the Centre to enable funding to be sought for its construction including the actual display areas and promotional literature, together with a plan for training of personnel and management of the facility

The principle of channelling visitors through an Orientation Centre is an approach to visitor management adopted in many such facilities worldwide. It enables visitors to be given literature to take away and a basic understanding of what the area has to offer before they enter the key resource area. It also encourages repeat visits and dissemination of information to a wider market.

The status of World Heritage will also no doubt have a catalytic effect in terms of attracting visitors to the area and there will be an increase in the number and range of eco-tourism venues in the area. The development of the Visitor Management Plan will be a function of the overall Management Plan for the Site, which is in the process of being developed with a view to an interim plan being in place by December 1998.

Further a Tourism Development Plan will be drawn up in consultation with the Directorate of Tourism in the Department of Finance and Economic Affairs, the Gauteng Tourism Agency and Westour that will aim to promote the area in a more active and coordinated manner consistent with its proposed status. The Tourism Development Plan for the site will form part of the Gauteng Provincial Eco-Tourism Strategy which is presently being formulated.

SECTION FOUR

4.0 MANAGEMENT

a. Ownership

The area nominated for inclusion on the World Heritage List ("the Nominated Area") and described in Section 1 covers a range of properties with many different owners. The Title Deeds for the properties within the Nominated Area are attached in File 2.

Three main categories of land owners in the area can be identified:

- Private owners - these make up approximately 98% of the land holdings in the area and range from small plots of a few hectares to holdings of several thousand hectares. Details of these are shown in the appended title deeds.

- The State represented by Local Government (8 hectares of land).

- The University of the Witwatersrand ("the University") which owns the Isaac Stegmann Nature Reserve in which the Sterkfontein Caves are located and the farm on which Swartkrans is located.

In the period March 1998 to June 1998 initial consultations have been held with private landowners and residents in the area on the establishment of the World Heritage Site and the Buffer Zone. The consultative process has included six public meetings to date.

The public meetings were hosted by the Gauteng Department of Agriculture, Environment and Conservation and were aimed at informing owners of the implications of the inclusion of their property as part of the area included as the World Heritage List. Information was provided about the World Heritage Convention and the proposed area for inclusion on the World Heritage List.

The prospect of World Heritage Listing enjoyed general support at the meetings although some reservations were expressed about what the final limitations on land use in the area will be.

Property owners and residents in the area were requested to indicate "in principle" support for the nomination. Letters indicating the "in principle" support for the nomination are attached in Appendix D.

Some residents indicated that although they supported the process they would prefer to only indicate their support after the application for nomination has been finalised. Letters from these residents are also listed in Appendix D.

The Western Gauteng Services Council (WGSC) and the Magaliesburg Rural Council,

which are the Local Authorities responsible for the area, have also indicated their support for the initiative. A letter indicating their support is attached marked Appendix E.

The University has indicated its support for the inclusion of the land owned by it in the nomination process. (See Appendix F).

Finally the nomination of the site by the National Minister of Environmental Affairs and Tourism is supported by a decision of the Provincial Executive Council. The Cabinet decision is attached in Appendix G. In addition the nominated area extends into the North-West Province and the application is supported by the Premier of the North-West Province. (See Appendix H).

b. Present Legal Status

Different parts of the Nominated Area are presently subject to a number of different legislative mechanisms that control land use, land development and environmental impacts.

This legislation is primarily reactive and aimed at the protection of the area and the existing palaeo-anthropological sites, not the management or development of the area. With the establishment of the World Heritage Site, it has been decided to establish clear legal mechanisms for the management and development of the area. The form this will take is discussed below.

- Existing Legislation

The relevant Sections of the existing legislation are included in Appendix I and are summarised as follows:

1. National Monuments Act 28 of 1969 ("the Monuments Act")

   Swartkrans, Sterkfontein Caves and the Kromdraai palaeo-anthropological sites are declared national monuments in terms of the Monuments Act.

   The Monuments Act provides that no person may damage, destroy, excavate or alter any monument without the authority of the Monuments Council. The effect is that where an environmentally significant place or site is a national monument, the Council enjoys the ability to supervise the use and management in a way which conserves its environmental significance.

   Section 12(2A) of the National Monuments Act provides that no person shall destroy, damage, excavate, alter, remove from its original site or export any:

   - fossil anthropological or archaeological contents of caves, rock shelters, middens, shell mounds or other sites;

- archaeological or palaeo-anthropological finds, material or object; except under the authority of and in accordance with a permit issued in accordance with the provisions of the Act.

All the existing sites and palaeoanthropological material in the area are protected by the Monuments Act.

2. Environment Conservation Act 73 of 1989 ("the ECA")

Regulations promulgated by the Minister of Environment and Tourism in terms of section 21 and 22 of the ECA provide a process whereby an environmental impact assessment must be undertaken before a number of identified activities can be undertaken.

The activities identified by the Minister include activities such as the construction or upgrading of facilities for commercial electricity generation and supply, transport routes, building of roads, public and private resorts and buildings and structures for industrial manufacturing.

This therefore limits the undertaking of the identified activities in the nominated area where they threaten the integrity of the World Heritage Site.

3. Minerals Act 50 of 1991 ("the Minerals Act")

Mining and prospecting in the area is limited by the Minerals Act. Mining may only be undertaken by Permit Holders.

A prerequisite for the commencement of mining by a permit holder is the approval of an Environmental Management Programme. The Director-General may also require that an Environmental Impact Assessment be carried out in respect of intended prospecting or mining operations.

4. Local Authority Controls:

Local planning and the formulation of Land Development Objectives consistent with the need to protect the area could also be viewed as a mechanism for the protection of the area supplementing any other measures taken.

Land Development Objectives are developed through a consultative process in terms of the Development Facilitation Act 67 of 1995 ("the DFA"). Section 29 of the DFA provides that no competent authority may approve a land development application if the application is inconsistent with any Land Development Objective.

The Draft Gauteng Development Planning Bill provides that the Land Development Objectives drawn up in terms of the DFA shall be deemed to be

'local development plans' in terms of the Bill. The Land Development Objectives will therefore continue to be in use in creating an integrated development framework, setting priorities for growth and development, determining the spatial framework for development in an area and formulating development projects and guiding resource allocation.

The Main Reports for the 1997 Land Development Objectives for the Western Gauteng Services Council stated that the vision statement for the Land Development Objectives in the area should be:

"... to improve the quality of life of all its residents while ensuring the protection of the rural character and the unique beauty and regional environmental importance of the area by:

strengthening existing nodes; encouraging agricultural related land uses, tourism and recreation; preventing further urban sprawl and harmful land uses into the area; promoting conservation and the protection of natural resources." Land development in the nominated area must conform with the above criteria which are consistent with the requirement of the World Heritage Convention that the integrity of a World Heritage Site be safe-guarded.

In addition to the relatively new legislative developments discussed above the Gauteng Town Planning Ordinance 15 of 1986 provides for zoning schemes to prescribe land use. Developments in an area must conform with the zoning requirements. In the proposed area for inclusion on the World Heritage List, land use is restricted to "agricultural" and "special" use. The existing zoning of the area would therefore, for example, prohibit urban development and industrial uses in the area, without approval of the relevant Authority and would need to be supported by and Environmental Impact Assessment which would need to be adjudicated by the Provincial Authority.

5. Customary and Other Controls:

In addition to the legislative controls set out above many of the landowners in the area are also vigilant conservationists. There are therefore existing management and conservation plans on many of the privately owned properties in the area. The commitment to conservation by many of the landowners in the area is also demonstrated by the many Natural Heritage Sites. Natural Heritage Sites are established in terms of a national programme under the auspices of the national Department of Environment and Tourism (DEAT). Private landowners may apply for their land to be registered as a Natural Heritage Site in terms of the programme. In order for an application to be successful the owner must give an undertaking that they will not destroy or degrade the area, and that they will report any adverse impacts to DEAT.

This is an important factor to consider in an assessment of the existing protection and management mechanisms in the area.

c. Planned Protective Measures and Means of Implementation

Although, as outlined above there are some existing protective measures in place a new mechanism is envisaged to consolidate existing measures and ensure the proper management and protection of the area.

This will take the form either of new legislation, the principles of which are explained in paragraphs 1-6 of pages 44 to 46, or it may be possible for it to form an additional section of the Gauteng Development Planning Bill as detailed below:

The new Gauteng Draft Development Planning Bill ("the Bill") is presently being drawn up. The Bill will provide a single system of development planning, land management and development in the Province. If it is decided to incorporate the legislation for the World Heritage Site in this Bill, a Chapter of the Bill will be used to provide mechanisms for the protection and management of areas with unique or special attributes in accordance with sound environmental principles specified in the Bill. This Chapter could then be used to establish a management and protective structure for the area similar to that envisaged for the possible new legislation discussed below.

Any new legislation will be promulgated in accordance with the **Constitution of the Republic of South Africa Act 108** of 1996 which contains a Bill of Rights in Chapter 2.

Section 24 of Chapter 2 provides for an environmental right including the right to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures.

Environmental management policy consistent with the Constitution sets out a number of principles for environmental management. An overview of the principles which must be incorporated in the legislation follows.

1. Accountability:
   Government is accountable for policy formulation, monitoring and enforcement.

2. Allocation of Functions:
   Government will allocate functions within the framework of the Constitution to the institutions and spheres of government that can most effectively achieve the objective of a function within the context of environmental policy.

3. Alienation of Resources:
Renewable and non-renewable natural resources, cultural resources and land are all part of South Africa's environmental heritage. They are public assets belonging to all the nation's people. Government must ensure that the ownership and use of this heritage promotes sustainable development, benefiting the public good and maintaining environmental integrity. Any alienation of these resources and land must respect people's environmental rights and ensure the sustainable use of such resources and land.

4. Co-ordination:
Environmental concerns affect all aspects of life and must be integrated into the work of all government institutions.
This requires intergovernmental harmonisation of policies, legislation, monitoring, regulation and other environmental functions in accordance with the requirements of environmental policy.

5. Custodianship:
The government acknowledges that it has a constitutional duty to protect the environment for the benefit of current and future generations of South Africans.

6. Due Process:
Due process must be applied in all environmental management activities. This includes adherence to the provisions in the Constitution dealing with just administrative action and public participation in environmental governance.

7. Global and International Co-operation and Responsibilities:
Government must recognise its shared responsibility for global and regional environmental issues and act with due regard for the principles contained in this policy and applicable regional and international agreements.

8. Good Governance:
Good governance depends on mutual trust and reciprocal relations between government and people. This must be based on the fulfilment of constitutional, legislative and executive obligations, and acceptance of authority, responsibility, transparency and accountability.

9. Inclusivity:
Environmental management processes must consider the interests, needs and values of all interested and affected parties in decision making to secure sustainable development. This includes recognising all forms of knowledge including traditional and ordinary knowledge.

10. Precaution:
Government will apply a risk averse and cautious approach that recognises the limits of current knowledge about the environmental consequences of decisions or actions.

11. Prevention:
Government must anticipate problems and prevent negative impacts on the environment and on people's environmental rights.

The new legislation will be consistent with the above approach and follow the following principles.

1. Objectives:

- To define and effectively protect and manage the World Heritage Site area ("the Area").

- To authorise the establishment and enforcement of regulatory measures in the Area.

- To establish an administrative body ("the Board") with powers to provide for the promotion, protection and management of the World Heritage Site area.

- To streamline and rationalise the present regulatory framework.

2. Establishment of the Board

- The Board will be established by statute.

- Composition and constitution:

  This will be determined by the participation of The State, Landowners, the University, other scientific groups and other interest groups in the consultation process. The composition and constitution must however ensure that the government will be able to fulfil its obligations in terms of the World Heritage Convention.

- The Board shall have powers and obligations to:

  - Develop management programmes for the development of the World Heritage Site.

  - Manage, protect and promote the World Heritage Site.

- Raise funds to further its objectives.

- Promote and further the objectives of the World Heritage Convention.

- Regulate its assets and liabilities.

- Provide input to Government decision-makers regarding developments in the Area.

3. Financing

Possible sources of funding could include:

- Fiscal allocation from national, provincial and local government
- international institutions and bilateral Aid
- donations and sponsorship
- money raised by projects undertaken including profits on items such as sales of literature, souvenirs and so on at the Orientation Centre, tours and other organised promotions.

A comprehensive Business Plan is being developed which will set out the required funding for the intended infrastructure and development required in the area related to its status as a tourist and educational destination.

4. Personnel:

The Board shall have power to appoint and manage personnel necessary for the effective performance of its functions. The Staff Unit will be responsible for implementation of the decisions of the Board and the day-to-day management of the area.

5. Prohibitions, offences and penalties:

The legislation shall establish appropriate sanctions for contravention of its provisions. The effective enforcement of the legislation will be required to address some of the shortcomings of the existing legislative framework.

6. Time Framework:

Draft Legislation: October 1998
Consultation: October - December 1998
Revision of Draft: January 1999

Finalisation and implementation April 1999

d. Agencies with Management Authority

1. Co-ordinating agency for the implementation of the Convention:

   The Department of Environmental Affairs and Tourism
   Mr Makgolo Makgolo Private Bag X2 Roggebaai, Cape Town 8012
   Tel No :+27 21 402 3068 Fax: +27 21 418 2582

2. Agency responsible for the management mechanisms and day to day management of the World Heritage Site and the buffer zone

   Gauteng Province Department of Agriculture, Conservation and Environment
   Dr P Hanekom, Head of Department, P O Box 8769, Johannesburg 2000.
   Tel No: +27 11 333 2106 Fax No: +27 11 333 0667.

   Gauteng Province Department of Sports, Recreation, Arts and Culture
   Ms P Madiba. Private Bag X33, Johannesburg 2000.
   Tel No: +27 11 355 2506 Fax No: +27 11 355 2505

   Gauteng Province Department of Finance and Economic Affairs
   Mr R Hunter. Private Bag X115, Pretoria 0001.

e. Level at which Management is exercised:

Management of the Area will rest with the Gauteng Provincial Government, Department of Agriculture Conservation and Environment until such time as the Board is established at which time the authority to manage the area will pass to the Board. The day to day management of the area will rest with the Staff Unit who will report to the Board. The Gauteng Province will continue to coordinate the activities of the Board and exercise its existing statutory powers in relation to the Area.

f. Agreed Plans Related to the Property.

The area falls within the jurisdiction of the Western Gauteng Regional Services Council, Northern Region under the Magaliesburg Rural Council. The planning for this area is encapsulated in the Land Development Objectives (LDOs) drafted in March 1997. The Land Development Objectives are a rolling five year plan for development in an area.

The specialist Environmental Resource report contained within the LDO for the area recognises the importance of the area for "nature conservation, ecotourism, areas of great scenic beauty, archaeological and palaeotological sites of international significance, caves of international renown and a wide range of

private resort, recreation and commercial activities that have developed around this resource base." It is further submitted that "any development which ignores the existing and potential value of this area for conservation, recreation, tourism, education, scientific and allied uses, and which could compromise the potential for the sustained development of the area for these uses, must be very carefully considered before approval."

The Directorate of Nature Conservation in the Department of Agriculture, Conservation and Environment of the Gauteng Provincial Government have also carried out an evaluation in the area which concluded that the area is "the best area for Conservation in Gauteng outside existing provincial Nature Reserves." Their report is included in Appendix C.

g. Sources and Levels of Finance

A comprehensive Business Plan is being developed in order to establish the amounts and types of funding required for the development of the necessary infrastructure for the area . This might include, but not be limited to, funding for the following:

- upgrading of certain of the dirt roads by surfacing
- development of the Orientation and Interpretation Centre
- upgrading and expansion of the Robert Broom Museum at Sterkfontein
- upgrading of the general infrastructure at the Sterkfontein Caves to cater for greater visitor numbers
- improving the scientific facilities
- upgrading Swartkrans to enable visitors to access this site on a limited basis.
- upgrading of access to other caves for limited access visits and additional funding for scientific investigations
- upgrading of emergency services to cater for additional visitor numbers
- coordination of promotion of the area
- improvement of educational facilities
- assistance to private enterprise to develop other facilities in the area such as overnight accommodation, restaurants, trails, horse riding and other extensive outdoor recreation activities to create choice in the area.
- provision of personnel and funding for the Coordination Unit to enable the day to day management of the area to be carried out effectively.
- possible development of a conference centre.

The Business Plan will be monitored on an annual basis and updated and the results fed back to the "Board" to assist in the decision making process.

h. Sources of Expertise and Training

Inherent in the Management Plan will also be the need for staff training and skills enhancement. Sources of expertise already exist or are being proposed within the University of the Witwatersrand, other local institutions, and through international contacts, to enable training programmes to be established to provide the personnel that will be required for the monitoring and management programmes for the World Heritage site and its buffer zone, as guides, as assistants within the Interpretation Centre etc.

I. Visitor Facilities and Statistics

The visitor facilities in the area are at present low key, with Sterkfontein Caves attracting the largest number of annual visitors, estimated at around 75,000.

There are other facilities in the area including organised horse and nature trails, game reserves, a wedding venue, the oldest Gold Mine on the Witwatersrand, restaurants, arts and crafts venues. The area is also close to other popular tourist destinations including the Crocodile River Arts and Crafts Ramble, Hartebeespoortdam, and the Magaliesburg Protected Area as well as the Cheetah Breeding facility at De Wildt. The emphasis is on eco-tourism type venues linked to the scenic beauty and natural resources of the area.

There is no doubt that the area has not reached its potential as a Conservation and Educational type of tourism venue and this will need to be addressed in the Tourism Development Plan for the area to ensure that the tourism potential is optimised without endangering this internationally significant resource.

j. Property Management Plan

Drafting of the Management Plan is dependant upon the necessary legislative framework being finalised. An interim Management Plan will be drawn up by December 1998, concurrent with the draft legislation, but will only be finalised once the legislation has been finalised and is therefore linked to the timescales proposed for the legislation.

The Management Plan will address a number of issues:

- firstly, the site will be managed in such a way that it will conserve the palaeo-anthropological sites, both known and future sites, and conserve the landscape, of which they are a part, with its many other intrinsic qualities.

- secondly, the landscape is a living and working environment for its many

landowners and inhabitants, and it is essential that the uses carried out in the area continue to respect the essential character of the landscape. Thus changes will only be permitted in ways that are compatible with this objective. Tourism will become a more important aspect of the local economy with World Heritage listing and a balance will need to be achieved in accommodating this change. The rights of landowners will also be upheld and their present work in conservation respected.

- thirdly, public access will increase into the area, leading to increased understanding and enjoyment of the resource. Visitors will be managed in such a way that damage to the fossil sites, other historical sites, the geology and the flora and fauna is avoided, and that conflict is minimised with other land uses in the World Heritage Site and the Buffer Zone. A Visitor Management Plan will be a part of the overall Management Plan as will be a Tourism Development Plan.

The Management Plan will also provide clear objectives for the future and will act as a platform for all those involved in the area to move forward through the development of consensus and partnership. The Management Plan will be a "living" document that can respond to changing needs.

The key to successful management will also be the ongoing monitoring of the Site. The monitoring programme must be capable of identifying where certain land use changes, land management practices or visitor pressures are compromising the quality of the landscape or endangering parts of the World Heritage Site. It must also be sufficiently sophisticated to trigger appropriate management actions where required. This may involve techniques such as establishing "Limits of Acceptable Change" and will need to take account of a wide range of environmental factors such as physical, ecological and visual factors, in addition to palaeotological and archaeological. The limits will form a set of quality standards, to which can be linked management actions. The quality standards, issues and monitoring methods will be regularly reviewed to ensure their continuing relevance and acceptability.

The Tourism Development Plan will be formulated jointly between the Directorate of Tourism in the Department of Finance and Economic Affairs, the Gauteng Tourism Agency, Westour, the two responsible Departments as well as existing tourism operators in the area.

k. Staffing Levels

There are no dedicated staff currently allocated to the broader management of the site. Gauteng Province Department of Agriculture, Conservation and Environment will fulfill an interim role in management

of the area until such time as the Staff Unit is set up which will take over responsibility for the day to day management of the area. The staffing levels of the Staff Unit will consist of a Director assisted by administrative staff and Field Officers with the relevant specialist skills.

The University, Transvaal Museum and other academic organisations involved in the cave sites will continue to exercise a management role in terms of the scientific excavations and their protection. They will also control the access to these scientific sites in conjunction with the landowners. The academic interests will be represented at "Board" level. The staffing levels at the excavations will continue to rely largely on the levels of funding available.

SECTION FIVE

5.0 FACTORS AFFECTING THE PROPERTY

The key factors affecting the area relate to its proximity to the fast expanding urban area of Greater Johannesburg and Krugersdorp. Inevitably, the rural areas surrounding the conurbation are coming under pressure for development, as the urban fringe expands further and further.

a. Development Pressures

Development pressures are likely to include the need for land for housing, with informal settlements being the most likely to occur. There is an informal settlement already on the dolomites to the south of the area raising concerns that the ground may not be stable (sink holes can and do open up in dolomitic areas) and the possibility that the ground water may become polluted as a result of inadequate sanitation measures.

The dolomites are in fact often unsuitable for siting larger buildings but intensive agriculture such as piggeries and battery chicken houses have been built in the area and on adjacent farms. Although the landscape may be able to absorb small groups of new buildings, especially if carefully sited, large groups of such buildings would be undesirable aesthetically and would be a negative influence on the character of the area.

There are also certain minerals in the area which could be mined including clay, silica and aggregates. The data relating to these resources appears to be poor and fragmented. There is a quarry at Bolts Farm immediately south of the Sterkfontein Caves. The scar left by this quarry is very evident and despoils the visual quality of the immediate area. There is potential for mining and quarrying not only to scar the area visually but also to pollute ground water. There is also a 'Black (gold bearing) Reef' running immediately to the south-east of the dolomites which has been mined in the 1880s. It is possible that there could be interest in this reef in the future and in fact one of the landowners fairly recently looked at reopening mining operations but later decided to abandon the idea.

There is no doubt that pollution of the ground water is an increasing threat as urbanisation and other development activities draw closer to the area. This is of concern both from a health point of view, as the ground water is a source of drinking water for many farms over a wide area, and also because polluted ground water has the potential to cause chemical erosion in the underground cave systems.

There is a growing interest in the area as an eco-tourism venue, especially with its proximity to a large centre of population. Many of these facilities are small scale and do not negatively impact on the area. However there is the potential to attract larger developments, or a large number of small developments which, if not properly sited and coordinated could ultimately result in unacceptable visitor pressures, visual cluttering and the destruction of the environment that made the area desirable in the first place. It is important that development in this area takes place in an appropriate and planned manner

to the benefit of all participants and especially those that rely on the area for their livelihood.

An application to build a Casino, Golf Course, hotel and other facilities has been made at the western foot of the Swartkop. To date this has received approval of the Gambling Board but still has to be vetted by Gauteng Province in terms of its Environmental Impact. This proposal includes some initiatives relating to the expansion of Game Farms in the area and funding for interpretation of museum facilities related to the World Heritage Site.

b. Environmental Pressures

With the encroachment of urbanisation come the possible threats of water and air pollution. There are substantial tracts of land in the area which are conservation areas and contain red data and vulnerable species. Pollution of water or the air could adversely affect these species and could also result in a change in the ecology of the area. There are also many historical and archaeological relics which could also be adversely affected by pollution under certain circumstances.

As the area is largely in private ownership, access to the general public is restricted and therefore pressures from mass influx of people is unlikely. However, should landowners decide to open up areas which have previously received little or no pressure, then there is no doubt that this could adversely impact on plant and animal communities. It is important therefore that changes of land use or opening up of areas which may have low carrying capacities be managed and visitor numbers restricted to protect the resource.

Damage to caves is of concern and may occur if visitors are permitted uncontrolled access to caves or if mining is permitted in the area. Although caves enjoy some level of protection under the Monuments Act, this may not be sufficient to deter certain activities. Visitor management in the caves is of particular importance not only because the cave may be damaged but also because there is a health risk attached to some of the caves including 'bat disease' and problems with carbon dioxide levels as in the Wonder Caves.

Although the environmental database at macro-level is good, which allows the identification of broad resource areas, the knowledge of individual problem areas is poor, with data fragmented between Government Depts, other institutions and individuals. (WGSC - Regional Environmental Overview). This is of particular concern where these threats may affect the ground water or the dolomites.

c. Natural Disasters and Preparedness

The area falls under the Western Gauteng Services Council Directorate of Emergency and Disaster Management of which the relevant branch is the Spioenkop Emergency and Disaster Management Organisation. A number of the large landowners in the area also maintain fire fighting equipment and respond to fires on each others farms as necessary as bush fires are the greatest threat.

The natural disasters that could occur in the area are:

- violent atmospheric storms
- fires
- floods and drought
- sinkholes and collapsing caves in the dolomites
- earthquakes

Man-made disasters that could occur in the area are:

- Road accidents
- Pollution
- Security related (theft, car hijacking, attacks on tourists, vandalism etc.)

The SEDM have at their disposal adequate radio networks, members trained in fire fighting and first aid and limited equipment to deal with the existing situation in the area. It should be noted that at present the crime rate in the area is relatively low.

There is no doubt that the increase in visitor numbers that will be attendant upon the area achieving World heritage listing will place additional demands on the emergency services and Civil Protection in the area. There will be a need to provide funding, training and equipment to improve the ability of the services in the area to deal with natural and man-made disasters.

It would appear that fire is the greatest threat both due to naturally induced fires such as through lightning strike and the winter veld fires that occur naturally in the dry months, as well as those resulting from careless handling of fire or vandalism. Additional equipment and manpower will need to be allocated to the area for fire fighting and the Management Plan will need to embody measures for fire control such as cutting of fire breaks or other management techniques.

d. Visitor / Tourism Pressures

For nearly a century, Sterkfontein has been a popular destination for week-end family visits and picnickers. The site, at Sterkfontein includes a tea-room, the Robert Broom Museum and the guide service, and operates six days a week.

Student parties from the University of the Witwatersrand and other universities and colleges in Gauteng and further afield have also been coming to the site for many years. For more than thirty years, organised parties of schoolchildren, with their teachers, have also been visiting the caves, as part of the School Visits Programme and the Caves are on the visiting list of over 1700 schools.

The numbers of visitors each year vary between 60,000 and 80,000, the overwhelming majority of whom are schoolchildren. An average of about 75,000 visitors per year has

been calculated for recent years. Each time an important new discovery is announced, the numbers surge ahead, as happened in 1995 when the discovery of "Little Foot" was announced.

In 1993, P.V. Tobias appealed for the development in South Africa of the concept of what he called "Palaeo-tourism" - in the same way as ecotourism has become popular in recent years. The idea of palaeo-tourism has begun to take off and every year now some parties of overseas visitors include visits to Sterkfontein and other such sites as prime objectives in their itineraries. Many of these visitors are strongly supportive of both the research and conservational aspects of the hominid cave sites and not only moral but financial support for the work of the scientists has stemmed from such visitors.

It is likely that this pattern of visits would continue if the site is listed, but it can be expected that the tourist component of the annual tally of visitors would increase.

Student parties are regularly taken on a tour of the three sites at Sterkfontein, Swartkrans and Kromdraai. It is possible to visit all three excavation sites (the current National Monuments), as well as the underground cave circuit, on one day. This pattern could be modified so as to take in more sites and/or to be spread over two or three days per group of visitors. Such visits might apply especially to the organised groups of tourists and other visitors.

An appreciable increase in the number of visitors and tourists to the sites would be expected to create the need for an Orientation Centre, enlargement and upgrading of the Museum to international standards, improvements to the tea-room at Sterkfontein, improvement of the access roads to some of the caves, such as Swartkrans, and the employment of an increased number of locally-recruited guides and of scientists or research students.

Other visitor pressures will relate to the other eco-tourism activities in the area. There are proposals for a Casino below the Swartkop on a site that is within the buffer zone. Should this receive approval the number of visitors in the area will increase dramatically.

A Visitor Management Plan will be included within the overall Management Plan to ensure that the assets of the World Heritage Site are not compromised. This Plan will be put in place concurrently with the overall Management Plan which relies to a large extent on the protective legislation that is to be promulgated for the site. This will encompass the improvement of facilities and infrastructure, setting up of controlled visitor routes, promotion of other destinations in the area as well as a Business Plan.

e. Number of Inhabitants in the Proposed Site and Buffer Zone

The area falling within the jurisdiction of the Magaliesburg Rural Council, of which this area is a part, has an estimated population of approximately 5000 inhabitants. The area

proposed as the World Heritage Site has an estimated population of approximately 3500, made up of Tswana, Afrikaans and English speaking people.

Large tracts of land in the area which are utilised for Conservation (up to 50% of the area) are not inhabited. Other areas are used for extensive agriculture and are also sparsely populated. The main concentrations of inhabitants are in the south of the area on the Farms Kromdraai, Zwartkrans and Oaktree.

SECTION SIX

6.0 MONITORING

a. Monitoring of the State of Conservation of the Site

A monitoring programme is an intrinsic part of the Management Plan for the area. As already described in Section 4 j, the monitoring programme will be capable of identifying where certain land use changes, land management practices or visitor pressures are compromising the quality of the landscape or endangering parts of the World Heritage Site. It must also be sufficiently sophisticated to trigger appropriate management actions where required. This may involve techniques such as establishing "Limits of Acceptable Change" and will need to take account of a wide range of environmental factors such as physical, ecological and visual factors, in addition to palaeotological and archaeological. The limits will form a set of quality standards, to which can be linked management actions. The quality standards, issues and monitoring methods will be regularly reviewed to ensure their continuing relevance and acceptability.

The Management Plan will also be a "living" document that can respond to changing needs. In principle the site should also be audited annually in order that changes are recorded systematically and thoroughly, and on a five yearly basis for the World Heritage Committee.

The University of the Witwatersrand already have in place management and monitoring systems for the palaeontological sites, and this will need to be expanded upon to include the wider aspects of the total area.

The site has recently been evaluated by the Department of Nature Conservation in terms of its conservation status. There are also comprehensive 1:10 000 aerial Orthophotos of the area which can be updated on a five year cycle to enable changes in land use and other pressures to be monitored at a broad scale. These will be invaluable baselines from which to monitor.

b. Administrative Arrangements for Monitoring the Property

The monitoring of the state of conservation of the site will be conducted in accordance with Integrated Environmental Management procedures.

The site will be monitored as a part of the overall Management Plan through the Staff Unit appointed by the Board, and by field officers competent in the field of Nature Conservation. The University of the Witwatersrand,Transvaal Museum and other scientific organisations, as appropriate, will have delegated authority with regards the monitoring of the scientific studies and excavations. In addition, where landowners are already monitoring their own properties in a competent manner, their resources can be utilised to input into the monitoring procedures, thus avoiding duplication of resources.

c. **Previous Reporting Exercises**:

The Directorate of Nature Conservation of the Gauteng Province have completed a study in the area and this report is appended in Appendix C. This will provide baseline information as at April 1997.

At the Sterkfontein Caves, for over thirty years, details have been kept of the numbers of visitors categorised into (i) general visitors especially to the underground caves of Sterkfontein, and (ii) scientists and student parties to the fenced excavation area.

Records are also kept of the amount of excavation made annually (quantified as the volume of breccia excavated) in the *in situ* breccia and dumps of Sterkfontein: these have been recorded in the Annual Report on the Sterkfontein excavation (and in more recent years on the excavations at Gladysvale and Drimolen, and further afield at Taung and Makapansgat) published each year by the Director of the Palaeo-Anthropological Research Unit of the University of the Witwatersrand.

The upkeep of the entire site, fencing, museum, tea-room, amphitheatre, plaques, steps below ground and above, excavation site, laboratory-cum-store, has been monitored for many years, both by the officer in charge of the excavations at Sterkfontein, by those employed to run the tea-room and look after general site maintenance, by the employed guides, the tea-room staff, the team of field aides on the excavation, and by the liaison officer with the Krugersdorp Rotary Club, Mr. John Olivier. Improvements have been effected whenever the need has been detected and when funds have been available: thus, the Museum has been upgraded two or three times, the tea-room and surrounding gardens have been improved, new toilet facilities have been constructed, lighting and signage have been improved, underground circuit facilities have been improved and relaid from time to time.

Throughout the period since 1966, there has been no encroachment on the site, other than the buildings mentioned above; there has been no residential squatting on the site; veld-fires have not produced any damage to the property.

SECTION SEVEN

7.0 DOCUMENTATION

a. List of Visual Material

Figures 1-33 - See Appendix A

Maps 1-9 - See Appendix B

b. Bibliography

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c. Address where Inventory, Records and Archives are held

Files for the **World Heritage Site** are maintained at:

1. Gauteng Provincial Government
   Department of Agriculture, Conservation and Environment
   Diamond Corner, Market Street, Johannesburg

   Tel No: +27 11 333 2106
   Fax No: +27 11 333 0667

2. Department of Environmental Affairs and Tourism
   120 Plein Street, Cape Town

   Tel No: + 27 21 420 3068
   Fax No: +27 21 418 2582

The **Hominid Fossils** are held in the following repositories:

1. Department of Anatomical Sciences,
   University of the Witwatersrand Medical School,
   7 York Road,
   Parktown
   Johannesburg, 2193
   South Africa

   Tel: +27 11 647-2516
   Fax: + 27 11 484-0385
   E-Mail: 055parg@chiron.wits.ac.za

2. Department of Palaeontology,
   Transvaal Museum,
   P.O. Box 413,
   Pretoria, 0001
   South Africa
   Tel: + 27 12 322-7632
   Fax: + 27 12 322-7939
   E-Mail: thack@tm.up.ac.za

The **other (non-primate) animal fossils** are housed in the following two repositories:

1. The Transvaal Museum,
   Pretoria address as above

2. The Bernard Price Institute for Palaeotological Research,
   The University of the Witwatersrand,
   P/Bag X3,
   Wits, 2050
   South Africa

   Tel: +27 11 716-2727
   Fax: +27 11 403-1423
   E-Mail: 106gar@cosmos.wits.ac.za

The **Inventories of the fossils** are held in the following:

1. Palaeo-anthropology Research Group,
   Department of Anatomical Sciences,
   University of the Witwatersrand Medical School
   7, York Road,
   Parktown,
   Johannesburg, 2193
   South Africa

   Tel: +27 11 647-2516
   Fax: +27 11 484-0385
   E-Mail: 055parg@chiron.wits.ac.za

2. Transvaal Museum
   Pretoria - address as above

3. Bernard Price Institute for Palaeotological Research
   Address as above

The **records and archives of the fossil sites** are kept in the following repositories:

1. Department of Anatomical Sciences
   Address as above

2. The Transvaal Museum
   Address as above

3. Bernard Price Institute for Palaeotological Research
Address as above

4. The R.A. Dart/P.V. Tobias Archives,
Archives of the University of the Witwatersrand,
P/Bag X3,
Wits, 2050
South Africa

Tel: + 27 11 716-3428
Fax: + 27 11 716-8030

APPENDIX C

INTERNAL SUMMARY REPORT: THE IDENTIFICATION OF LARGE CONSERVATION WORTHY AREAS IN GAUTENG

GAUTENG DIRECTORATE OF NATURE CONSERVATION

Report Compiled by LA Lötter, Head: Conservation Advisory Services Division
File number: GN 8/10/6
April 1997

1. Introduction

During 1995 the Directorate of Nature Conservation initiated a process to take stock and inventorise the natural assets of Gauteng Province. This process culminated in 18 meetings by staff of the Directorate to determine which natural assets occurred in the Province and to identify areas of conservation importance. The last meeting was held on 21 February 1996. The result of this process was that the North Eastern Gauteng Initiative was identified as a flagship project for Nature Conservation and Tourism development in the Province. The decision to develop the north eastern part of Gauteng into a so-called "big five" collaborative nature reserve was mainly based on the tourism potential of the area and not due so much to biotic diversity reasons. This proposal would be creating much needed jobs in an impoverished area of the Province, one of the main policy objectives of the Gauteng Provincial Government.

After this initial inventory and identification process it was felt that more information was needed on the nature conservation potential of the rest of Gauteng which could culminate in similar collaborative projects or provincial nature reserves.

A smaller group of officials was requested by the Head: Technological Services to further investigate such potential areas according to main catchment boundaries.

This group consisted of the following officials:
Mr Leon Lötter (Co-ordinator)
Mr Brian Reilly (Leader: Vaal Catchment)
Mr Piet Muller (Technical Support: Vaal Catchment)
Mr James Williams (Leader: Wilge Catchment)
Ms Karien Pieterse (Tech Support: Wilge Catchment)
Ms Christa Grobler (Leader: Crocodile Catchment)
Ms Tania Canninga (Tech Support: Crocodile Catchment)
Ms Pieta Compaan (Map production)
Mr Werner Herselman (Providing computer model to rank identified sites)

2. Extent of the problem

A need has been identified to as objectively as possible determine where viable potential nature conservation areas or reserves exist in Gauteng, and

to rank these according to priority using internationally agreed criteria used in the establishment of nature reserves. This has to be done so that scarce resources in terms of staff and funds may be spent wisely.

The brief of the group therefore was to:

- Determine which large natural areas still occurred in Gauteng.
- Collect certain relevant information about these areas.
- Use a computer model to objectively determine priority areas for conservation involvement in Gauteng, so that an idea could be formed as to where Nature Conservation resources should be spent to have most benefit.
- Make their findings known so as to inform management.

3. Method

The Gauteng Province was divided into three main catchment areas, namely the Crocodile, Vaal and Wilge River catchments. Each of the three catchments was allocated to a nature conservation scientist as the leader responsible for the collecting of information pertinent to that specific catchment. Each of the three nature conservation scientists was also assisted by a technical member of staff.

All participants were handed data forms named "Data form- Prioritization of Conservation Areas" dated 6 March 1995 and explanatory notes named "Data form- Objective- weighting of conservation areas for decision support" dated March 1995.

The following action plan steps were followed to obtain the necessary relevant information:

1) Produce a map of Gauteng to delineate boundaries of three major catchments.
2) Identify large natural open areas on 1: 250 000 scale map for each catchment.
3) Identify large natural open areas on 1: 50 000 scale map in more detaille for each catchment.
4) Do a literature and GIS survey to obtain as much relevant information as possible.
5) Produce a delineated map for each identified area.
6) Visit each identified area per vehicle and obtain relevant data needed to complete data forms. Obtain photographic record of all salient points. Do not create expectations with land owners that they are to be expropriated.
7) Do helicopter flight surveys of each identified area to verify data and other area information. Obtain photographic record of all salient points.
8) Describe survey in report format.
9) Determine for each catchment the three most viable areas.
10) Complete data forms for the identified most viable areas.
11) Hand data forms in to be processed.

12) Prioritize identified areas with assistance of a computerized model.
13) Combine the results in an overall report.

4. Results

The following 7 areas were identified in the three catchments and are listed in the table according to priority for conservation action:

RANKING FROM HIGHEST TO LOWEST PRIORITY	NAME OF AREA	CATCHMENT	OVERALL SCORE ALLOCATED
1	Kromdraai	Crocodile	1041
2	Rhenosterspruit	Crocodile	998
3	Magalies river upper catchment	Crocodile	919
4	Wilge river	Wilge	822
5	Suikerbos river	Vaal	775
6	Aloe Fjord	Vaal	739
7	Poortjie	Vaal	717

5. Interpretation of results and discussion

From the scores of the areas under investigation it appears that the Crocodile catchment has the most potential for conservation action in Gauteng (map attached). In this respect the Kromdraai area has scored the highest with Rhenosterspruit and Magalies river following close behind. The second most important catchment is the Wilge (map attached) followed by the Vaal (map attached).

This approach was used to in a fairly short space of time give the Directorate a robust idea of where to spend more energy in the creation of further nature reserves or collaborative initiatives. The results of this project is seen as a first approach in the further planning of nature reserves in the Province. The interim reports and minutes of meetings are available on file GN 8/10/6.

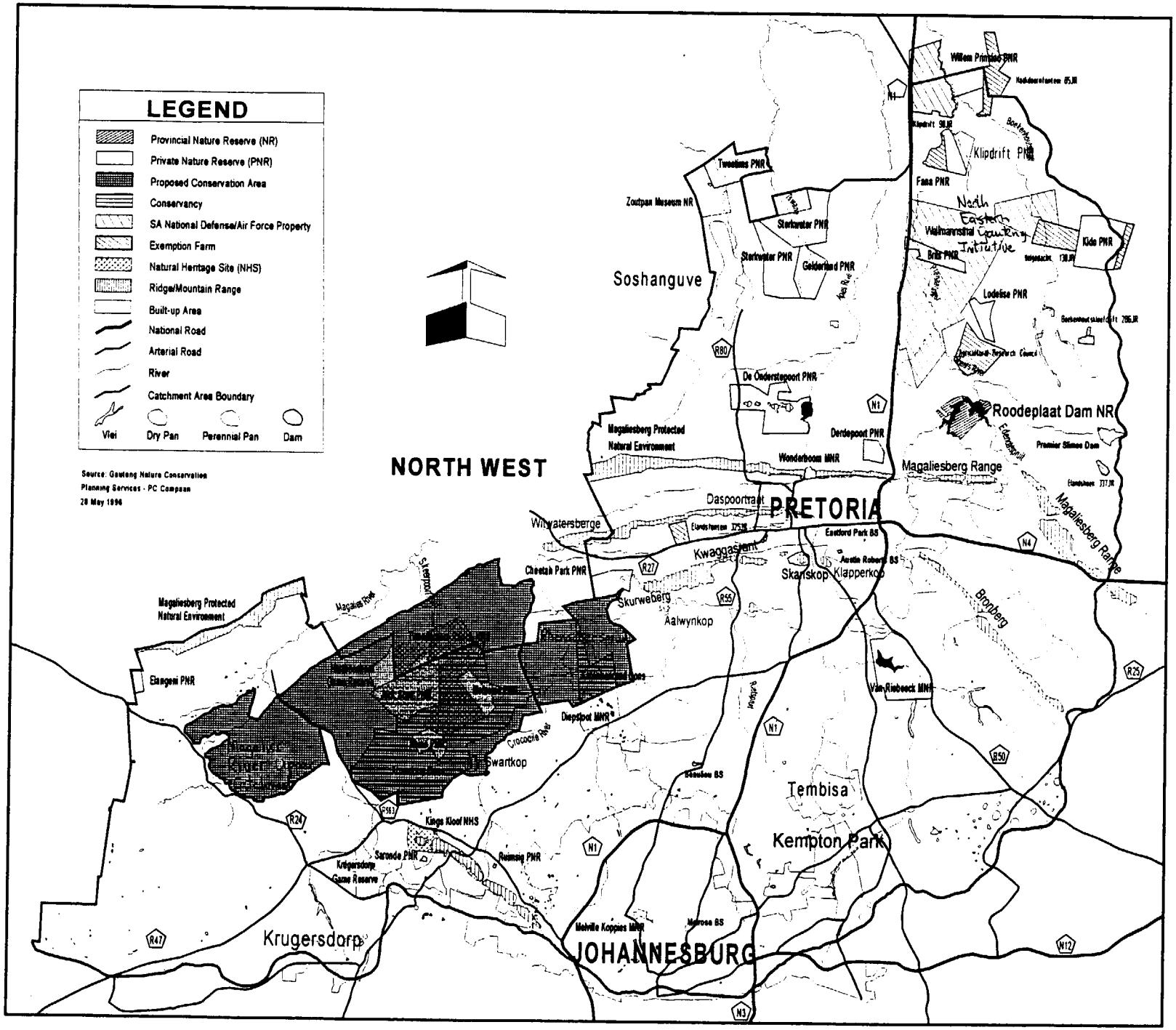
6. Recommendations

It is recommended that:
1) any initiative to create conservation areas whether formal (provincial nature reserves, collaborative reserves) or informal (conservancies), in the Crocodile catchment (specifically Kromdraai, Rhenosterspruit and Magalies river) areas be actively and fully supported by the Directorate,

2) any nature conservation area initiatives in the remaining Wilge, Suikerbos, Aloe Fjord and Poortjie areas be supported,
3) the data so far obtained be used in any further nature conservation initiatives in the Province.

End.

Protected Areas in the Crocodile River Catchment



APPENDIX D

COMMENTS FROM PUBLIC MEETING OF 18 JUNE 1998 AT WHICH THE APPLICATION WAS PRESENTED

The following points of clarification were made:

1. "Swartkrans" in the text refers to the actual fossil cave site. The Farm "Zwartkrans" is an area of Farm Holdings in the proposed World Heritage.

2. References to "Sterkfontein Valley" in the text is more accurately the proposed inscription area.

3. The Ownership status of the area is taken to include rights in land in addition to ownership or holding of title. In particular the "Extension of Security of Tenure Act" confers rights in land to occupants who reside on land with consent, which they do not own.

ZWARTKRANS
COMMUNITY ASSOCIATION
P.O. Box 5408,Krugersdorp West, 1742.

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
On behalf of the National Department of Environmental Affairs and Tourism

Dear Dr. Hanekom,

In response to your letter dated 25 May 1998, this Association called a meeting of members to evaluate the request for support of your application as per paragraph 6.

Those present at the meeting resolved:

To support the World Heritage Site application in principle subject to the following;

A. A more appropriate title for the World Heritage Site would be:

The Palaeontological sites of South Africa cituated at Sterkfontein and Zwartkrans.

These area names are well known to palaeontological societies around the world .

B. Consideration is given that the entire area known as Zwartkrans 172 IQ is included in the World Heritage Site.

C. Landowners be assured that the present property rights remains intact.

D. That local people be an integral part in determining the mandate, powers and Constitution of the Management Authority Board and be represented thereon.

E. The application recognizes the LDO process.

Please acknowledge our member's concerns and suggestions.

Yours truly,

L.B. van der Merwe
CHAIRMAN

3 June 1998

Contact: Secretary 011 956 6647

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I Merle Versler (*Please state full name*) own Property at HI RWARTKRANS in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Versler
Signature

12 June 98
Date

8. The Departments are therefore requesting the support of landowners in the Sterkfontein Valley.

9. The Department therefore requests that you please indicate your consent, in principle, to the inclusion of the property, which you own or on which you reside in the Nomination by providing the details requested and signing in the area set out below.

10. The consent only indicates your support to the nomination of Sterkfontein Valley in principle. It therefore does not limit you with respect to any reservations or concerns about the nomination of the Sterkfontein Valley, which you may have.

    Please inform the Departments of any queries or concerns you may have so that they can be considered in the Nomination process and planning process.

Yours sincerely

pp **GAUTENG PROVINCIAL GOVERNMENT**
Department of Agriculture, Conservation and Environment
On behalf of the National Department of Environmental Affairs and Tourism

I Jan Daniel Verster. *(Please state full name)*

own property at Zwartkrans 41 in the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my consent, in principle, to the nomination of Sterfontein Valley as a World Heritage Site.

Signature

22-5-98
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I CYNTHIA MARGARET BREEDT (*Please state full name)* own Property at ZWARTKRANS 18 in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

15 · 6 · 98
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I DANIEL GEORGE WOODROW (*Please state full name)* own Property at ZWARTKRANS (No 50) in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

18th JUNE 1998.
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I André Steynberg *(Please state full name)* own Property at Zwartkrans No. 6 in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

3/6/98
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I A.D ASHWORTH *(Please state full name)* own Property at 14 ZWARTKRANS in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

A.D Ashworth
Signature

3-6-98
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I Glen Cook (*Please state full name*) own
Property at Farm 24 Zwartkrans in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature Cook G.

Date 1998.06.03

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I Cornelius Rudolph Roxmouth *(Please state full name)* own Property at Swartkrans P.E 56 in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

3/6/98
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I LOUWRENS ESTERHUYSEN *(Please state full name)* own Property at NO 16 ZWARTKRANS in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

3 June 1998
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I Phyllis Louisa Roxmouth *(Please state full name)* own Property at Swartkrans Pit 56 in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

3/6/98
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I David W. Coleman *(Please state full name)* own Property at Zwartkrans 35 in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

3/6/98.
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I J. C. BOTHA (MR) *(Please state full name)* own
Property at 27 ZWARTKRANS in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

Date 3/6/98

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I Aletta Elizabeth Botha Co-owner. *(Please state full name)* own
Property at 97 Kwart Rivers in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

3/2/98.
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I LEONARD JOE PEARCE *(Please state full name)* own Property at 10 ZWARTKRANS 172 IQ in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

29/5/98.
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I J.P.N. Heigi *(Please state full name)* own
Property at 15 ZWARTKRANS in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

J.P. Heigi
Signature

3/6/1998
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I Y. vdMerwe (*Please state full name)* own Property at NBR 8 Zwartkrans in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Yvd Merwe
Signature

6/6/98
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I L B v.d. Merwe (*Please state full name*) own
Property at NR 9 Zwartkoppies in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

6/6/98
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I Gert Lukas Roos *(Please state full name)* own Property at Zwartkrans in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

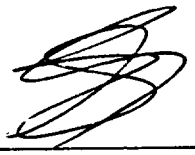
Signature

09/06/98
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I STEPHEN ROY CHARLES SELLET *(Please state full name)* own Property at 66 Oaktree in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.



Signature

18/6/98

Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I JANE BARNARD (*Please state full name)* own Property at PROTEA RIDGE NORTH in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

27.5.98
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I Elsie Johanna Martina Snyman (*Please state full name*) own Property at Plot 46 Swartkops in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

5/6/98

Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I JOHAN le Roux *(Please state full name)* own No
Property at _____ in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

F JC le Roux
Signature
CHAIRPERSON SASAP
(S.A. Society for Amateur Palaeontologists
27/5/98
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I H.P.N. PRETORIUS *(Please state full name)* own Property at Hartebeeshoek in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

27.05.98.
Date

Satelliettoepassingsentrum
Divisie vir Inligting- en Kommunikasietegnologie, WNNR
Posbus 395 Pretoria 0001 SUID-AFRIKA
Telefoon : (012) 334-5000
Internasionaal: + 27 12 334-5000
Telefaks : (012) 334-5001
Internasionaal: + 27 12 334-5001
Tuisblad : www.sac.co.za

WNNR

10 Junie 1998

Christa Grobler
Landbou Bewaring Omgewing

Faks: 012 303 2046

INSAKE: INLIGTING SOOS VERSOEK

Hier is die koordinate van die plaas Hartebeesthoek 502 JQ op kaart nommer 2527DC.

Longitude	Latitude
27,43	25,52
27,40	25,50
27,41	25,56
22,44	25,55

Die plaas grens aan die Jack Scot Natuur Reservaat. Ons sal graag ook die moontlikheid wou ondersoek om die plaas ook as 'n wêreld erfenis terrein te kan kwalifiseer.

Ons sal 'n projek span saamstel om tesame met Natuurbewaring die bogenoemde moontlikeid te ondersoek. Die samestelling van die projek span sal op die 23ste Junie 1998 by die GBK op Hartebeesthoek bespreek en aangestel word. Die span sal dan direk met jou in verbinding tree om die moontlikheid te begin ondersoek.

By voorbaat dank,

Raoul Hodges
S.T.S

Verw: A:\natuurbewaring.wpd

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I MARTIN TREVOR DOWER *(Please state full name)* own Property at 106 HORINGKLIP IQ178 in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

27/05/1998.
Date

NEDCOR BANK
LIMITED • BEPERK

HEAD OFFICE
100 MAIN STREET JOHANNESBURG 2001
P O BOX 1144 JOHANNESBURG 2000 SOUTH AFRICA
TEL (011) 630-7111 FAX (011) 630-7333

HOOFKANTOOR
MAINSTRAAT 100 JOHANNESBURG 2001
POSBUS 1144 JOHANNESBURG 2000 SUID-AFRIKA
TEL (011) 630-7111 FAKS (011) 630-7333

LEGAL AND SECRETARIAL SERVICES

REGS- EN SEKRETARIËLE DIENSTE

27 May 1998

Directorate of Nature Conservation
Department of Agriculture, Conservation and Environment
P O Box 8769
Johannesburg

Fax: (012) 303 2046

Attention: Ms Christa Grobler

WORLD HERITAGE SITE : STERKFONTEIN VALLEY

Nedcor Bank is the owner of land in the Sterkfontein Valley area, and will fall within the proposed World Heritage Site.

We, Nedcor Bank Limited, confirm that we have read the letter (dated 15 May 1998) from your Departments, and we hereby indicate our consent to the nomination of Sterkfontein Valley as a World Heritage Site.

Yours faithfully

WILLEM KRÜGER
Company Secretary
(WJK/js/f249.doc)

A MEMBER OF THE NEDCOR GROUP / 'N LID VAN DIE NEDCOR-GROEP

DIRECTORS/DIREKTEURE: G F LIEBENBERG (CHAIRMAN/VOORSITTER) R G M LAUSCHER (CHIEF EXECUTIVE/HOOF UITVOERENDE BEAMPTE) M J LEEMING (EXECUTIVE/UITVOEREND) A A ROUTLEDGE (EXECUTIVE/UITVOEREND) G S ADCOCK G H BULTERMAN R J GOSS DR J DE V GRAAFF PROF M M KATZ M J LEVETT DR G S VAN NIEKERK DR W P VENTER
REG NO 51/00669/06
01.05.98

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I Jacob John Vorster (*Please state full name)* own Property at 19 Daniels Rust in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

27.5.98

Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I THOMAS ROBBINS (*Please state full name)* own Property at 18 OAKTREE in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

T. Robbins
Signature

27/5/98
Date

8. The Departments are therefore requesting the support of landowners in the Sterkfontein Valley.

9. The Department therefore requests that you please indicate your consent, in principle, to the inclusion of the property, which you own or on which you reside in the Nomination by providing the details requested and signing in the area set out below.

10. The consent only indicates your support to the nomination of Sterkfontein Valley in principle. It therefore does not limit you with respect to any reservations or concerns about the nomination of the Sterkfontein Valley, which you may have.

    Please inform the Departments of any queries or concerns you may have so that they can be considered in the Nomination process and planning process.

Yours sincerely

GAUTENG PROVINCIAL GOVERNMENT
Department of Agriculture, Conservation and Environment
On behalf of the National Department of Environmental Affairs and Tourism

I JOHN CLERK *(Please state full name)*

own property at Plot 21 Oaktree in the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my consent, in principle, to the nomination of Sterfontein Valley as a World Heritage Site.

Signature

1998.05.20
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I Maria Emelia Claassens *(Please state full name)* own Property at JQ 520 Section 10 Kromdraai in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

M. Claassens
Signature

18 June 1998.
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I Johannes K Josia *(Please state full name)* own Property at Lalapnze Plot N°6 Kromdraai in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

K. J. JOSIA
Signature

9th June 1998
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs an
Tourism)

I NICO JOHAN VAN ZILL *(Please state full name)* wn
Property at KROMDRAAI PORTION 36 in the area refer. d to
as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my
support in principle to the nomination of the area as a World Herit e Site.

Signature

9-6-98
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I Daniël Johannes [illegible] (*Please state full name*) own Property at Gedeelte 38 van gedeelte 20 [illegible] in the area referred to as the Sterkfontein Valley. Plaas Kandoveis 20

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

[signature]
Signature

98/06/09
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I DAVID IAIN RAWLINSON
(*Please state full name*) own Property at CRAB FARM, KROMDRAAI in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

D Rawlinson.
Signature

8 June 1998
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I MARC READ *(Please state full name)* own Property at PLOVERSLAKE FARM in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

27/5/98.
Date

Aandag Christa Grobler

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I HENDRIK STEPHANUS JOSEPHUS GROBLER *(Please state full name)* own Property at PORTION 8 KROMDRAAI in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site. Subject to a first preference as highligted in my letter dated 28 May 1998 attached herewith.

Signature

5 June 1998

Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I WOT-A-FARM CC (*Please state full name*) own Property at PORTION 43 KROMDRAAI in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

A.H. Adams
Signature (Managing Member)

1.6.98
Date

A.H. Adams
L Whatley
L Whatley
(Members)

WOT-A-FARM CC

ATT: CHRISTA GROBLER
012 303 2046

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I Heinrich George Wilgenach *(Please state full name)* own Property at Gedeelte 12 Tweefontein 523JQ the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

27/5/98
Date

8. The Departments are therefore requesting the support of landowners in the Sterkfontein Valley.

9. The Departments therefore requests that you please indicate your consent, in principle, to the inclusion of the property which you own or on which you reside in the Nomination by providing the details requested and signing in the area set out below.

10. The consent only indicates your support to the nomination of Sterkfontein Valley in principle. It therefore does not limit you with respect to any reservations or concerns about the nomination of the Sterkfontein Valley which you may have.

Please inform the Departments of any queries or concerns you may have so that they can be considered in the Nomination process and planning process.

Yours sincerely

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
On behalf of the National Department of Environmental Affairs and Tourism

I JOHANNES MARTHINUS AURET *(Please state full name)* own property at PTN 24 OF in the Sterkfontein Valley.
PTN 3 OF RIETFONTEIN 522 JQ
I have read the letter from the Departments and hereby indicate my consent, in principle, to the nomination of Sterkfontein Valley as a World Heritage Site.

Signature

13·05·1998
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I RICHARD BRENGOSZ *(Please state full name)* own
Property at RIETFONTEIN in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

8-6-98
Date

PORTION 38 / A PORTION OF PORTION 19)
FARM RIETFONTEIN 522 JQ.

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I DEREK REX BRISTOW *(Please state full name)* own Property at PTN 38 RIETFONTEIN 522 JQ in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

98/06/09
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I S.C.C. MUNRO *(Please state full name)* own Property at 45 RIETFONTEIN in the area referred to as the Sterkfontein Valley. (WERGEWOOD)

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

S.C.C. Munro
Signature

27-5-95.
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I STEPHANUS ANDRIES LOUW *(Please state full name)* own Property at RIETFONTEIN JO 503 in the area referred to as the Sterkfontein Valley. (PORTION 16 + 31 + 36)

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

SA Louw.
Signature

18 JUNE 1998.
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I ROY JOHN DE STADLER *(Please state full name)* own Property at 43 RIETFONTEIN 522 JQ in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

27.5.98
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I COLIN KATZ *(Please state full name)* own Property at PORTION 13 RIETFONTEIN in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

27/5/98.
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I WILLEM VAN WYK ESTERHUIZEN (*Please state full name*) own Property at PORTIONS 14, 23, 34 of RIETFONTEIN 529JQ in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

W Esterhuizen
Signature

8.6.1998
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I Michael Brennan (*Please state full name*) own Property at PTN 44 Sterkfontein 173 in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

18/6/98
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I Petrus Jacobus Nyp *(Please state full name)* own Property at Sterkfontein 173 IQ in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

8/6/98
Date

Fax to Christa Grobler

012 3032046

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I H. P. RINGGELI *(Please state full name)* own Property at STERKFONTEIN S 19 J. on the area referred to as the Sterkfontein Valley. (PTN. 11 OF PTN. 4)

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature

27/5/98
Date

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

I JOHN ANTHONY ROBERTS (*Please state full name)* own Property at PORTION 13 OF STERKFONTEIN in the area referred to as the Sterkfontein Valley. 519 JQ

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

J Roberts
Signature

27/5/1999
Date

APPENDIX D

CONDITIONAL LETTERS OF CONSENT

Conditional Letters of Consent have been received from:

John Nash - Farms Uitkomst, Diepkloof, Portions 3 and 4 Rietfontein, Portion 2 Tweefontein
David Woolf -Plots 29 and 30- Oaktree Agricultural Holdings
Franklin Dwight Bester - Farm Tweefontein
Dolomite Adventures - Kromdraai Wondercave (Lessee)
Nicholaas C Greyling - Portion 27 Rietfontein
Rabie Bekker - Portion 29 Rietfontein
Johannes Pieter van der Merwe - Farm Danielsrust
Frederick Francois Jooste - Farm Danielsrust
Elizabeth Schroder - Portion 58 Kromdraai
Cheetah Park Beleggings - Portion 7 Sterkfontein
Marius Andre du Plooy - Portion 8 Sterkfontein
Alan Pauwels - Portion 22 Danielsrust
Jacobus Joubert
Barbara Spaanderman - Millbank
Michael Christopher Morris - Plot 46 Farm Rietfontein
Robert William Fulton - Portion 9 Kromdraai
P B Klerk - Farm Kromdraai
Dennis Pauwels - Plot 13 Danielsrus
P W Brink - Plot 25 Danielsrus
F J Brink - Plot 24 Danielsrus
T P Oosthuisen - Portion 9 Danielsrus
Johannes Stephanus

Consent is conditional upon presentation of the Application and firming up of the Management Plan.

APPENDIX E

A-ITEM 200 (55)
WGSC: EXCO: ME

NOMINATION OF STERKFONTEIN VALLEY AS WORLD HERITAGE SITE

3/1/8/1/2

RESOLVED THAT:

1. Cognisance be taken of the proposed nomination of the Sterkfontein Valley as a World Heritage Site.

2. A technical task team, linked with the RDF and LDF, comprising the Chairperson of the WGSC, councillors, landowners (Kromdraai area), Residents Association and general public be established to facilitate the nomination process and that a report in this regard be prepared for submission to the Magaliesberg Representative Council.

3. A meeting in this regard be scheduled for Wednesday 15 April 1998 at 17:00 at Glenburn Lodge.

4. Invitations to attend this meeting be extended to the following councillors:

    - Cllr Gadd
    - Cllr Peirce
    - Cllr C Cloete
    - Cllr M Cloete
    - Cllr L T Dipone

WGSC
Exco Item 200 22
Page 1136

A ITEM 55

MAGALIESBERG REPRESENTATIVE COUNCIL

NOMINATION OF STERKFONTEIN VALLEY AS WORLD HERITAGE SITE

3/1/8/1/2

A letter regarding the possible nomination of the Sterkfontein Valley as a World Heritage Site has been received from the Department of Agriculture, Conservation and Environment (Refer to the attached **Annexure**)

A personal meeting has been arranged with the Director of the said Department in order to obtain more information on the nature and extent of the project and this information will be availed to the meeting on Tuesday 7 April 1998.

SUBMITTED FOR INFORMATION

APPENDIX F

Gauteng Provincial Government
Department of Agriculture, Conservation and Environment
(on behalf of the National Department of Environmental Affairs and Tourism)

THE UNIVERSITY OF THE WITWATERSRAND *(Please state full name)* owns Property at STERKFONTEIN + SWARTKRANS in the area referred to as the Sterkfontein Valley.

I have read the letter from the Departments and hereby indicate my support in principle to the nomination of the area as a World Heritage Site.

Signature
DR. B. P. WOOD
DEPUTY REGISTRAR

27.5.98
Date

APPENDIX G

30 Simmonds Street, JOHANNESBURG.
Private Bag x61, MARSHALLTOWN 2107.

Tel: +27 (011) 355 6000
Fax: +27 (011) 836 9334

Minister Environmental Affairs and Tourism
Dr Z P Jordan
Private Bag X9154
Cape Town
8000

17 June 1998

Via Fax: (012) 323-5181

Dear Colleague

WORLD HERITAGE SITES: GAUTENG PROVINCIAL GOVERNMENT POSITION

At an Executive Council meeting of the Gauteng Provincial Government held on 1 April 1998 the following decision regarding World Heritage sites was taken:-

Resolved:

1. that the Executive Council supports the nomination of Sterkfontein Valley for inscription on the World Heritage List in 1998;

2. that the Executive Council supports the listing of Tswaing Crater on the South African Tentative List for World Heritage Sites;

3. that the Executive Council notes the correspondence received from the Director of the World Heritage Centre outlining the implications of development projects for the Declaration of World Heritage Sites;

4. that the Executive Council approves the development and implementation of a communication strategy designed to gain support for this nomination;

5. that the Member of the Executive Council for Agriculture, Conservation and Environment arranges site visits for the Executive Council to all Gauteng Provincial Heritage Sites, providing each Member with maps and data on these sites prior to the visits;

6. that the Member of the Executive Council for Agriculture, Conservation and Environment prepares a proposal for consideration by the Executive Council on how the Province should take forward Eco-Tourism, and how other line Departments can get involved in this.

Attached is a copy of the memorandum tabled which informed the above decisions on the matter.

Yours sincerely

DR MATHOLE MOTSHEKGA
PREMIER - GAUTENG

CONFIDENTIAL

ITEM 8.2.6
CAB. MTG 01 APRIL 1998

DEPARTMENT OF AGRICULTURE, CONSERVATION AND ENVIRONMENT

FILE NUMBER:

PREMIER IN EXECUTIVE COUNCIL

THE NOMINATION OF STERKFONTEIN VALLEY FOR INSCRIPTION ON THE WORLD HERITAGE LIST IN 1998.

CONSIDERED:

A memorandum regarding the above from the MEC for Agriculture, Conservation and Environment

RESOLVED

1. Cabinet supports the nomination of Sterkfontein Valley for inscription on the World Heritage List in 1998.
2. Cabinet supports the listing of Tswaing Crater on the South African Tentative List for World Heritage Sites.
3. Cabinet notes the correspondence received from the Director of the World Heritage Centre outlining the implications of development projects for the Declaration of world Heritage Sites
4. Cabinet approves the development and implementation of a communication strategy designed to gain support for this nomination.

DEPARTMENT OF AGRICULTURE. CONSERATION AND ENVIRONMENT

FILE NUMBER

PREMIER-IN-EXECUTIVE COUNCIL

MEMORANDUM

NOMINATION OF STERKFONTEIN VALLEY AS A WORLD HERITAGE SITE

A PURPOSE

The purpose of this memorandum is to inform the Executive Council that Sterkfontein Valley, has been nominated as a World Heritage Site to be put forward for inscription on the World Heritage List in 1998; and that Tswaing Crater will be listed on the South African Tentative list of potential World Heritage Sites. Cabinet approval of the nomination is requested.

B DISCUSSION

1. Background

South Africa signed the World Heritage Convention in 1997. This means that national and cultural sites of unique international significance may be put forward to the World Heritage Committee to be declared World Heritage Sites. Declaration as a World Heritage site is not only internationally prestigious, but carries with it significant economic implications. There is a substantial international tourism industry designed to bring visitors to see World Heritage Sites. Gauteng stands to receive a considerable boost in its tourism should a World Heritage Site be declared within its borders.

A national consultative process to select a South African Tentative List of potential World Heritage Sites has just been completed. A National World Heritage Committee consisting of representatives of the relevant Provincial Government departments and national heritage organisations was formed in 1997 to take responsibility for this process. This Committee is chaired by the national Department of Environmental Affairs and Tourism.

In order to meet international deadlines, the South African Tentative List had to be compiled before the end of February and finalised at a meeting early in March. Provinces were given a deadline of end February to forward their nominations for consideration on the South African List.

The Gauteng representatives to the national committee consulted with stakeholders in the province and specifically with the Standing Committees responsible for Sport,

Recreation, Arts and Culture and Agriculture, Conservation and Environment. A joint public hearing on the matter took place on 26th February 1998. The Standing Committees recommendation following the public hearing was that Sterkfontein Valley, Tswaing Crater and The Fort be placed on the South African Tentative List.

2. The Gauteng Proposal

The MEC for Sports, Recreation, Arts and Culture and the MEC for Agriculture, Conservation and Environment identified two sites in Gauteng that meet the main criteria for consideration as World Heritage Sites. The key consideration relates to the "unique" international significance of the area. This must be able to be clearly demonstrated. Other key criteria relate to clarity in relation to ownership of the area and the proven ability to manage and protect the site.

The two sites that were put forward in terms of their ability to meet the criteria are: Tswaing Crater and Sterkfontein Valley.

- Sterkfontein Valley

The fossil sites in the caves and surrounds of the Sterkfontein Valley (including Swartkrans and Kromdraai) can be called the cradle of mankind in Africa. They preserve and provide scientific findings concerning the crucial stages of human evolution between 3.5 to 1 million years ago. They also cover the period about 150 000 years ago when Stone Age men developed as Homo Sapiens. Mrs Ples the oldest pre-historic human skull in the world was discovered at Sterkfontein. More recently, the earliest South African hominid, almost 3.5 million years old was found here, demonstrating through some hitherto undiscovered foot bones that Australopithecus could both walk upright and climb trees. Over 600 fossils of ape-men have been excavated at Sterkfontein, providing the most extensive collection in the world for this species. Fossil wood and fauna have provided botanical evidence of a dramatically different climate in southern Africa for the 3.5 to 2.5 million-year periods.

The Valley is internationally recognised as one of the world's most important archeological sites. It is regularly visited by eminent scientists and archeologists. The University of the Witwatersrand's Department of Anatomy, which has spearheaded the excavations since 1936, manages the site. A museum exists in the area and over 75 000 schoolchildren and other visitors go on tours through the cave system.

- Tswaing Crater

The crater is located in the north western area of the Province close to Soshanguve. It was originally formed by a meteorite impact about 200 000 years ago. The crater rim is at present about 60m higher than the surrounding plains, with the crater floor being about 100m below the rim's crest. The crater is about 432 meters in diameter with its centre

being covered by a shallow lake, whose water is rich in dissolved minerals, of a predominantly saline character. Because the deeper lying crater sediments have hardly been disturbed since the formation of the crater they are a unique source of information about the South African climate of the past 200 000 years. This is internationally recognised and the area is visited by many eminent scientists.

In addition to the crater and the salt pan, the flora and fauna surrounding the crater are also of value.

A Tswaing museum has been established as a satellite museum of the National Cultural History Museum. In addition a Tswaing Forum which has representatives of local communities, specialists and representatives of Community Based Organisation's (CBO's) and Non Governmental Organisations (NGO's) has been established.

3. Outcome of the Selection Process

The South African World Heritage Committee recommended to Minister Pallo Jordan that Robben Island, St Lucia Wetlands, Sterkfontein Valley and the Natal Drakensberg Park, be put forward as South Africa's nominations for inscription on the World Heritage List in 1998.

The National Minister accepted three of the recommended sites and has announced that Robben Island, St Lucia Wetlands and Sterkfontein Valley will be put forward as the 1998 South African nominations for inscription on the World Heritage List.

C ORGANISATIONAL AND PERSONNEL IMPLICATIONS

The Department of Sports, Recreation Arts and Culture and the Department of Agriculture, Conservation and Environment are represented on the South African World Heritage Convention Committee. Personnel from these two departments have been assigned to complete the necessary work for a Gauteng nomination to go forward for consideration as a World Heritage Site.

D FINANCIAL IMPLICATIONS

- In order to prepare the submission on Sterkfontein Valley that must be submitted to the World Heritage Committee, resources will need to be made available. Funds for this are available in existing departmental budgets.
- In order to cope with an envisaged increase in visitors to the Sterkfontein Valley, the existing facilities at the site will require upgrading. In addition, a management authority for the Valley will need to be established. Indications are that in addition to existing budgetary sources, funds for this would be able to be sourced internationally.
- South Africa has joined the World Heritage Convention which has a financial implication of approximately R 0.5 million for the national government

- Only a limited number of World Heritage Sites exist and these sites serve tourism niche market, which focuses on World Heritage Sites as a tourist destination. The recognition of a World Heritage Site in Gauteng will therefore result in economic gains from increased international and domestic tourism to Gauteng Province.

E COMMUNICATION

The two departments will develop a communications strategy that will inform the Province of the nomination and gain support for the nomination.
In relation to this a press conference will be held in early April to make an official announcement of the nomination.

F OTHER DEPARTMENTS/BODIES CONSULTED

- The national Minister of Environmental Affairs and Tourism has announced the nomination of Sterkfontein Valley as one of three World Heritage Sites for inscription on the World Heritage List in 1998.
- The MEC for Sport, Recreation, Arts and Culture is represented in the South African World Heritage Committee and officials of his department together with officials of the Department of Agriculture, Conservation and Environment are jointly responsible at a Provincial level for the finalisation of the nomination
- The Western Gauteng Services Council will facilitate, together with the relevant Provincial Departments the necessary work to finalise the nomination.
- The University of Witwatersrand, as the major owner of the site, has been consulted. The technical work to finalise the nomination is being co-ordinated by a team from the University of the Witwatersrand led by Professor Tobias.
- A meeting is scheduled to obtain the formal consent of other landowners.
- Correspondence from the Director of the World Heritage Centre outlining the implications of development projects for the Declaration of world Heritage Sites is attached as an Annexure

G RECOMMENDATION

It is recommended that:

1. Cabinet supports the nomination of Sterkfontein Valley for inscription on the World Heritage List in 1998.
2. Cabinet supports the listing of Tswaing Crater on the South African Tentative List for World Heritage Sites.
3. Cabinet notes the correspondence received from the Director of the World Heritage Centre outlining the implications of development projects for the Declaration of world Heritage Sites
4. Cabinet approves the development and implementation of a communication strategy designed to gain support for this nomination.

Recommendations in paragraph G supported/supported ~~with amendments~~/not ~~supported~~

Head: Agriculture, Conservation and Environment
Date: 19/3/98

Recommendations in paragraph G supported/~~supported with amendments~~/not ~~supported~~

MEC Agriculture, Conservation and Environment
Date: 19/03/98

GAUTENG PROVINCIAL GOVERNMENT

AGRICULTURE, CONSERVATION AND ENVIRONMENT

OFFICE OF THE MEC

PO Box 8769, Johannesburg, 2000
Tel: (011) 333 2106. Fax: (011) 333 0520.

DRINGEND URGENT

Councillor F Matshikiza
Chairperson of the Executive Council
Private Bag X033
Randfontein
1760

Dear Councillor Matshikiza

Re: Nomination of Sterfontein Valley as a World Heritage Site

It is a privilege for me to confirm that Minister Pallo Jordaan has announced the Sterkfontein Valley as one of the first three South African nominations to go forward for inscription on the World Heritage List.

Selection process

The United Nations adopted the World Heritage Convention twenty five years ago. It falls under UNESCO and provides a means to protect and preserve natural and cultural sites that are of unique international significance. To date there are 706 sites inscribed on the World Heritage List, and of these, 74 are in Africa. South Africa signed the World Heritage Convention in 1997 and thereby qualified to put forward sites to the World Heritage Committee for consideration for inscription on the World Heritage List. In order to facilitate the selection of sites for inscription on the World Heritage List, a South African World Heritage Committee was formed, and a consultative process undertaken in each province. The Standing Committee for Agriculture, Conservation and Environment and the standing committee for Sports, Art and Culture in the Gauteng Legislature held public hearings and made nominations for Gauteng which were considered by the South African World Heritage Committee. (See annexure)

The South African World Heritage Committee meeting held in Cape Town on 3rd and 4th March 1998, recommended a South African Tentative List of potential World Heritage Sites to Minister Jordan. The committee recommended that Robben Island, Sterkfontein Valley, St Lucia and the Natal Drakensberg be put forward as nominations for 1998. On March 5th Minister Jordan announced Robben Island, St Lucia and Sterkfontein Valley as the first three South African nominations.

Implications of World Heritage Status for South African Sites

The inscription of sites on the World Heritage List brings prestige to the country and region where the site is located. It also brings with it a substantial increase in international tourist interest in that particular area.

There are however major responsibilities that go with this status. These responsibilities are towards the international community for conservation of the site and its development in a way that it appropriate and does not threaten its authenticity. This means ensuring that conservation and management plans are in place. It also means a long-term agreement that buffer zones will be set and respected, and that any developments in the vicinity of a World Heritage Site will be considered in relation to the priorities and plans of the site.

Finally, the inscription of sites on the World Heritage List gives access to a considerable degree of funding and technical assistance for matters ranging from development of the site, through to the preparation of management plans, and funds for assistance should the site be threatened in any way.

Submission to the World Heritage Committee

As one of the three provinces with a 1998 nomination, we are now in a position where a great deal of work has to be done in a relatively short period of time to prepare the submission to the World Heritage Committee.

The World Heritage Committee must be satisfied that there are adequate legislative measures and enforcement mechanisms in place to safeguard the site. This includes ensuring that there are no conflicts regarding the ownership of the site.

A detailed plan stipulating how the site will be conserved has to be included in the nomination. This plan has to demonstrate how the site will be protected from encroachment by human settlements, or other development initiatives. In situations where there is a risk of development in the vicinity of the site, a plan indicating how a buffer zone that would protect the site from this development must be included. The extent of this buffer zone, its nature and the measures that will be put in place to ensure that it will not be encroached upon, must be set out.

Finally, the development plan for the site must include a development master plan that indicate how improved facilities are to be established, but in such a way that the authenticity of the site will not be threatened. In the case of cultural landscapes this is regarded as particularly important.

Timeframes

A first draft of our submission on Sterkfontein Valley must be forwarded to the National Department of Environmental Affairs and Tourism by March 20th. A formal process of finalising the nomination will then take place and must be completed by May 1st.

Gauteng Legislature

AGRICULTURE, CONSERVATION AND ENVIRONMENT STANDING COMMITTEE

MEMORANDUM

To:	The MEC for Agriculture, Conservation and Environment Ms N P Mokonyane	From:	E M Sagoni - Chairperson of the Agriculture, Conservation and Environment
C C:	Ms J Yawich : Chief Director - Environment		
Subject:	Invitation to a standing committee meeting Committee Report on the Public Hearings - Selection of World Heritage Sites for Gauteng	Date:	25 February 1998

Dear Ms Yawich

In pursuit of finding highly competitive sites and in the spirit of people centre government we held public hearings as a joint effort between the Standing Committee of the Sports, Arts and Culture and ourselves. The following people made verbal submissions:

1 Sterkfontein Valley
Professor P V Tobias and Professor T C Partridge from the Palaeo-Anthropology Research Unit in the University of Witwatersrand made a joint verbal submission on the Sterkfontein Valley.

2 Melville Koppies
Ms Jenni Millward from the Johanneesburg Metropolitan Council made gave a presentation on the Melville Koppies.

3 The Old Fort
Ms Flo Bird form the Parktown and Westcliff Heritage Trust made a verbal presentation on the Old Fort in Johannesburg.

4 Indaba Tree
Mr Reuben Masenebo from the Isiqi Peace Cultural Organisation made a verbal presentation on the Indaba Tree.

5 Wilgespruit Fellowship Centre
Reverend Sipho Masemola from the Wilgespruit Fellowship Centre made a presentation on the South African Nobel Laureates Memorial and Peace Park.

6 The Indaba Tree and World War II Cemetery, The Blesbokspruit Wetlands, and the Art Deco.
Mr Daniel Potgieter, Ms Hennelie Swart and Ms Charl van der Merwe from the Springs Transitional Local Council made a presentation on the above sites in Springs.

7 Professor Partridge
Professor Partridge from the Palaeo-Anthropology Research Unit in the University of Witwatersrand gave verbal presentation on Tswaing Crater Museum.

The joint committee evaluated the presentation and come to a conclusion that the following sites deserve listing:

i) Sterkfontein Valley
ii) Tswaing Crater Museum
iii) Old Fort Prison (No. 4) in Johannesburg

We trust that your committee will approve the sites.

Kind regards

E M Sogoni - Chairperson of the Agriculture, Conservation and Environment

APPENDIX H

OFFICE OF THE PREMIER

R2/P6.1

1998-06-18

The Premier
Premiers Office
Gauteng Province
Johannesburg
2000

Dear Colleague

REQUEST FOR THE SUPPORT OF THE NORTH-WEST PROVINCE IN THE NOMINATION FOR THE STERKFONTEIN CAVES AND SURROUNDINGS AS A WORLD HERITAGE SITE

Thank you for your letter explaining the work that has been undertaken in regard to the above issue.

The North West Province is in principle fully supportive of the initiative to declare the identified area a World Heritage Site. Furthermore the North West province is committed to a process of discussion and joint work with Gauteng Province in order to maximise the tourism benefits and other advantages of such a listing.

In addition, the North West Province will participate fully in the institutional and other structures that might be set up in order to manage the World Heritage Site.

Sincerely

Popo Molefe
PREMIER

3rd Floor, Ga-Rona Building • Private Bag X65, Mmabatho 2735 • REPUBLIC OF SOUTH AFRICA
TEL.: (0140) 87-3000 • FAX: (0140) 87-3008 • e-mail: christo@nwpg.org.za

18. JUN. 1998 14:49 PREMIERS OFFICE NWP 0140 873008 NO. 2512 P. 2

APPENDIX I

NATIONAL MONUMENTS ACT 28 OF 1969

[ASSENTED TO 21 MARCH 1969] [DATE OF COMMENCEMENT: 1 JULY 1969]

(English text signed by the State President)

as amended by

National Monuments Amendment Act 22 of 1970

National Monuments Amendment Act 30 of 1971

Expropriation Act 63 of 1975

National Monuments Amendment Act 35 of 1979

Finance Act 21 of 1980

National Monuments Amendment Act 13 of 1981

War Graves and National Monuments Amendment Act 11 of 1986

Legal Succession to the South African Transport Services Act 9 of 1989

National Monuments Amendment Act 25 of 1991

General Law Amendment Act 49 of 1996

Abolition of Restrictions on the Jurisdiction of Courts Act 88 of 1996

ACT

To provide for the repair, maintenance and general care of certain burial grounds and graves, the establishment of gardens of remembrance in respect of certain persons, the erection of memorials for certain persons and the preservation of certain immovable or movable property as national monuments and for that purpose to establish the National Monuments Council and to define its powers, functions and duties; to establish a Burgergraftekomitee and a British War Graves Committee to assist the said Council in connection with certain matters; to provide for National Gardens of Remembrance and for the continued existence of the War Graves Trust Fund established by the War Graves Act,

1967; to repeal certain laws relating to natural and historical monuments, relics and antiques; and to provide for incidental matters.

[Long title substituted by s. 15 of Act 35 of 1979 and by s. 17 of Act 13 of 1981.]

5 **Powers, functions and duties of council**

(1) The council shall, subject to the provisions of this Act, have power, in addition to any other power conferred on it by this Act or any other Act-

(a) to make such recommendations as may be required to be made in order to enable the Minister to exercise any of his powers under this Act;

(b) at the request of the Minister, or of its own accord, to investigate and report to the Minister on-

(i) any matter relating to a monument;

(ii) the desirability of declaring anything to be a national monument;

(iii) any application for a State subsidy in respect of the purchase, restoration or maintenance of a monument;

[Para. (b) amended by s. 4 (a) of Act 11 of 1986.]

(c) by notice in the Gazette provisionally to declare any immovable property (including any burial ground and grave referred to in section 3A (2), any garden of remembrance, and any area declared to be a National Garden of Remembrance under section 9C) described in such notice and in respect of which the council is investigating the desirability of recommending it to be declared a national monument, to be a national monument, or by like notice to withdraw any such notice;

[Para. (c) substituted by s. 5 (a) of Act 13 of 1981.]

(cA) to repair, restore, maintain and generally care for burial grounds and graves referred to in section 3A (2);

[Para. (cA) inserted by s. 5 (b) of Act 13 of 1981.]

(cB) subject to the provisions of subsection (4A) or any other law, to exhume and re-inter the remains of any person buried in any grave referred to in section 3A (2) (a), (b) or (c);

[Para. (cB) inserted by s. 5 (b) of Act 13 of 1981.]

(cC) to compile and maintain a register of immovable property which it regards as worthy of conservation on the ground of its historic, cultural or aesthetic interest and to supplement, amend or delete any entry in the register from time to time by notice in the Gazette: Provided that an entry shall not be made until such time as it has consulted with the local authority in whose area of jurisdiction such immovable property is situated;

[Para. (cC) inserted by s. 4 (b) of Act 11 of 1986.]

(cD) by notice in the Gazette to declare, after consultation with the owner, any movable property to be a cultural treasure as described in such notice;

[Para. (cD) inserted by s. 4 (b) of Act 11 of 1986.]

(d) to invest, lend or borrow money;

(e) to purchase or otherwise acquire, hold, let, hire, receive in trust, make over to any person to hold in trust, or sell, exchange or otherwise alienate, or hypothecate, burden with a servitude or otherwise confer any real right in any property movable or immovable;

(f) to preserve, repair or restore anything declared or provisionally declared under this Act to be a national monument or to construct fences, walls or gates around it or on it, if it is under the control of the council or, if it is not under the control of the council, if the owner consents thereto: Provided that if the owner fails to maintain properly any monument, the council may, with the concurrence of the Minister, after reasonable notice to such owner, take such steps as may be necessary for the maintenance thereof;

[Para. (f) substituted by s. 3 (b) of Act 35 of 1979 and amended by s. 5 (c) of Act 13 of 1981.]

(g) (i) to take steps for the erection in suitable places of memorial tablets giving information in both official languages and, if the council considers it to be desirable, in any other language, about historical events relating to such places;

(ii) to affix to any monument the badge or a sign;

[Para. (g) substituted by s. 3 (c) of Act 35 of 1979.]

(gA) to establish gardens of remembrance in respect of any class of persons contemplated in section 3A (2) (a);

[Para. (gA) inserted by s. 5 (d) of Act 13 of 1981.]

(gB) to erect memorials for any class of persons or any person belonging to any such class of persons;

[Para. (gB) inserted by s. 5 (d) of Act 13 of 1981.]

(h) to lend any monument under its control to any museum or other public institution;

(i) by agreement with the owner of any land, to acquire or construct and maintain an access road over such land to any monument, or to construct upon such land fences, walls or gates upon, across or next to such road;

(j) by means of the news media or in any other manner-

(i) to publish and distribute or to cause to be published and distributed any knowledge and information directly or indirectly relating to any monument;

(ii) to encourage and to promote the preservation of monuments;

[Para. (j) substituted by s. 3 (d) of Act 35 of 1979.]

(k) to provide insurance cover-

(i) for the council against any loss, damage, risk or liability which it may suffer or incur; and

(ii) for the members of the council, of any committee of the council and of any committee established by section 3A, in respect of bodily injury, disablement or death resulting solely and directly from an accident occurring in the course of the performance of their duties as such members;

[Para. (k) substituted by s. 5 (e) of Act 13 of 1981.]

(kA) subject to the approval of the Minister, to insure such of its officers or employees as are excluded from the definition of 'workman' in section 3 of the Workmen's Compensation Act, 1941 (Act 30 of 1941), without having regard to subsection (1) (b) of the said section, against disablement or death resulting from accidents or scheduled diseases as defined in that Act, either by way of special arrangement with the Workmen's Compensation Commissioner as provided for in the said section, or in some other manner;

[Para. (kA) inserted by s. 5 (e) of Act 13 of 1981.]

(kB) subject to the approval of the Minister and subject to such conditions as the Minister may determine when granting such approval, insure any of its officers and

employees in respect of whom the council considers it necessary to do so, against disablement or death sustained or taking place in the execution of their duties, to supplement any indemnification in accordance with the provisions of the Workmen's Compensation Act, 1941;

[Para. (kB) inserted by s. 5 (e) of Act 13 of 1981.]

(kC) to inspect or cause to be inspected any grave repaired or maintained by it, any garden of remembrance established by it, any memorial erected by it, or any National Garden of Remembrance mentioned in section 9C;

[Para. (kC) inserted by s. 5 (e) of Act 13 of 1981.]

(l) to perform such functions relating to the preservation of any property as a national monument as the Minister may from time to time determine;

(m) to make a recommendation referred to in section 7A of the Forestry Act, 1968 (Act 72 of 1968), to the Minister of Water Affairs, Forestry and Environmental Conservation;

[Para. (m) added by s. 5 (f) of Act 13 of 1981.]

(n) if agreed upon between the Government of the Republic and the government of any other state, to perform, with the concurrence of the Minister, in that state any function which it would be capable of performing in the Republic in terms of this Act.

[Para. (n) added by s. 5 (f) of Act 13 of 1981.]

[Sub-s. (1) amended by s. 3 (a) of Act 35 of 1979.]

(2) The council shall not invest, lend or borrow any money without the consent of the Minister in writing given in consultation with the Minister of Finance.

(3) The council may acquire immovable property by way of purchase, only if it has been or is about to be declared under this Act to be a national monument and if the council has the necessary funds at its disposal.

(4) The council shall not let, make over to any person to hold in trust, or sell, exchange or otherwise alienate, or hypothecate, burden with a servitude or otherwise confer any real right in-

(a) immovable property, without the consent in writing of the Minister given in consultation with the Minister of Finance;

(b) movable property being a monument, without the consent in writing of the Minister.

(4A) The council shall not exhume and re-inter the remains of any person if the owner of the land or premises on which such remains happen to be, is a descendant of such person and objects to the exhumation and re-interment.

[Sub-s. (4A) inserted by s. 5 (g) of Act 13 of 1981.]

(5) The council shall not by notice under subsection (1) (c) provisionally declare to be a national monument-

(a) any property belonging to the State, unless the Minister consents thereto;

(b) any property belonging to any person other than the State or the council, without the consent of such person, unless the council has, at least one month before the date of such notice, served upon the owner of such property, by post or by delivery to him personally, a notice in writing advising him of the proposed declaration and calling upon him to lodge objections thereto with the council within one month of the date of service of such last-mentioned notice.

(6) The Minister may, at the request of any person whose property has by notice under subsection (1) (c) been provisionally declared to be a national monument, after

consultation with the council by notice in the Gazette withdraw such first-mentioned notice in so far as it relates to such property.

[Sub-s. (6) substituted by s. 3 (e) of Act 35 of 1979.]

(6A) The Minister may, at the request of any person whose property has by notice under subsection (1) (cD) been declared to be a cultural treasure, after consultation with the council, by notice in the Gazette withdraw such a declaration.

[Sub-s. (6A) inserted by s. 4 (c) of Act 11 of 1986.]

(7) The council shall keep a register of all monuments and shall record therein such particulars as the Minister may from time to time determine, and may make such register available for inspection by any person during the council's normal office hours.

[Sub-s. (7) substituted by s. 3 (e) of Act 35 of 1979.]

(7A) The council shall-

(a) compile and maintain registers of the situation of graves referred to in section 3A (2) and of personal details of persons buried therein;

(b) establish and keep a register of all graves repaired or maintained, gardens of remembrance established and memorials erected by it;

(c) publish periodically lists of any graves referred to in section 3A (2) with such particulars of or information relating to such graves as may be determined by the council.

[Sub-s. (7A) inserted by s. 5 (h) of Act 13 of 1981.]

(8) (a) The council shall-

(i) endeavour to ensure that land surrounding or in the immediate vicinity of a monument is not developed in such a manner that the aspect of, or the view from, that monument is obstructed;

(ii) as far as may be practicable, mark each monument by affixing its badge or a sign thereto.

(b) The council may in order to comply with the provisions of paragraph (a) (i), enter into an agreement with the owner of the land in question.

[Sub-s. (8) added by s. 3 (f) of Act 35 of 1979.]

(9) The council may, after consultation with the relevant authority, by notice in the Gazette designate any area of land to be a conservation area on the ground of its historic, aesthetic or scientific interest: Provided that in the absence of any agreement the relevant authority may appeal to the Minister, who may after consultation with the council, revoke such designation by notice in the Gazette.

[Sub-s. (9) added by s. 4 (d) of Act 11 of 1986.]

12 **Alienation, protection, removal or export of monuments and certain other objects**

(1) Any person who sells, exchanges or otherwise alienates, or pledges or lets any monument shall forthwith inform the council of the name and address of the person to whom it has been alienated, pledged or let.

(1A) Any planning authority as well as the owner of immovable property appearing in the register referred to in section 5 (1) (cC) or of a conservation area shall consult with the council in respect of planning which affects such immovable property or such a conservation area.

[Sub-s. (1A) inserted by s. 8 (a) of Act 11 of 1986.]

(2) No person shall-

(a) destroy, damage, excavate, alter, remove from its original site or export from the Republic any monument except under the authority of and in accordance with a permit issued under this section; or

(b) disfigure, destroy, remove, alter or damage any memorial tablet, the badge or a sign erected or affixed in terms of section 5 (1) (g) or any fence, wall or gate constructed in terms of section 5 (1) (f), except with the written authority of the council.

[Para. (b) substituted by s. 11 (a) of Act 13 of 1981.]

[Sub-s. (2) substituted by s. 11 (a) of Act 35 of 1979.]

(2A) No person shall destroy, damage, excavate, alter, remove from its original site or export from the Republic-

(a) any meteorite or fossil; or

(b) any drawing or painting on stone or a petroglyph known or commonly believed to have been executed by Bushmen; or

(c) any drawing or painting on stone or a petroglyph known or commonly believed to have been executed by any other people who inhabited or visited the Republic before the settlement of the Europeans at the Cape; or

(d) any implement, ornament or structure known or commonly believed to have been made, used or erected by people referred to in paragraphs (b) and (c); or

(e) the anthropological or archaeological contents of graves, caves, rock shelters, middens, shell mounds or other sites used by such people; or

(f) any other historical site, archeological or palaeontological finds, material or object,

[Para. (f) substituted by s. 8 (b) of Act 11 of 1986.]

except under the authority of and in accordance with a permit issued under this section.

[Sub-s. (2A) inserted by s. 11 (b) of Act 35 of 1979.]

(2B) No person shall destroy, damage, alter or export from the Republic-

(a) any painting, print, document, deed, seal, stamp or manuscript or collection or group thereof or an object made of paper in respect of which it is known or generally accepted that it has been in the Republic for longer than 50 years;

(b) any object or collection or group of objects of any substance except paper, in respect of which it is known or generally accepted that it has been in the Republic for longer than 100 years;

(c) any movable object or collection of objects of any substance, including manuscripts, declared by the council to be a cultural treasure;

(d) any wreck or portion of wreck, or any object derived from wreck, known or generally accepted to have been in South African territorial waters longer than 50 years; or

(e) any burial ground or grave referred to in section 3A (2),

except under the authority of and in accordance with a permit issued under this section.

[Sub-s. (2B) inserted by s. 11 (b) of Act 13 of 1981 and substituted by s. 8 (c) of Act 11 of 1986.]

(2C) (a) No person shall disturb or remove any wreck which is 50 years old or older, except by virtue of a permit issued by the council on such conditions as it may deem fit and by virtue of a licence issued by the Commissioner of Customs and Excise.

(b) A permit referred to in paragraph (a) may only be issued to a person providing written proof of affiliation with a museum approved by the council.

(c) (i) A permit referred to in paragraph (a) may only be issued by the council after it has by notice in the Gazette afforded the opportunity for the submission of representations to it on the issuing of such permit and after representations received thereon have been considered by it.

(ii) The location of wreck shall not be disclosed in the notice referred to in subparagraph (i).

(d) Any person to whom the council issues a permit referred to in paragraph (a), shall thereby acquire no other right to wreck than the right granted him by such permit.

(e) (i) The council shall not issue a permit referred to in paragraph (a) with regard to wreck in a security area or nature conservation area, or in an area adjacent to a security area or nature conservation area, without obtaining the prior approval of the department controlling such security area or nature conservation area.

(ii) The department concerned may grant its approval subject to certain conditions, which shall be binding on all parties concerned.

(f) All material recovered from wreck or a wreck site shall be placed in the custody of the museum referred to in paragraph (b), and the museum, in consultation with the council and the holder of the permit, shall decide on the disposal thereof: Provided that in the case of a dispute among the parties referred to in this paragraph the said museum shall refer the matter to arbitration.

[Sub-s. (2C) inserted by s. 8 (d) of Act 11 of 1986.]

(3) (a) The provisions of subsection (2A) shall not apply to the removal of anything other than deposits in any cave or midden, in the normal course of mining, engineering or agricultural activities: Provided that if anything referred to in section (2A) is found in the normal course of the said activities, the finder thereof or the owner of the land where it is found or the person who performs such activities, shall report that fact immediately to an institution referred to in the Cultural Institutions Act, 1969 (Act 29 of 1969).

(b) The council or any person in the employment of the State authorized thereto by the Minister may enter into an agreement with such finder, owner or other person in connection with the removal and safe custody of such thing: Provided that the council and the State shall not be liable in respect of any loss arising out of such removal or custody unless with the consent of the Minister it is otherwise agreed.

[Sub-s. (3) substituted by s. 11 (c) of Act 35 of 1979.]

(4) On application by any person in the manner prescribed by regulation under this Act, the council may in its discretion, but subject to the directions of the Minister, issue to such person free of charge a permit to-

(a) destroy, damage, excavate, alter, remove from its original site or export from the Republic any monument or any other object referred to in subsection (2) or (2A), specified in the permit;

(b) destroy, damage, alter or export from the Republic any object referred to in subsection (2B) specified in the permit;

(c) disturb or remove wreck as referred to in subsection (2C) (a),

[Para. (c) added by s. 8 (e) of Act 11 of 1986.]

at such time or within such period and subject to such terms, conditions and restrictions or directions as may be so specified.

[Sub-s. (4) substituted by s. 11 (d) of Act 35 of 1979 and by s. 11 (c) of Act 13 of 1981.]

(5) Whenever the council has refused an application made under this section, or has granted such application subject to any terms, conditions, restrictions or directions, the applicant may appeal against the decision of the council to the Minister who may confirm such decision or direct the council to grant the application subject to such terms, conditions, restrictions or directions as the Minister may determine.

(6) Whenever any person has been convicted of any contravention of subsection (2), (2A) or (2B), the council may-

(a) by notice in writing served upon such person by post or by delivery to him personally, direct him to put right the result of the act of which he was found guilty as may be specified in the notice, in the manner thus specified and within such period as may be so specified;

(b) upon failure of such person to comply with such notice, put right or cause to be put right the result of the act of which he was found guilty and recover the cost thereof from such person.

[Sub-s. (6) amended by s. 11 (e) of Act 35 of 1979 and by s. 11 (d) of Act 13 of 1981 and substituted by s. 8 (f) of Act 11 of 1986.]

(7) Whenever any person has been convicted of disfiguring, destroying, removing, altering or damaging any memorial tablet, the badge or any sign, or any fence, wall or gate constructed in terms of section 5 (1) (f), in contravention of paragraph (b) of subsection (2), the council may repair or replace or cause to be repaired or replaced such tablet, badge, sign, fence, wall or gate and recover the cost thereof from such person.

[Sub-s. (7) added by s. 11 (f) of Act 35 of 1979 and substituted by s. 11 (e) of Act 13 of 1981.]

ENVIRONMENT CONSERVATION ACT 73 OF 1989

[ASSENTED TO 1 JUNE 1989] [DATE OF COMMENCEMENT: 9 JUNE 1989]

(English text signed by the State President)

as amended by

Environment Conservation Amendment Act 98 of 1991

Environment Conservation Amendment Act 79 of 1992

Environment Conservation Second Amendment Act 115 of 1992

Environment Conservation Amendment Act 94 of 1993

Environment Conservation Second Amendment Act 189 of 1993

Environment Conservation Amendment Act 52 of 1994

Proclamation R29 of 1995

Proclamation R43 of 1996

NB: See Proclamation R29 in Government Gazette 16346 of 7 April 1995 and Proclamation R43 in Government Gazette 17354 of 8 August 1996 concerning the extent of the assignment of the administration of this Act to the provinces.

ACT

To provide for the effective protection and controlled utilization of the environment and for matters incidental thereto.

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21 **Identification of activities which will probably have detrimental effect on environment**

(1) The Minister may by notice in the Gazette identify those activities which in his opinion may have a substantial detrimental effect on the environment, whether in general or in respect of certain areas.

(2) Activities which are identified in terms of subsection (1) may include any activity in any of the following categories, but are not limited thereto:

(a) Land use and transformation;

(b) water use and disposal;

(c) resource removal, including natural living resources;

(d) resource renewal;

(e) agricultural processes;

(f) industrial processes;

(g) transportation;

(h) energy generation and distribution;

(i) waste and sewage disposal;

(j) chemical treatment;

(k) recreation.

(3) The Minister identifies an activity in terms of subsection (1) after consultation with-

(a) the Minister of each department of State responsible for the execution, approval or control of such activity;

(b) the Minister of State Expenditure; and

[Para. (b) amended by s. 8 of Act 94 of 1993.]

(c) the competent authority of the province concerned.

[Para. (c) amended by Proclamation R43 of 8 August 1996.]

[Sub-s. (3) substituted by s. 10 of Act 79 of 1992.]

[a73y1989s22]

22 **Prohibition on undertaking of identified activities**

(1) No person shall undertake an activity identified in terms of section 21 (1) or cause such an activity to be undertaken except by virtue of a written authorization issued by the Minister or by a competent authority or a local authority or an officer, which competent authority, authority or officer shall be designated by the Minister by notice in the Gazette.

(2) The authorization referred to in subsection (1) shall only be issued after consideration of reports concerning the impact of the proposed activity and of alternative proposed activities on the environment, which shall be compiled and submitted by such persons and in such manner as may be prescribed.

(3) The Minister or the competent authority, or a local authority or officer referred to in subsection (1), may at his or its discretion refuse or grant the authorization for the proposed activity or an alternative proposed activity on such conditions, if any, as he or it may deem necessary.

(4) If a condition imposed in terms of subsection (3) is not being complied with, the Minister, any competent authority or any local authority or officer may withdraw the authorization in respect of which such condition was imposed, after at least 30 days' written notice was given to the person concerned.

[S. 22 substituted by s. 11 of Act 79 of 1992 and amended by Proclamation R43 of 8 August 1996.]

MINERALS ACT 50 OF 1991

[ASSENTED TO 15 MAY 1991] [DATE OF COMMENCEMENT: 1 JANUARY 1992]

(Afrikaans text signed by the State President)

as amended by

Minerals Amendment Act 103 of 1993

Mine Health and Safety Act 29 of 1996

also amended by

General Law Fourth Amendment Act 132 of 1993

[with effect from a date to be proclaimed]

ACT

To regulate the prospecting for and the optimal exploitation, processing and utilization of minerals; to regulate the orderly utilization and the rehabilitation of the surface of land during and after prospecting and mining operations; and to provide for matters connected therewith.

[Long title substituted by s. 99 of Act 29 of 1996.]

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[S. 4 amended by s. 99 of Act 29 of 1996.]

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[S. 18 substituted by s. 7 of Act 103 of 1993.]

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[S. 19 amended by s. 99 of Act 29 of 1996.]

20. Restriction on dividing of rights to minerals

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[S. 33 substituted by s. 13 of Act 103 of 1993.]

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[S. 39 substituted by s. 15 of Act 103 of 1993.]

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[S. 49 amended by s. 99 of Act 29 of 1996.]

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[S. 52 amended by s. 99 of Act 29 of 1996.]

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70. Short title and commencement

38 **Rehabilitation of surface of land**

(1) The rehabilitation of the surface of land concerned in any prospecting or mining shall be carried out by the holder of the prospecting permit or mining authorization concerned-

(a) in accordance with the environmental management programme approved in terms of section 39, if any;

[Para. (a) amended by s. 25 of Act 103 of 1993.]

(b) as an integral part of the prospecting or mining operations concerned;

(c) simultaneously with such operations, unless determined otherwise in writing by the Director: Mineral Development; and

(d) to the satisfaction of the Director: Mineral Development concerned.

(2) (a) If the Director: Mineral Development is of the opinion that having regard to the known and disclosed mineral reserves of any mine, that mine is likely to cease mining operations within a period of five years, he shall in writing give notice accordingly to the owner of that mine and such owner shall not dispose of any of his assets in relation to that mine without a certificate furnished by the Director: Mineral Development to the effect that the necessary steps have been taken or adequate provision has been made for the rehabilitation of the mining area concerned.

(b) Any certificate contemplated in paragraph (a) may be furnished in general terms or in respect of specified assets and may be made subject to such conditions as the Director: Mineral Development may determine.

[Sub-s. (2) added by s. 14 of Act 103 of 1993.]
[S. 38 amended by s. 99 of Act 29 of 1996.]

39 **Environmental management programme**

(1) An environmental management programme in respect of the surface of land concerned in any prospecting or mining operations or such intended operations, shall be submitted by the holder of the prospecting permit or mining authorization concerned to the Director: Mineral Development concerned for his approval and, subject to subsection (4), no such operations shall be commenced with before obtaining any such approval.

(2) The Director: Mineral Development may-

(a) on application in writing and subject to such conditions as may be determined by him, exempt the holder of any prospecting permit or mining authorization from one or more of the provisions of subsection (1) or grant an extension of time within which to comply with any such provision;

(b) approve an amended environmental management programme on such conditions as may be determined by him; or

(c) without application being made therefor, but after consultation with such holder, amend any approved environmental management programme.

(3) Before the Director: Mineral Development-

(a) approves any environmental management programme referred to in subsection (1) or any amended environmental management programme referred to in subsection (2) (b); or

(b) grants any exemption or extension of time under subsection (2) (a) or any temporary authorization under subsection (4); or

(c) effects an amendment under subsection (2) (c),

he or she shall consult as to that with the Chief Inspector of Mines and each department charged with the administration of any law which relates to any matter affecting the environment.

[Sub-s. (3) amended by s. 99 of Act 29 of 1996.]

(4) The Director: Mineral Development may, pending the approval of the environmental management programme referred to in subsection (1), grant temporary authorization that the prospecting or mining operations concerned may be commenced with, subject to such conditions as may be determined by him.

(5) (a) The Director-General may, pending the approval of an environmental management programme referred to in subsection (1), require that an environmental impact assessment be carried out in respect of the intended prospecting or mining operations by a professional body designated by the Director-General.

(b) Any costs in respect of an environmental impact assessment referred to in paragraph (a) shall be borne by the holder of the prospecting permit or mining authorization referred to in subsection (1).

[S. 39 substituted by s. 15 of Act 103 of 1993 and amended by s. 99 of Act 29 of 1996.]

41 **Restrictions in relation to use of surface of land**

(1) The Director: Mineral Development may issue directives and determine conditions in relation to the use of the surface of land comprising the subject of any prospecting permit or mining authorization in order to limit any damage to or the disturbance of the surface, vegetation, environment or water sources to the minimum which is necessary for any prospecting or mining operations or processing of any mineral: Provided that such directives and conditions shall not be construed as placing the holder of any such prospecting permit or mining authorization, in a better position vis-à-vis the owner of such land in relation to the use of the surface thereof.

DEVELOPMENT FACILITATION ACT 67 OF 1995

[ASSENTED TO 28 SEPTEMBER 1995] [DATE OF COMMENCEMENT: 22 DECEMBER 1995]

(Unless otherwise indicated - see Schedule)

(English text signed by the President)

ACT

To introduce extraordinary measures to facilitate and speed up the implementation of reconstruction and development programmes and projects in relation to land; and in so doing to lay down general principles governing land development throughout the Republic; to provide for the establishment of a Development and Planning Commission for the purpose of advising the government on policy and laws concerning land development at national and provincial levels; to provide for the establishment in the provinces of development tribunals which have the power to make decisions and resolve conflicts in respect of land development projects; to facilitate the formulation and implementation of land development objectives by reference to which the performance of local government bodies in achieving such objectives may be measured; to provide for nationally uniform procedures for the subdivision and development of land in urban and rural areas so as to promote the speedy provision and development of land for residential, small-scale farming or other needs and uses; to promote security of tenure while ensuring that end-user finance in the form of subsidies and loans becomes available as early as possible during the land development process; and to provide for matters connected therewith.

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CHAPTER IV

LAND DEVELOPMENT OBJECTIVES (ss 27-29)

27 Body responsible for setting land development objectives

(1) The land development objectives referred to in section 28 shall, subject to subsections (2), (3), and (4), be set-

(a) in respect of any particular local government area, by the local government body having jurisdiction, with the approval of the MEC, which approval shall not be refused unless-

(i) the land development objectives in the opinion of the MEC fail to deal adequately with the subject matter to which land development objectives in terms of section 28 shall relate; or

(ii) the land development objectives are, in the opinion of the MEC, inconsistent or cannot be reconciled with other objectives set or planning done in terms of any other law in the province; or

(iii) the procedures and other requirements prescribed under subsection (3) have, in the opinion of the MEC, not been complied with,

and the MEC has, on request therefor, provided the local government body concerned with his or her written reasons for having an opinion referred to in subparagraph (i), (ii) or (iii), as the case may be; and

(b) outside such local government area, by the MEC.

(2) If a local government body fails to set land development objectives, either generally or in respect of any particular case, within a period of time prescribed by the MEC in the Provincial Gazette, the MEC may set land development objectives in respect of that local government area, and objectives so set shall prevail over objectives subsequently set by the local government body.

(3) Land development objectives shall be set in the manner, within the time limits and after following the procedures prescribed by the MEC in the Provincial Gazette.

(4) The procedures referred to in subsection (3) shall include procedures relating to-

(a) the manner in which members of the public and interested bodies shall be consulted in the setting of land development objectives; and

(b) the manner in which the setting of land development objectives shall be co-ordinated with the functions of any department of State or other authority responsible for the administration or formulation of any plan dealing with subject matter which is the same as or similar to the subject matter set out in section 28.

(5) The Minister may, at the request of the MEC, perform the functions assigned to and exercise the powers conferred on the MEC by this Chapter.

28 **Subject matter of land development objectives**

(1) Land development objectives shall relate to-

(a) the objectives of the relevant authority in relation to access to and the standard of services for land development, including public transport and water, health and education facilities;

(b) the objectives (with reference to local circumstances, including demographic circumstances and prevailing spatial patterns) relating to urban and rural growth and form in the relevant area, including objectives in relation to-

(i) the integration of areas settled by low-income communities into the relevant area as a whole;

(ii) the sustained utilisation of the environment;

(iii) the planning of transportation;

(iv) the provision of bulk infrastructure for the purpose of land development;

(v) the overall density of settlements, with due regard to the interests of beneficial occupiers;

(vi) the co-ordination of land development in consultation with other authorities;

(vii) land-use control;

(viii) the optimum utilisation of natural resources; and

(ix) such other matters as the MEC may determine by notice in the Provincial Gazette;

(c) the development strategies of the relevant authority in relation to-

(i) facilitation of the optimal involvement of sectors of the economy or of subsectors thereof involved in land development;

(ii) access to finance for land development;

(iii) available administrative or proposed new administrative structures to deal with land development in the relevant area;

(iv) such other matters as the MEC may determine by notice in the Provincial Gazette;

(d) the quantum of land development objectives in the sense of-

(i) the number of housing units, sites or other facilities planned for;

(ii) whether such units, sites or other facilities will be delivered by means of upgrading land or built environments, undertaking new land developments or the letting of land or buildings;

(iii) the rate at which the production or delivery of such units, sites or facilities will increase during a period in future, which period may be determined by the MEC in the Provincial Gazette; and

(iv) the other matters determined by the MEC by notice in the Provincial Gazette.

(2) A local government body or the MEC may require the persons or bodies determined by him or her to carry out environmental evaluations in order to assess the likely impact of any land development objective upon the environment.

29 **Effect of land development objectives and other plans**

(1) A tribunal or any other competent authority shall not approve a land development application in terms of this Act or any other law dealing with the establishment of land development areas, if such application is inconsistent with any land development objective contemplated in this Chapter: Provided that no provision in this Chapter shall be so construed that it entails the delay of any land development application where no land development objectives have been set.

(2) If a land development objective set in terms of this Chapter is expressly inconsistent or incompatible with any plan as defined in section 1 of the Physical Planning Act, 1991 (Act 125 of 1991), the land development objective shall prevail over the plan and the plan shall for the purposes of that Act be deemed to have been amended accordingly.

(3) Despite anything to the contrary contained in the Physical Planning Act, 1991, the MEC may, subject to the procedures deemed fit by him or her or that he or she may prescribe by notice in the Provincial Gazette, amend or withdraw, whether in whole or in part, a guide plan referred to in section 37 (1) of that Act, which is deemed to be a regional structure plan or an urban structure plan by virtue of a declaration contemplated in section 37 (2) (a) (ii) of that Act.

Acknowledgements

The Gauteng Provincial Government through the Department of Agriculture, Conservation and Environment has been responsible for the preparation of the country application for the nomination of the World Heritage Site as well as for the Planning Phase of the project. The following persons and organisations have been instrumental in assisting with the compilation of the reports for the Planning Phase which will culminate in the submission of the Proposed Integrated Environment and Conservation Management Plan to UNESCO in July 1999.

The Landowners and Residents of the Area

South African Government - Department of Environmental Affairs and Tourism
South African Government - Department of Arts, Culture, Science and Technology
South African Government - Department of Land Affairs - Deeds Office, Pretoria
South African Government - Department of Land Affairs - Chief Directorate of Surveys and Mapping
South African Government - Department of Water Affairs and Forestry
Gauteng Provincial Government - Office of the Premier
Gauteng Provincial Government - Department of Agriculture Conservation and Environment
Gauteng Provincial Government - Department of Finance and Economic Affairs
Gauteng Provincial Government - Department of Sports, Recreation, Arts and Culture
Gauteng Provincial Government - Department of Development Planning and Local Government
North West Provincial Government - Department of Tourism, Environment and Conservation
North West Provincial Government - Office of the Premier
Gauteng Local Government Authority - Western Gauteng Services Council
Gauteng Local Government Authority - Krugersdorp Local Council
Gauteng Local Government Authority - Magaliesberg Representative Council
Gauteng Local Government Authority - Magaliesburg Rural Council
Gauteng Local Government Authority - Crocodile River Representative Council
North West Local Government Authority - Eastern Region District Council
North West Local Government Authority - Skeerpoort Representative Council
North West Local Government Authority - Hartbeespoort Local Council

National Monuments Council
CSIR Satellite Station
University of the Witwatersrand - Palaeo-Anthropology Research Group
University of the Witwatersrand - Educational Archaeology
University of the Witwatersrand - Amenities Committee
Palaeo-Anthropological Scientific Trust
Northern Flagship Institution (formerly Transvaal Museum)
Gauteng Tourism Agency
Westour

Gauteng Department of Agriculture, Conservation and Environment - Project Management & Stakeholder Participation
Environmental Design Partnership - Lead Agent - Consultants Team
SRK - Kagiso Cowi - Proposed Integrated Environment and Conservation Management Plan
Grant Thornton Kessel Feinstein - Proposed Tourism and Marketing Plan
Koplan and Stewart Scott Incorporated - Proposed Land Use and Infrastructure Management Plan
Simeka TWS - Communications and Promotions Plan
Randall Gross - Financial Plan
Bell Dewar and Hall - Legal Aspects
IUCN & Greg Jacobs - Assistance with Stakeholder participation

PROPOSED INTEGRATED ENVIRONMENT AND CONSERVATION MANAGEMENT PLAN FOR THE NOMINATED WORLD HERITAGE SITE KNOWN AS THE FOSSIL HOMINID SITES OF STERKFONTEIN, SWARTKRANS, KROMDRAAI AND ENVIRONS

EXECUTIVE SUMMARY

1. Introduction

This report documents the proposed integrated environment and conservation management plan (proposed IECMP) for the implementation phase of the nominated World Heritage Site (nominated WHS) described as the fossil hominid sites of Sterkfontein, Swartkrans, Kromdraai and environs (the area), South Africa. To be successfully listed on the World Heritage List, the nominated WHS must have a clear motivation for listing and be supported by a management plan for the area's conservation.

The motivation for the inclusion of the nominated WHS is set out in Section 2 of the application for inclusion on the World Heritage List submitted in June 1998. Although the justification for inscription of the nominated WHS pertains primarily to the 12 identified fossil hominid sites (and a vast number of potential fossil-bearing cave deposits), the area is also significant in terms of archaeological resources and particularly well-conserved grasslands and associated fauna and flora.

2. Regional and local setting

The nominated WHS, an area of approximately 47 000 ha, is located on the north-west border of the Gauteng Province and the North West Province of South Africa. Major urban centres in close proximity to the area, include Krugersdorp (2km to the south), Johannesburg (25km to the south-east), and Pretoria (40 km to the north-east). The nominated WHS extends across approximately 30 farms, many of which have been extensively subdivided. The area is almost entirely under private ownership and is largely under conservation or farming except to the south and south-east where commercial, light industrial activities and a number of smallholdings occur. Tourism activities also predominate in the area, particularly in the south-east part of the nominated WHS.

3. Vision

The vision statement for the proposed IECMP is as follows:

To achieve an acceptable balance in the nominated WHS between the conservation of cultural and natural resources, access and education, the interests of those living and working in the area, and its use for the economic and social benefit of the population at large within the framework of the World Heritage Centre.

The principles and objectives that drive the vision for the nominated WHS are outlined in the main report.

4. Methodology

The process for the submission for the nominated WHS was initiated in 1998 with the nomination of the area as a cultural property and will be concluded at the end of 1999 when the World Heritage Bureau makes known its decision on the listing of the site. After the decision has been made known, it is expected that the implementation phase will be initiated.

A multi-disciplinary project team was commissioned to develop the proposed IECMP and other plans for the planning phase. The other proposed plans (appended to the main report) include:

- The State of Environment Report
- Proposed Tourism and Marketing Plan and Report on the Research Phase for the Plan
- Proposed Land Use and Infrastructure Management Plan
- Stakeholder Participation Report
- Proposed Communications and Promotion Plan
- Proposed Financial Plan
- Review of existing and proposed legislation to protect and conserve the nominated WHS.

Information gathering has been based on secondary information gathered in a combination of a review of desktop information, site visits, specialist advice and opinion, and the integration of key findings and recommendation from other proposed plans produced during this planning phase. It is recognised that the IECMP is a proposed plan and as such will be updated in a process of ongoing information gathering and negotiation with stakeholders. DACE has been responsible for the stakeholder involvement and strategies to engage discussion throughout the planning phase of the project. Stakeholder involvement will be an ongoing process.

5. Background

Environmental overview

The area is predominated by ridges running in a north-east south-west direction and is divided approximately in two, by the central watershed that runs through the centre of the area. To the north-west and approximately parallel to the central watershed lies the Witwatersberg ridge, which forms a distinct physical boundary to the site. To the south and south east of the central watershed, lower ridges and rocky outcrops break up the otherwise gently rolling topography.

The Bankenveld grassland vegetation that covers much of the area is generally well conserved. The grassland is interspersed with patches of dense woody vegetation in the drainage lines and along ridges and rocky outcrops, and limited crop cultivation in the wide valley bottoms. The vegetation across the area is not homogenous in distribution type, density or height. The richness of plant and animal species in the area is enhanced by its location within the transition zone between the savanna and grassland biomes. In particular it features a diversity of woody plants and non-grassy herbs as well as animals.

The topography of the area in combination with the dolomite, which is a source of clear clean water, provide a variety of striking fluvial features. These include natural springs and eyes, as well as incised highland watercourse and larger meandering streams in wider lowland valleys that are fed by numerous perennial and ephemeral tributaries as well as dolomitic sources. The area drains into two catchments to the north and south of the central watershed, these being the Magalies River catchment and the Crocodile River catchment respectively. These rivers both drain into the Hartbeespoort Dam to the north of the area.

In the lowland valleys of the area the ridges create a sense of visual enclosure and remoteness from the adjacent and surrounding land uses. During winter months, on cold nights and early mornings the sense of enclosure is increased by the formation of fog in the valley bottoms. The air quality in this area is generally considered to be good and, on most days, an extensive and uninterrupted panoramic view across the rolling hills is afforded from the vantage points in the area. To the north and north-west spectacular views are created by the distant rocky and rugged landscape of the Witwatersberg and Magaliesberg, while wide expanses of undulating landscape are visible to the south and south-west. The southern part of the area is less well protected visually. Creeping urbanisation of the Greater Johannesburg area is visible in the distance to the south and south-east.

A collection of man made features mar the otherwise well conserved and undeveloped landscape of this area. Notable among these are: powerlines which traverse the centre of the nominated WHS in a north-east south-west direction; telephone lines and fencing; poorly maintained roads and tracks; communication masts on some of the

high points and ridges; and an eclectic mixture of signage and advertising located along the roads leading into the area.

Socio-economic context

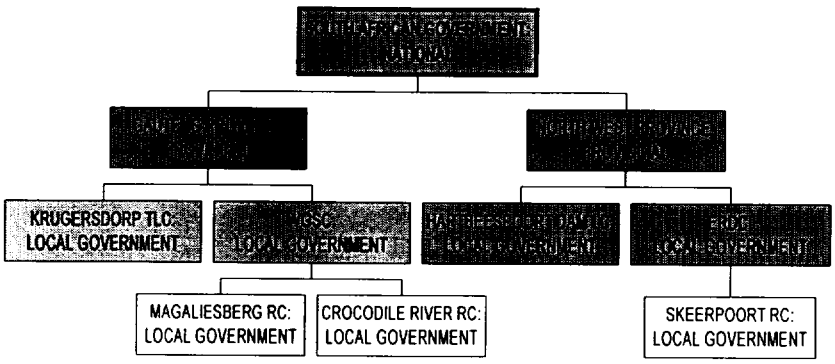
The nominated WHS is located within a region where there has been a steady decline in formal employment, significant increases in population numbers and high rates of urbanisation, placing a burden on local authorities to provide basic services. This is reflected particularly in the rural parts of this region in the poor provision of services, especially health and disaster management.

Tourism

Tourist attractions in the area include horse trails, art galleries, craft manufacturing, cultural villages, picnic sites, game reserves and six of the twelve fossil sites that are open to the public. Currently the quality and standard of products is diverse. The tourism infrastructure and potential of the nominated WHS is discussed in the proposed Tourism and Marketing Plan.

Institutional context

The South African government has a three-tier system of governance incorporating national, provincial and local authorities. The structures with jurisdiction in the nominated WHS are illustrated as follows and are described in detail in the proposed Land Use and Infrastructure Management Plan.



Legal context

There is a variety of legislation in place to protect and manage the nominated WHS. The most important pieces of legislation in this regard include:

- The National Monuments Act (No 28 of 1969) which is eventually to be replaced by the National Heritage Resources Act (No 25 of 1999) and the National Heritage Council Act (No 11 of 1999)
- Environment Conservation Act (No 73 of 1989)
- National Environment Management Act (No 107 of 1998)
- National Water Act (No 36 of 1998)

- Transvaal Nature Conservation Ordinance (No 12 of 1983)
- World Heritage Convention Bill

Special features, management requirements and management plan

The environmental assets of the nominated WHS are palaeontological sites, archaeological sites and areas where the ecology is well conserved. Aspects requiring specific management attention include: visual character of the area, the dolomites and water resources. These are all outlined in Table 5.1.

Land use intensity zones were identified in order to facilitate the spatial management of the nominated WHS. The purpose of identifying land use intensity zones is to provide for areas of conservation and areas of opportunity within the nominated WHS in keeping with the overall aim of conserving the asserts and resources of the area while promoting opportunities for increased access. The land use intensity zones and management recommendations for each zone is summarised in Table 5.2.

TABLE 5.1: SPECIAL FEATURES, MANAGEMENT REQUIREMENTS AND MANAGEMENT PLAN FOR THE NOMINATED WHS

Special features	Management requirements: sensitivities and threats	Management recommendations
Palaeontology sites		
The dolomite in the area hosts an abundance of plant and animal fossils of outstanding universal value. These include the 12 fossil sites that have been identified as having conservation importance. Seven of these sites bear hominid deposits, while five have yielded fossil animals and in some cases plants, but as yet no hominid remains.	• Uncontrolled access to sites • Damage to resources • Unstable excavations a threat to the integrity of fossil resources as well as visitors • Increased carbon dioxide levels • Sensitive cave ecosystems • Scavenging of artefacts • Presence of histoplasmosis	• Identification of specific sites to which public access can be promoted or should be controlled. Implementation of control measures including information to tourists. • Control of researcher access to further excavation sites and review of the authorisation process. • Risk assessment on the stability of fossil sites. • Assessment of health and safety hazards associated with the fossil sites and appropriate controls put in place to reduce/manage risks. • Risk assessment of presence of histoplasmosis and information sharing with the public • Risk assessment and quantification of carbon dioxide levels to set upper limits. • Development of management plans for fossil sites • Monitoring for signs of instability and sinkhole formation, presence of histoplasmosis and carbon dioxide levels.
Archaeological resources		
The region within which the nominated WHS is located is rich in Stone Age, Iron Age, Rock Art and historical resources. Several archaeological sites of conservation importance are known to occur in the area, however a full systematic archaeological survey of the area has not been undertaken to date.	• Exposure of archaeological resources may become a problem with increased access to the area • Scavenging of artefacts	• Systematic Phase One Archaeological survey to identify and document archaeological resources. • Apply measures for the protection of resources, including: authorisation procedures for researchers, protective infrastructure, interpretive signage. • Development of themed trails linking archaeological resources, maximising opportunities with provision of information via on site custodians and interpretive signage. • Monitor archaeological resources to ensure public access being adequately controlled and damage kept to a minimum.

Special features	Management requirements: sensitivities and threats	Management recommendations
Ecology		
The nominated WHS falls on the edge of the grassveld biome in the transition between grassland and savanna. It is within the Highveld Grassland biome, specifically the bankenveld ecozone and has a high plant and animal species diversity. The area has an important role in safeguarding a small but valuable portion of the diminishing grassland biome, one of the most transformed biomes in the world.	• Transformation through urbanisation • Invasion by alien plant species • Inappropriate rangeland management • Subdivision of the area into unnatural management units by fencing and firebreaks • Over controlled burning affecting biodiversity • Fragmentation of habitats	• Prevent transformation of grasslands by controlling infrastructure development, identifying no-go areas for development and fragmentation of habitats by development. • Undertake a survey of alien plant species occurring in the area and identify and implement appropriate control measures. • Develop a detailed ecological management plan which includes exploring the notion of removing fencing where possible. • Promote ecological research and develop a data base to co-ordinate information and activities. • Promote different levels of access and types of activities depending on the conservation importance of the area. • Develop an inventory of specific ecological features and a means by which visitors can experience these features without adverse impacts. • Set up a mechanism to collate all monitoring data and identify other monitoring needs. • Monitor the following: transformation f land cover, spread of alien invasives, progress of the ecological management plan, compliance with 'levels of acceptable change', weather conditions, soil erosion, and burning practices.

Special features	Management requirements: sensitivities and threats	Management recommendations
Visual character		
It is desirable to preserve the wilderness character of parts of the site, in particular the central and northern parts of the site. It is important that visually detracting features are not developed within the landscape. Improvements to the area could be made with the removal of existing detracting features and the promotion of a distinctive character.	• Visual detractions include communication and transmission towers, power pylons, telephone poles, roads and paths, fences and signage. • Development of the ridges and vantage points of the area.	• Environmental authorisation process including the following principle: limit and carefully plan linear infrastructure and built components in areas where visual character is worth conserving, removed unused and redundant infrastructure, vegetative screening of visual detractions, control spread of alien vegetation, design of signage to minimise visual intrusion, promote architectural styles and colour palettes. • Develop guidelines defining visual character objectives. • Environmental authorisations for all new infrastructure and developments. • Encourage mitigation of existing visual detractions. • Monitor visual character objectives to ensure no undesirable changes occur.
Dolomites		
The dolomites require special management attention as these rocks are host to the remains of early hominids and other fossils of fauna and flora including algal structures known as stromatolites. Furthermore the dolomites present constraints to development by the nature of their weathering processes. Hazards to visitors also need to be managed in terms of instability of excavated areas, as well as sinkhole formation.	• Overexploitation of groundwater resources affecting support of the karst structures and surface subsistence • Alteration of drainage patterns	• Hydrological investigation including a census of boreholes and springs, delineation of groundwater compartments, determine permissible abstraction rates. • Control of groundwater abstraction. • Delineate geotechnically sensitive areas and introduce controls for development of infrastructure. • Compile a list of management measures based on existing guidelines for development on dolomites. • Groundwater monitoring programme to monitor changes in groundwater levels on a seasonal basis.

Special features	Management requirements: sensitivities and threats	Management recommendations
Water resources		
The catchments in the nominated WHS are relatively undisturbed and runoff from the area is relatively clean. This runoff dilutes contamination in the Magalies River, Crocodile River and Hartbeespoort Dam. Although the effect is limited, deterioration of water quality could adversely affect downstream water users, the ecology and aesthetics of the site.	• Current water quality impact sources include: localised intensive agriculture, small industries and sewage treatment works upstream of the area. • Future impact sources include increased demand for residential development and rising water levels in the mines located to the south of the site.	• Develop baseline information on surface water abstraction and discharges. • Introduce controls for surface water use in line with the national Water Act. • Prevent contaminated surface water entering the nominated WHS by motivating water users in the Bloubankspruit Catchment to obtain the necessary water use licenses, ensure that discharges from the upstream sewage works are of acceptable quality, and prioritise service provision to unserviced settlements. • DWAF and other relevant authorities to raise the priority of ensuring that contaminated ground water from the mines does not reach the area. • Environmental authorisation of new developments to take account of sewage and waste disposal practices. • Water quality monitoring to supplement data collected by DWAF.

Special features	Management requirements: sensitivities and threats	Management recommendations
Good environmental practice		
Special management measures are to be put in place to conserve the important assets of the area and to manage sensitive resources. Good environmental practice should be encouraged to complement this management.	• Cumulative effects of evasion of environmental authorisations by smaller developments. • Lack of control on existing developments. • Problems associated with existing poor waste management practices.	• Promotion of good environmental practice through environmental authorisation of new developments. Issues to be included in an environmental authorisation are: threats to palaeontological, palaeo-anthropological, archaeological and ecological assets of the area; threats to sensitive resources such as the visual integrity, water resources, and dolomites; storm water management; water availability; water quality; and sanitation. • Motivate existing landowners to follow good environmental practices through: advise on how to achieve this; development of a list of criteria; sharing of information; implementation of a certification scheme to recognise compliance; awareness raising of existing legislation and how it applies. • Implementation of an awareness campaign with respect to litter. • Provision of adequate facilities to manage litter, as well as for recycling. • Develop guidelines and provide information for private waste management. • Develop guidelines on conservation of energy and provide technical advice and information to landowners and residents in the area.

Special features	Management requirements: sensitivities and threats	Management recommendations
Visitor management		
Visitors to the nominated WHS need to be managed in terms of numbers and activities so as to maintain a balance between the conservation of the areas assets and resources, and the opportunities presented in terms of tourism and development.	• Souvenir hunting • Destruction of assets and resources through tourist movements • Defacement of assets through graffiti • Pollution and littering • Erosion and abrasion of resources through toughing, walking etc • Lack of understanding and awareness of the importance of protecting the area • Overuse resulting in destruction of resources • Poor facilities and services detracting from the visitor experience • Lack of information and interpretation detracting from the visitor experience • Uncoordinated activities resulting in a lack of optimisation of community benefits	• Management of visitors through: appropriate orientation and interpretation facilities, information and a code of conduct informing visitors of appropriate behaviour. • Control of visitor access through: scheduling of activities, guided visits, fees, channelling of visitors, regulation of private transport, and education. • Enhance the visitor experience by catering to a variety of markets, interest levels and providing for the elderly and disabled. • Implementing an orientation and interpretation strategy. • Return benefits to local communities through the encouragement of: local entrepreneurial projects; selling local products; locals to take part in guiding and orientation of tourists; training and capacity building projects. • Monitor the following: footpaths and road condition; disturbance to fossil sites; condition of vegetation and animals in the area with respect to impacts of visitors and animals in the area, visitor pressure on the area, visitor satisfaction levels, visitor impacts on local communities.

Special features	Management requirements: sensitivities and threats	Management recommendations
Disaster management		
Disaster management is an important aspect of the proposed IECMP in light of the international significance of the assets of the area as well as the increased presence of visitors to the area. A disaster could permanently destroy the assets of the area resulting both in loss of resources as well as the degradation of a living and working environment.	• Natural disasters including lightning and drought. • Uncontrolled fires • Sinkhole formation	• Preparation of a disaster management plan which includes: - identification of the specific issues making the area vulnerable to disasters; - adaptation of efforts to local conditions; capacity to track, - monitor and disseminate information of phenomena and activities triggering disaster events; - involvement of interested and affected parties; provision for a co-ordinated response to disasters; - provision for institutional emergency preparedness; - promotion and implementation of disaster management training and community awareness.

TABLE 5.2: MANAGEMENT PRINCIPLES AND USE GUIDELINES FOR THE LAND USE INTENSITY ZONES

Land use intensity zone	Management principles	Land use guidelines
Very low use: Wilderness	Conservation • Manage land for biodiversity purposes. • Conserve as an area of land substantially unmodified by human activities, without permanent or significant habitation (refer to land use guidelines). • Encourage cooperation between neighbours. • Manage this area to conserve its natural condition. • Roads that are not being used in this area should be rehabilitated with vegetation. • Refer to management priorities with respect to aesthetics (Section 5.4.4). • Design of trails and roads to maximise consider soil compaction, soil erosion, drainage problems etc and take steps to prevent these. Construction • No new buildings or communications infrastructure to be constructed without consultation with and approval from the proposed Management Authority. • Redundant infrastructure and buildings to be removed and scars to be rehabilitated. • Plans for management and maintenance of essential roads to be discussed with proposed management committee and a sub-committee for roads and tracks. Access • No new construction of linear infrastructure. • Existing roads to be used for emergency purposes and access by land owners only. Quality of roads to limit access to four-by-four vehicles as far as possible. • Roads that have been insensitively designed, or without consideration of contours, water courses, drainage patterns, the potential for soil erosion and effects on plant and animal communities should be rehabilitated and closed to access. • Limit human encounters to a maximum of one per day by careful design of trails, setting upper limits on visitor perceptions and appreciation of the wilderness area. • Minimal tourism and public access to this area. To be limited to footpaths with overnight camping by permit only. • Access for scientific research subject to permit requirements.	Existing • Existing residential and associated activities on farms to remain (subject to principle of removing and rehabilitating redundant infrastructure). • Conservation and game farming • Existing land uses to be encouraged to comply with current environmental legislation and regulations Proposed • Hiking and overnight camping subject to permits. Any proposed development to be subject to the EA process and commitments made within the EA.

Land use intensity zone	Management principles	Land use guidelines
Very low use: Ridges	Conservation • Priorities in this zone include the conservation of the ridges for visual and aesthetic purposes, as well as the conservation of plant and animal communities and habitats. Construction • No new linear infrastructure to be developed in this zone. • Proposed infrastructure and communication infrastructure to go through the EA process. Access • Access to be limited to existing footpaths. • Limited access subject to permit requirements. • Access for emergency vehicles, land owners and scientific researchers subject to permit requirements. • Any existing roads that do not follow contours and take no cognisance of water courses, drainage patterns the potential for soil erosion and the effects on plants and animals are to be rehabilitated over time and closed to access.	Existing • Communication masts are to be subject to a scoping exercise to determine recommendations in this respect. • Existing activities to be encouraged to comply with current environmental legislation. Proposed • No new infrastructure, except essential infrastructure to be determined through the EA process. • Limited walking trails • No overnight activities (except existing). Any proposed developments to be subject to the EA process and commitments made within the EA are to be upheld.

Land use intensity zone	Management principles	Land use guidelines
Low intensity	Conservation • Priority is given to the ecosystem conservation and the conservation and protection of the wilderness reserve (in terms of biodiversity, visual character and remoteness). • Encourage cooperation between neighbours. • Roads are to be maintained and vegetation of roads is to be encouraged. Construction • New infrastructure and buildings to be designed with consideration of water courses, drainage patterns, sedimentation of water courses, fragmentation of plant and animal communities. • Any infrastructure and buildings to be developed on the dolomite to take geotechnical constraints into consideration and all sewage and solid waste disposal must be in keeping with approved methods so as to avoid pollution of ground water resources. Access • New roads and other linear infrastructure to be kept to a minimum. All roads to be dirt roads or vegetated. Tarring of roads is not to be encouraged. • Access to be based on walking trails and hikes on existing paths (with minor realignments where necessary). • Horse trails and bicycle trails to be kept to a minimum and concentrated in the less sensitive areas within this zone. • Vehicular access (with the exception of emergency vehicles and land owners) to be kept to the periphery of this zone. • Tour busses and large capacity vehicles to be discouraged from this area. • Access to be allowed for scientific research purposes subject to permit requirements.	Existing • Existing residential and associated activities on farms to remain (subject to principle of removing and rehabilitating redundant infrastructure). • Conservation • Farming • Existing land uses are to be encouraged to comply with current environmental legislation and regulations Proposed • Hiking and trail activities subject to permit requirements • Low key interpretation facilities • Low density hospitality and tourism services Any proposed development to be subject to the EA process, and management commitments made within the EA are to be upheld.

Land use intensity zone	Management principles	Land use guidelines
Moderate intensity	Conservation • The primary purpose of this land use intensity zone is to encourage development opportunities in line with tourism activities to the nominated WHS. Conservation and improvement of the visual character is a priority and management principles in this regard are made in Section 5.4. Construction • New infrastructure and buildings to be designed with consideration of water courses, drainage patterns, sedimentation of water courses, fragmentation of plant and animal communities. • Geotechnical constraints of dolomite (where applicable) to be taken into account in the construction costs and design of linear infrastructure and buildings. • Solid waste and sewage disposal to be in keeping with approved methods so as to avoid pollution of ground water resources. Access • A transition from vehicular to low impact modes of transport (horse trails, hiking and walking and bicycles) to be encouraged in this zone.	Existing • Existing facilities to be encouraged to comply with current environmental legislation and regulations Proposed • Medium density hospitality (refer to proposed Tourism Plan) • Conference facilities • Orientation and interpretation facilities • Trails (horse, hiking/walking and bicycle) • Tourist services • Tourism oriented shops • Education and research facilities Any proposed development to be subject to the EA process and to comply with management commitments made in the EA.
High intensity	Conservation • This area is to provide for intensive recreation infrastructure and facilities. Ecosystem fragmentation has already occurred in this area, and conservation principles pertain to the conserving water and soil resources and areas of visual integrity. Construction • New infrastructure and buildings to be designed with consideration of water courses, drainage patterns, sedimentation of water courses, fragmentation of plant and animal communities. • Large accommodation facilities, developed and serviced camping and interpretive facilities are appropriate in this zone and management of solid, waste sewage and storm water need to be taken into consideration. Access • All levels of vehicular access to be allowed in this zone. • Transition points from vehicular to low impact access and modes of transport to be encouraged in this zone.	Existing • Existing facilities to be encouraged to comply with current environmental legislation and regulations Proposed • Overnight accommodation facilities • Conference facilities • Orientation and interpretation facilities • Education and research facilities • Emergency and disaster management services • Low density retail Any proposed development to be subject to the EA process and to comply with management commitments made in the EA.

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B	State of Environment Report (with specialist investigation reports appended)
C	Proposed Tourism and Marketing Plan
D	Report on the research phase for the Proposed Tourism and Marketing Plan
E	Proposed Land Use and Infrastructure Management Plan
F	Stakeholder Participation Report
G	Communications and Promotions Plan
H	Proposed Financial Plan
I	World Heritage Convention Bill and National Heritage Resources Act.
J	Management objectives for the Land Use Intensity Zones and IUCN Categories Management Objectives
K	Training and Capacity Building Needs Analysis and Management Institutions and their Relevant Roles
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1.1	Core And Buffer Zone Boundaries – Nomination Phase
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4	Visual Absorption Capacity
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6	Valley Flows And Air Sheds
7	Hydrology
8	Geology
9	Land Types
10	Red Data Plant Distribution
11	Provincial And Municipal Boundaries
12	LDO Composite Macro Spatial Framework
13	Applicable Town Planning Scheme
14	Existing Land Uses

GLOSSARY

Archaeological	Material remains resulting from human activity, which are in a state of disuse or are in or on land and which are older than 100 years, including artifacts, human and hominid remains, artificial features and structures, and rock art.
Biodiversity	Three primary attributes of biodiversity are recognised: *composition, structure* and *function*. *Composition* has to do with species lists, and measures of species and genetic diversity. *Structure* is the physical organisation or pattern of a system. *Function* involves ecological and evolutionary processes, including gene flow, disturbances, and nutrient cycling. Elements of each of these attributes manifest at four levels of an organisation hierarchy: *landscape, community-ecosystem*, *population- species*, and *genetic*.
Ecozone	Ecozones are large areas with relatively uniform geology, landform and climate (rainfall and temperature).
Histoplasmosis	A respiratory disease that can be contracted by humans in caves containing bats.
Koppie	South African terminology for a small hill or rocky outcrop.
Palaeontology	The study of any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains.
Palaeo-anthropology	The science of the study of any human origins.
Red data species	Fauna and flora defined as threatened or endangered species.
Ungulate	Any hoofed mammal. The ungulates constitute a large group of dissimilar animals whose last toe joints are encased in hooves. Odd-toed ungulates belong to the order *Perissodactyla* (zebra and rhino). Even-toed ungulates are in the order *Artiodactyla* (antelopes, pigs etc). Most ungulates are herbivores.
Veld	South African terminology for open fields or grassy plains
Zoogeographic	Concerned with the geographical distribution of animals and the study of the causes and significance of such distribution. Zoogeographic classifications may vary depending on scale and criteria. Traditionally five or six major zones are recognized globally, based on continental landmass. Within a continent smaller scale faunal groupings may be recognized based on ecozones.

LIST OF ABBREVIATIONS

DACE	Gauteng Province Department of Agriculture, Conservation and Environment
DBSA	Development Bank of Southern Africa
DEAT	National Department of Environmental Affairs and Tourism
DWAF	National Department of Water Affairs and Forestry
EA	Environmental authorisation
ERDC	Eastern Region District Council
GGP	Gross Geographic Product
GIS	Geographical Information System
GTA	Gauteng Tourism Agency
ha	Hectares
ICCROM	International Centre for the Study of the Preservation and Restoration of Cultural Property
IDP	Integrated Development Plan
IUCN	World Union for Conservation of Nature
KRA	Kromdraai Residents Association
LAC	Limits of Acceptable Change
LC	Local Council
LDO	Land Development Objectives
mamsl	Metres above mean sea level
MEC	Member of the Executive Committee
m.y.	Million years
NHBRC	National Home Builders Registration Council
NMC	National Monuments Council
NMLC	Northern Metropolitan Local Council
nominated WHS	The nominated World Heritage Site
proposed IECMP	Proposed Integrated Environment and Conservation Management Plan
PAST	Palaeo-Anthropological Scientific Trust
RC	Representative Council
RDO	Regional Development Objective
SAHRA	South African Heritage Resources Agency
Satour	South African Tourism
SAWHCC	South African World Heritage Convention Committee
SEDM	Spioenkop Emergency and Disaster Management
SMME	Small, medium and micro enterprise
the area	The area described as the fossil hominid sites of Sterkfontein, Swartkrans, Kromdraai and environs, South Africa.
TLC	Transitional Local Council
UNESCO	United Nations Educational, Scientific and Cultural Organisation
USP	Unique selling point
VAC	Visual absorption capacity
VFR	Visiting friends and relatives
Westour	West Rand Tourism
WGSC	Western Gauteng Services Council
WHC	World Heritage Committee or Bureau
Wits	University of the Witwatersrand
WWTW	Waste water treatment works

PROPOSED INTEGRATED ENVIRONMENT AND CONSERVATION MANAGEMENT PLAN FOR THE NOMINATED WORLD HERITAGE SITE KNOWN AS THE FOSSIL HOMINID SITES OF STERKFONTEIN, SWARTKRANS, KROMDRAAI AND ENVIRONS

1. INTRODUCTION

1.1. Overview

This report documents the proposed Integrated Environment and Conservation Management Plan (proposed IECMP) for the implementation phase of the nominated World Heritage Site (nominated WHS) described as the fossil hominid sites of Sterkfontein, Swartkrans, Kromdraai and environs (the area), South Africa.

To be successfully listed on the World Heritage List, the nominated area must have a clear motivation for listing (included in the nomination document) and be supported by a management plan for the area's conservation. This IECMP has been prepared in support of the nomination of the area as a cultural property and is submitted in accordance with the requirements of the World Heritage Committee, as set out in Section 24 (b) (ii) of the World Heritage Operational Guidelines. Although the justification for inscription of the nominated WHS pertains primarily to the fossil hominid sites contained within the area, the proposed IECMP also deals with archaeology and conservation of the natural environment to ensure an integrated and holistic approach to the management of the nominated WHS.

The South African Government signed the World Heritage Convention in 1997 and submitted nominations at the end of June 1998, to the United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Committee (WHC), for the listing of three sites in South Africa as World Heritage Sites (WHS).

The South African government has a three-sphere system of government incorporating national, provincial and local authorities. The responsible provincial and local spheres of government support the South African proposals.

The Department of Agriculture, Conservation and Environment (DACE) in the Gauteng Provincial Government has been responsible for the preparation of the country application for the area as a nominated WHS. The DACE is also responsible for the planning phase of the project resulting in the preparation of a number of proposed plans.

1.2. Motivation for the nomination

The motivation for the inclusion of the nominated WHS is set out in Section 2 of the Application for Inclusion on the World Heritage List submitted in June 1998 and is briefly outlined below.

Within the landscape of the nominated WHS are a vast number of fossil-bearing cave deposits considered to be of outstanding universal value because they encapsulate a record of plants and animals including an invaluable record of the stages of evolution of humanity over the past 3.5 million years (m.y.). Twelve palaeontology and palaeo-anthropology sites (Map 1.2) within the nominated WHS have played a substantial role in focussing attention on Africa as the cradle of humankind.

Factual and conceptual advances stemming from work undertaken in the area include the following:

- The discoveries at Sterkfontein which led to major advances in the understanding of the time, place and mode of evolution of the human family. The assemblage of fossils has made it possible to study not merely individuals and isolated specimens, but populations of early hominids from the point of view of their demography, variability, growth and development, functioning and behaviour, ecology, taphonomy and palaeo-pathology.

- The discovery of a second type of apeman (members of the robust group) at Kromdraai (1938) led to the realisation that not all early hominids were ancestors of later hominids including modern humans (*Homo sapiens*).

- Signs of controlled use of fire by the early inhabitants of the Swartkrans cave over one m.y. ago, is the oldest well-attested sign of the mastery of fire by ancient hominids.

- The biggest single population of *Australopithecus africanus,* bearing unique testimony of the presence, structure, functioning and behaviour of one of the crucial phases in the history of hominids, has come to light in the cave deposits of this nominated WHS.

- Fossils of the genus *Homo* from about 2.0 m.y. onwards and testimony to the early stages in the stone tool cultures of Africa have been discovered at both Sterkfontein and Swartkrans.

- The cave deposits of the nominated WHS are also valuable for the study of extinction of communities of animals and conditions under which the ancient faunae of Africa either adapted or died. The cave deposits provide a series of ecosystems, each frozen in time in a succession leading right up to the current, on-going ecological processes within the present cave system and in the ecozone surrounding the cave sites.

A very strong case exists for the listing of the cave deposits and the surrounding area as a World Heritage Site. The nominated WHS is considered to be on a par with a number of existing World Heritage Sites of palaeontological and palaeo-anthropological importance, including:

- The Sangiran Early Man Site in Java, Indonesia (1996)
- The Peking Man Site at Zhoukoudian, People's Republic of China (1987)
- The Australian Fossil Mammal Sites, Riversleigh/Narcoorte (1994)
- The Lower Valley of the Awash, Ethiopia (1980)
- The Lower Valley of Omo, Ethiopia (1980).

The cave deposits of the nominated WHS contain a rich source of two different species of early hominids, namely *Australopithecus africanus* and *Australopithecus (Paranthropus) robustus.*

1.3. Regional and Local Setting

The nominated WHS, an area of approximately 47 000 ha, is located on the north-west border of the Gauteng Province and the North West Province of South Africa. Most of the site is located in the Gauteng Province. The nominated WHS is located approximately 2km to the north of Krugersdorp Local Authority with Johannesburg city centre about 25km directly to the south-east, Randburg about 12km to the south east and Pretoria 40km to the north-east. Lanseria Airport, a local airport, is immediately east of the site, and Hartbeespoort Dam, a local tourism destination immediately north of the site. To the north-west of the area lies the Magaliesburg Protected Area.

The nominated WHS extends across approximately 30 farms, many of which have been extensively subdivided. With the exception of a 4ha portion of land owned by the Western Gauteng Services Council (WGSC), the nominated WHS is entirely under private ownership.

The nominated WHS has largely remained undeveloped and is sparsely inhabited, with many landowners especially in the northern part of the site, being absent much of the time and using their land as an occasional getaway destination. There are a number of private conservation initiatives within and surrounding the nominated WHS. These conservation initiatives and the general lack of public access to the area, have contributed to its rural and undeveloped appearance.

While the majority of the area is used for conservation and farming, specifically: game farming; livestock farming; and small-scale crop production, the nominated WHS also contains a number of mixed land uses predominantly in the southern and south-eastern portions of the area. The southern part of the area is typically a transition zone between urban and rural areas. Land uses in this area include small-scale industrial and commercial enterprises, for example indoor chicken and pig-farming, brickworks, workshops (steel working, carpentry, vehicle repair), general dealers. In the south-east part of the nominated WHS, tourism activities predominate including overnight

accommodation, conference venues, art and craft centres, tea gardens, horse riding and walking trails.

Adjacent to and surrounding the nominated WHS, land uses and physical features are as follows.

- The north west boundary of the site lies on the crest of the Witwatersberg mountain range. Beyond, and within the valley formed by this range and the more impressive Magaliesberg range there are primarily small scale cultivation and a few relatively small scale quarries for building materials.
- Immediately to the north of the nominated WHS lies the Hartbeespoort Dam and the Magaliesberg mountain range to the north and north-west. Both of these physical features are recognised as local tourist and weekend recreation attractions.
- To the east of the nominated WHS agriculture and conservation are the predominant activities and land uses.
- Further to the south and south-east of the nominated WHS, light industry and commercial activities as well as small holdings and peri-urban activities occur.
- Immediately to the south of the area is the urban centre of Krugersdorp, separated from the area by low ridges.
- To the south-west small scale crop production, light industrial activities and small holdings predominate.

1.4. Vision

The vision statement for the IECMP is as follows.

To achieve an acceptable balance in the nominated WHS between the conservation of cultural and natural resources, access and education, the interests of those living and working in the area, and its use for the economic and social benefit of the population at large within the framework of the World Heritage Convention.

1.4.1. Principles

The overriding principles that drive the vision for the IECMP and the nominated WHS are as follows.

- To develop and manage the site in a manner that promotes the values enshrined in the Constitution.
- To ensure ecologically sustainable development and use of natural resources whilst promoting economic and social development.
- To support and promote the Provincial Government's growth and development strategy and establish effective provincial planning.
- To promote co-operation, co-ordination and integration between Municipalities and Regions in the Province and between Provinces.

- To conserve the existing characteristics and in particular the special significance of the site.
- To promote a holistic approach to conservation which also considers the cumulative effect of development.
- To acknowledge the value and undiscovered potential value of the site and the obligation to protect and conserve the environment for the benefit of present and future generations.
- To acknowledge the need for management to be integrated and participatory.
- To ensure that in the management of the site the skills and capacities of persons and communities involved are developed and resources are made available for ongoing education and training.
- To ensure that learning opportunities and educational activities are promoted as an integral part of the development of the site for the benefit of all.
- To ensure an equitable spread of benefits to all people living and working in the area.
- To develop and fine-tune plans in the spirit of negotiation and agreement.
- To implement plans from which all can share the benefits and through which the public interest will be served.

1.4.2. Management objectives

The IECMP management objectives are identified below. These recognise the above principles.

- To preserve identified palaeontology and palaeo-anthropology sites.
- To prevent destruction of unidentified palaeontology and palaeo-anthropology sites.
- To protect Iron and Stone Age relics and other archaeology and Rock Art in the nominated WHS.
- To conserve important ecological habitats.
- To maintain sample ecosystems with minimal human impact and conserve ecological processes.
- To maintain genetic diversity and prevent species loss.
- To conserve and protect the special character, ambience and tranquillity.
- To promote scientific research.
- To promote educational and learning opportunities.
- To facilitate appropriate access strategies.
- To integrate, co-ordinate and optimise the sustainable use of resources.
- To encourage sound investment in the area which strengthens the local and regional economy.
- To develop a co-ordinated interpretation strategy.
- To develop a monitoring programme based on key indicators.
- To provide for ongoing stakeholder participation.
- To provide a tourist attraction of international and national significance.
- To provide a tourist attraction of local significance.
- To provide new and upgraded business opportunities.

- To establish new market for local products.
- To provide skills training and capacity building particularly within the local community.
- To provide, operate and maintain appropriate infrastructure services.
- To manage and encourage acceptable land use patterns.

1.5. Methodology

1.5.1. Stages in the nomination process

The process for the submission for the nominated WHS was initiated in 1998. It will be concluded at the end of 1999 when the World Heritage Bureau makes known its decision on the listing of the site. The process to date and the way forward to the decision is as follows:

- June 1998. The nominated WHS was submitted by the South African Government to the UNESCO World Heritage Committee for inclusion on the World Heritage List as a cultural property.
- January 1999. The international community assessed the nomination and a report was submitted to the World Heritage Committee (WHC).
- February to June 1999. In order to receive serious consideration plans must be implemented to conserve and manage the area. In February 1999 a multidisciplinary project team was commissioned to develop the proposed IECMP and other aspects of the planning phase, including: a state of environment report (SOER); a proposed tourism and marketing plan; a proposed land use and infrastructure management plan; a stakeholder participation report; a proposed communications and promotion plan; and a proposed financial plan.
- June 1999. Submission of the proposed IECMP, in support of the nomination document, to the World Heritage Bureau.
- July 1999. Evaluation and recommendations from the assessment to be put forward to a meeting of the World Heritage Bureau in Paris, France.
- December 1999. The Committee examines the nominations on the basis of the Bureau's recommendations together with additional information provided by the State parties and comments received from ICOMOS and IUCN. Outcome of the decision taken in July, to be made known to the public.
- After decision in December 1999. Implementation phase to be initiated.

1.5.2. Information gathering for the development of the IECMP

Information gathering for the development of the IECMP was initiated in the nomination phase and is ongoing. It is recognised that the proposed IECMP is a working document and is likely to be adapted and modified as further research and data collection occurs. This will be an ongoing process. The status of the IECMP is that of a proposed plan still to undergo significant ongoing negotiation with Local Authorities, Provincial Departments and people living in and owning land in the area.

To date, the development of the IECMP has been based primarily on secondary information gathered as follows.

- A review of desktop information and consultations with individuals and institutions with a working knowledge of the area.
- Site visits undertaken to gather primary data where possible.
- Specialist advice and opinion sought on a number of issues including: archaeology and palaeontology; ecology and conservation; geology; topography and soils; ground water; water quality and surface water; air quality; visual and aesthetics; and socio-economic issues.
- Integration of key findings and management issues from other proposed plans.

1.5.3. Determining the boundaries of the nominated WHS

The boundaries of the nominated WHS have been slightly modified between the nomination phase and the planning phases. Initial Core and Buffer boundaries (as indicated in Map 1.1) were identified in the nomination phase of this project. In the planning phase, these boundaries were reviewed with respect to visual, ecological, planning, geological, and hydrological criteria. Where possible interested and affected parties were consulted with respect to the delineation of the boundaries. The boundaries of the Core and Buffer zones, as they have been delineated for the purposes of the planning phase, are indicated in Map 1.2, and an explanation of the criteria used to determine the boundaries is included in Appendix A.

Delineation of boundaries has been further informed by the identification of sensitive areas and subsequent delineation of land use intensity zones. The process that was followed in identifying these spatial zones is explained in Chapter 4.

The core and buffer zones are largely located in the Gauteng Province with a small portion in the North West Province. The core area incorporates approximately 19 000 ha and the buffer zone an additional 28 000 ha. The overall size of the nominated WHS is approximately 47 000 ha.

1.5.4. Stakeholder involvement

The DACE undertook all stakeholder liaison and participation with key links to the communication and promotions work.

The role of people living in and owning land in the nominated area has and will continue to remain central to the conservation and appropriate development of the nominated WHS. A number of key organisations also have a stake and will add value to the development of the plans and to the long-term management and conservation of the nominated area. All plans will be developed and fine-tuned in the spirit of negotiation and agreement subject to the requirements of the WHC. One of the key criteria for successful implementation of the plan

would be the extent to which it would ensure an equitable spread of benefits to all people living and working in the area. A key goal will be to develop and implement plans from which all can share benefit and through which the public interest will be served. The starting point for the expression of all stakeholder views has been the Local Development Objectives in accordance with the Development Facilitation Act.

Objectives
The objectives of the stakeholder participation work are:

- To refine the stakeholder participation plan and ongoing planning & reporting;
- To develop a strategy to engage people previously not contacted during the preparation of the nomination;
- To develop a gender strategy;
- To develop a strategy for young people;
- To implement an ongoing strategy to inform people in the area and other role-players of the project, technical information and proposed IECMP, and to hear their views (public participation and communications work);
- To regularly convene public and smaller / individual meetings;
- To engage in an ongoing interaction with relevant Councils and Provincial and National Government Departments (this will be coordinated with the activities of the Working Group);
- To implement a strategy to interact with the North West Province; &
- To co-ordinate and run the planning phase field work / stakeholder participation requirements in conjunction with the project manager and lead agent.

Stakeholder groups & strategies
A number of strategies have been pursued to engage with stakeholders.

A base-map of the nominated area has been generated to indicate the exact proposed boundaries of the nominated WHS as well as cadastral boundaries of all farms. A comprehensive list of all farms (approximately seven hundred) and registered owners is under development. The sourcing of full contact details for all landowners in the nominated area remains an ongoing task.

Table 1.5.1 summarises the stakeholder analysis for the nominated WHS and is explained in full in the Stakeholder Participation Report (Appendix F). This document forms the basis for all stakeholder participation work. A list of key stakeholders to be reached during the planning phase of the project has also been developed.

TABLE 1.5.1: SUMMARY OF THE STAKEHOLDER ANALYSIS

Stakeholders	Strategy
1. Landowners Residents / tenants Workers	• Public meetings • Smaller / focus group meetings • Bilateral meetings (and field visits) • Written reports • Questionnaire • Fieldwork • Newsletter • General correspondence
2. Organisations (e.g. National Monuments Council (NMC), PAST, etc.)	• Bilateral meetings • Working Group meetings • Written reports • Questionnaire • Newsletter • General correspondence
3. Government departments: local, provincial (North West and Gauteng) and national	• Working Group meetings • Newsletters • Written reports • South African World Heritage Convention Committee meetings • General correspondence
4. General public (including above categories as well)	• Events (e.g. logo launch, pledge campaign launch, etc.) • Media reports • Newsletter

- Public meetings. A number of public meetings have taken place during the nomination phase and the planning phase of the nominated WHS project.

- Working Group meetings. The working group is an advisory body convened by DACE to meet during the planning phase of the project in order to allow for co-ordination between key government departments and spheres as well as key organisations. A number of meetings of this body have taken place.

- Smaller / focus group meetings. A number of smaller or focus group meetings have taken place with residents' associations or groups of landowners / residents. A meeting of residents" associations' representatives and key landowners took place with the international assessor in January 1999 in order to demonstrate stakeholder views. The purpose of these meetings has been to address issues specific to a particular area in the nominated area or to a particular sector (e.g. the tourism sector).

- Bilateral meetings. Meetings have taken place with individual landowners or organisations in order to address specific issues relevant to the specific landholding or organisation. A number of field visits to the nominated area have taken place. The purpose of these field visits has been to familiarise the planning team with the nominated area as well as to have bilateral discussions with individual stakeholders.

- Questionnaire. A questionnaire was developed and circulated to all known individuals, residents' associations and organisations in order to glean specific contact information and information related to the nominated area. This information has been compiled into a database.

- Fieldwork. It has been evident from public and smaller / focus group meetings that a sector of stakeholders in the nominated area has not been successfully reached, i.e. farmworkers and tenants. In order to reach these stakeholders, DACE appointed a fieldworker team to undertake a targeted scoping exercise in the area.

- Written reports. A number of written progress reports have been sent to government departments and other relevant stakeholders.

- South African World Heritage Convention Committee meetings (SAWHCC). The national Department of Environmental Affairs and Tourism (DEAT) convene the SAWHCC. This committee serves as a formal reporting forum between the provincial and national department.

- Newsletter. In accordance with the Communication and Promotions Plan for the project, a newsletter known as "Marapo (bones) Speak" has been published. The newsletter serves to provide a communication instrument between DACE and people owning land and living in the nominated area. It is also targeted at all other stakeholders as a means of ongoing information sharing from DACE.

- Events (e.g. logo launch, pledge campaign launch, etc.). In accordance with the Communication and Promotions Plan for the project a number of publicity events have taken place in order to launch the project logo and a pledge campaign to allow the general public the opportunity to pledge their support for the nomination bid. The purpose of these events is to share information more broadly about heritage, the World Heritage Convention and the nominated WHS project, and to develop a sense of buy-in from the public at large. A number of events will take place throughout out the financial year (ending March 2000) ranging from museum displays to an event to mark the outcome of the World Heritage Committees decision with regards the listing of the nominated WHS.

- Media reports. A number of media strategies have been put in place in accordance with the Communication and Promotions Plan.

- General correspondence. Numerous general correspondences remain ongoing between DACE and various stakeholders by means of letters, facsimiles, e-mail messages and telephone discussions.

Integration of stakeholder issues into the proposed plans

All proposed plans have been made available to stakeholders once they were in a final draft form. All stakeholder issues and comments are contained in the Stakeholder Participation Report (Appendix F).

DACE will continue with stakeholder participation work during the latter half of 1999 in order to ensure that all relevant stakeholders have been informed of and have informed the proposed plans. The future management authority, which will be tasked with implementing the proposed plans, will develop the necessary mechanisms to fully integrate the stakeholder issues into final plans for implementation.

1.6. Report structure

The structure of the report and main aims of each chapter is outlined as follows.

Chapter 1 Introduction
This chapter introduces the nominated WHS, including the features that have motivated the nomination, the nomination process and the purpose of the proposed IECMP. It also outlines the regional setting of the site, the methodology used in preparing the IECMP and vision for the site on which the proposed IECMP is based.

Chapter 2 Background
This chapter outlines the contextual information used to develop the proposed IECMP. It includes an environmental overview in the form of a visual character analysis of the landscape. Environmental features that require specific management attention are highlighted in the succeeding chapter. The legal and institutional context in which the proposed IECMP has been developed is also presented in this chapter. In addition, physical planning considerations for development of the site, the tourism potential of the site and the socio-economic context are reviewed.

The chapter has been compiled through summary of the information in the various investigations used to inform the preparation of the IECMP. The titles of the documents are given below. The contents of these documents are also briefly outlined.

- The State of the Environment Report (SOER). This report describes the physical, biological and social conditions in and around the site (Appendix B). Specialist inputs to this report are appended to the SOER.
- Proposed Tourism and Marketing Plan (Appendix C);
- Report on the research phase for the Proposed Tourism and Marketing Plan (Appendix D);
- Proposed Land Use and Infrastructure Management Plan (Appendix E);
- Stakeholder Participation Report (Appendix F);
- Proposed Communications and Promotion Plan (Appendix G);
- Proposed Financial Plan (Appendix H);
- Existing and proposed legislation to protect and conserve the nominated WHS (Appendix I).

Chapter 3 Environmental features and management requirements
This chapter outlines the environmental management requirements for sustainable use of the nominated WHS. It does this through review of the environmental assets that will be used to realize the vision for the area and other environmental aspects requiring specific management attention in the development of the site. General good environmental management practice requirements and disaster management requirements are also reviewed.

Existing environmental management measures currently being applied through the area that needed to be recognized in the preparation of the IECMP are also reviewed in this chapter.

Chapter 4 Spatial planning
The process of delineation of management zones known as "land intensity zones" is outlined in this chapter. The application of the management measures to these zones is addressed in Chapter 6.

Chapter 5 Management plan
Management measures that need to be implemented to achieve the vision for the nominated WHS are outlined in this chapter. These management measures are directly related to the vision outlined in Chapter 1 and the management requirements identified in Chapter 3.

The priorities and targets for implementation of the management measures are also included in this chapter.

Chapter 6 Implications of the management measures for land use in the land intensity use zones
Implications of the management plan for land use in the land use intensity zones are outlined in this chapter.

Chapter 7 Implementation plan
This chapter outlines the elements required to implement the management plan. These elements include a well-defined institutional structure framework that identifies all parties responsible for environmental management and respective responsibilities of these parties, financial provision, and an implementation schedule.

2. BACKGROUND

2.1. Introduction

The environmental, socio-economic, legal, institutional and physical planning contextual information used in the preparation of the proposed IECMP is summarized in this chapter. The tourism potential of the site is also outlined.

The contextual outline presented in this chapter has been extracted from various reports that document the investigations undertaken to inform the preparation of the proposed IECMP (Section 1.6).

2.2. Environmental Context: Landscape Description

The environmental context of the site is presented in the form of a landscape character description. Environmental features and resources that require specific management attention are highlighted in Chapter 3.

The nominated WHS comprises a diverse landscape with a complexity of natural and built features, scale, density, colours, texture and forms. The physical features that shape the landscape can be divided into the following:

- geology, topography and soils;
- vegetation and animals;
- land uses and activities;
- built form.

A general description of the landscape is provided. Three areas with distinctive landscape character are identified and described in the following sections. These three areas are described as the central watershed, the area to the north and north-west of the central watershed, and the area to the south and south-east of the central watershed. These areas correlate approximately with the core zone, the north and north-western section of the buffer zone and the south and south-eastern section of the buffer zone respectively.

The area is dominated by ridges running in a north-east south-west direction and is divided approximately in two, by the central watershed that runs through the centre of the area. To the north-west and approximately parallel to the central watershed lies the Witwatersberg ridge, which forms a distinct physical boundary to the site. To the south and south-east of the central watershed, lower ridges and rocky outcrops break up the otherwise gently rolling topography.

The Bankenveld grassland vegetation that covers much of the area is generally well conserved and provides a rich palette of greens, and golden browns. The grassland is interspersed with patches of dense woody vegetation in the drainage lines and along ridges and rocky outcrops, and limited crop cultivation in the wide valley bottoms. The vegetation across the area is not homogenous in distribution type, density or height. The richness of

plant and animal species in the area is enhanced by its location within the transition zone between the savanna and grassland biomes. In particular it features a diversity of woody plants and non-grassy herbs as well as animals.

The topography of the area in combination with the dolomite, which is a source of clear clean water, provide a variety of striking fluvial features. These include natural springs and eyes, as well as incised highland watercourse and larger meandering streams in wider lowland valleys that are fed by numerous perennial and ephemeral tributaries as well as dolomitic sources. The area drains into two catchments to the north and south of the central watershed, these being the Magalies River catchment and the Crocodile River catchment respectively. These rivers both drain into the Hartbeespoort Dam to the north of the area.

In the lowland valleys of the area the ridges create a sense of visual enclosure and remoteness from the adjacent and surrounding land uses. During winter months, on cold nights and early mornings the sense of enclosure is increased by the formation of fog in the valley bottoms. The air quality in this area is generally considered to be good and, on most days, an extensive and uninterrupted panoramic view across the rolling hills is afforded from the vantage points in the area. To the north and north-west spectacular views are created by the distant rocky and rugged landscape of the Witwatersberg and Magaliesberg, while wide expanses of undulating landscape are visible to the south and south-west. The southern part of the area is less well protected visually. Creeping urbanisation of the Greater Johannesburg area is visible in the distance to the south and south-east.

A collection of man made features mar the otherwise well conserved and undeveloped landscape of this area. Notable among these are: powerlines which traverse the centre of the nominated WHS in a north-east south-west direction; telephone lines and fencing; poorly maintained roads and tracks; communication masts on some of the high points and ridges; and an eclectic mixture of signage and advertising located along the roads leading into the area.

2.2.1. The central watershed

The central watershed is on the dolomite band and forms the core zone of the nominated WHS. It traverses the nominated WHS in a north-east south-west direction forming a divide between the two main drainage systems of the area. Weathering of the dolomite has resulted in a ridge, the crest of which can be described as being relatively flat or gently rounded, with a few scarp slopes. Sinkholes and caves formed by karst weathering processes are abundant. The crest also features numerous rock outcrops of various forms with very shallow soils except where deeper soils are associated with the sinkholes. A number of koppies also occur on this watershed, these reaching heights of 1590 to 1660 mamsl. From the vantage points, there are panoramic views of rolling hills, rocky ridges and the distant cliff faces of the Witwatersberg and

Magaliesberg ranges. The overall impression of open space is enhanced by 360 degree sky views.

The crest and upper slopes of the central watershed feature extensive grasslands of dolomite Bankenveld. The well conserved condition of the grasslands makes them particularly spectacular, as do the variety of microhabitats within the grasslands. The microhabitats are formed by topographical variations and varied exposures to fire, frost and grazing. The most distinctive microhabitats are rock outcrops, rocky scarp slopes, areas with thin soil cover, sheltered valleys, the riparian zone along water courses, and sinkholes.

Along ridges and rocky outcrops, the grasses tend to be tall, less grazed and less likely to be burnt, while on the highlands, the grasses tend to be shorter and sweeter and thus favoured by game for grazing. In heavily grazed areas the grasslands are interspersed with patches of forbs and flowering plants. These patches are particularly noticeable in the spring and autumn months and provide a contrast in scale, height and texture, to the grasslands.

The sinkholes and caves that punctuate the landscape provide a suitable microhabitat for a diversity of large trees and shrubs. This microhabitat has deeper soils, moister cooler conditions and protection from fire. It also supports a variety of wild life. Ungulates find shade, sweet short grass and a variety of palatable trees and shrubs. Birds find nesting sites and food. A number of sinkholes and caves in the area are known dens for leopard, brown hyena and jackal.

Land uses on the central watershed are predominantly conservation and game farming, with the result being that the vegetation has largely been well conserved and the land has remained undeveloped. The area is sparsely populated but a few farmsteads are scattered across the landscape, and for the most part are well incorporated into the surrounding natural features. However certain man-made features conflict with the landscape and the remoteness of the area. Game fencing creates a sense of false enclosure in an otherwise open landscape. Communication masts on a number of vantage points and powerlines break the skyline and visual horizons. Although much of the area is inaccessible a few poorly maintained and designed roads and access routes visually scar the landscape and also fragment ecosystems.

Key characteristics of this part of the nominated WHS can be summarised as follows:

- Undulating relief interspersed with rocky outcrops and steeper slopes.
- Extensive panoramic views into the distance panning across the rugged landscape to the north and north-west, and the gentler rolling landscape to the south and south-east.
- Well-conserved grasslands covering large tracts of land interspersed with dense woody vegetation in the drainage lines and on rocky outcrops and

ridges, and patches of flowering plants where vegetation has been overgrazed, particularly along the crest of the watershed.

- An abundance of wild game including: blesbok; springbok; red hartebeest; impala; giraffe; gemsbok; sable; blue wildebeest; black wildebeest; as well as a diversity of smaller mammal species, birds, reptiles and insects.
- Road network limited to dirt roads and farm tracks making the area largely inaccessible except by four wheel drive vehicles.
- Sparsely settled, with infrequent farmsteads sensitively designed to fit into the landscape and many landowners living off site, returning for a getaway experience.
- Sense of wilderness and remoteness from the nearby urban areas.

2.2.2. North and north west of the central watershed

To the north-west of the core zone a meandering valley is formed in the north-west buffer zone, between the Witwatersberg ridge and the central watershed. The Witwatersberg is a quartzite ridge, while shales and lavas underlie the valleys and foothills.

The Witwatersberg, a monoclonally tilted granite ridge, forms a distinct north-west boundary of the area and is part of the Magaliesberg, one of the oldest mountain ranges in the world. The Witwatersberg has steep south-east facing slopes and gentle north-west facing slopes. The slopes of this ridge are generally rocky with shallow well-drained soils, and deeper well-drained soils on the foot slopes. The crest of the Witwatersberg ranges between 1590 to 1650 mamsl and on clear days the Magaliesberg range (crest ranging between 1690 to 1790 mamsl) is visible in the distance to the north of the nominated WHS.

The northern slopes of the central watershed have weathered to form hilly and rugged terrain. The area between the Witwatersberg and the central watershed can be described as being hilly, with steep slopes and wide valley bottoms. The ridges on either side of the valley create a visual enclosure from the surrounding landscape and views are channeled within the meandering valley.

The rugged topography, varied geology and associated rock outcrops and residual soils of the Witwatersberg provide a variety of habitats for diverse plant communities. Generally woody vegetation occurs along the drainage lines and in scattered patches in association with rocky outcrops. The southern slopes are also more wooded than the north facing slopes as a result of aspect-related moister conditions. Between the Witwatersberg and the central watershed, the deeper soils of the wide valley bottoms have promoted the transformation of a small percentage of the area from woodland vegetation to crop cultivation. Where cultivation of crops has lapsed, the fields have been colonised by pioneer forbs and grass species, creating a mosaic effect when viewed from elevated areas.

The Skeerpoort River and some smaller tributaries drain the northern part of the site into the Magalies River catchment, through gorges in the Witwatersberg at between 1200 and 1350 mamsl. The valleys of the main watercourses are flat and relatively wide, ranging between 500m and 1km.

The Skeerpoort River is ephemeral in its upper reaches and perennial in its lower reaches and is fed by a number of natural springs, which provide most of the base flow in low rainfall periods. The quality of water in this catchment is considered to be good and the pools and streams in this area contain clear water.

A sense of remoteness in the north-west buffer zone is enhanced by the lack of visual intrusion from the surrounding areas, as well as an almost complete absence of industrial and commercial activities. The area is predominantly divided into farms in excess of 4 000 ha, the majority of which are not subdivided. Land uses and activities in this area are generally related to conservation, game farming and to a limited extent crop cultivation. This however changes towards the southern end of the valley where a few indoor farming and other commercial and industrial activities occur.

Detracting from the visual remoteness of this area are built features and infrastructure including roads and paths, telephone lines, fencing, and light industrial buildings. Communication infrastructure including satellite dishes are also located in this area. The appropriateness of the satellite dishes in the context of a generally remote and undisturbed area is subjective. These satellite dishes are limited to a small area within a large well-conserved farm, but are partially visible from the passing road.

Key characteristics of the north-west buffer zone can be summarised as follows:

- Wide valley, meandering through hilly and rugged topography and bounded on either side by steep slopes rising between 100 and 300m from valley floor to crest. The ridges on either side of the valley create a visual enclosure channeling views within the valley. The area can be considered to be scenically attractive and dramatic in parts.
- Woody vegetation occurs along the drainage lines, in scattered patches in association with rocky outcrops and on the southern facing moister slopes.
- Fluvial features including perennial and ephemeral streams of clear running water, pools, and fountains.
- Mosaic of cultivated and non-cultivated land and colonisation of uncultivated fields by forbs and grass species.
- Scattered farmsteads in close proximity to the secondary road network, and a few indoor farming and commercial activities in the southern part of the valley.

2.2.3. South of the central watershed

The southern slopes of the central watershed are more rounded than those of the northern slopes and flatten out into gently rolling terrain to form the south and south-east buffer zone of the nominated WHS. Slopes in this area average between 1:4 and 1:6. The underlying geology of the south and south-east buffer zone consists of quartzite, slate, conglomerate, granite and migmatite intrusions. Weathering processes have produced rocky outcrops and isolated ridges breaking up an otherwise gentle landscape.

The topography provides open visual expanses with frequent distant views to the south. From the vantage points, spectacular views of the rugged topographical features to the north are also experienced. Unfortunately the rolling topography contributes little to the visual protection of the site from urban encroachment from the south and south-east. Isolated ridges and koppies provide only limited visual enclosure, from the contiguous land uses to the south and south-east of the site.

The vegetation in this area is fairly similar to that of the central watershed and the area to the north and north-west. The vegetation here is however less well conserved and in many places has been transformed substantially by cultivation, and by light industrial, commercial and residential activities which are more prominent here than in other parts of the area. Crop cultivation is predominant in the valleys and pockets of deeper soils. There are also patches of exotic vegetation, mostly annuals and woody vegetation in patches of disturbed areas, along the watercourses and steep slopes.

The Bloubankspruit drains the south and south-east buffer zone of the nominated WHS and some perennial streams, all of which discharge into the Crocodile River. The Bloubankspruit's upper reaches arise in the urban area of Krugersdorp. The banks of this watercourse are under cultivation, and the Bloubankspruit also receives treated effluent from a nearby sewage works, all of which have resulted in a lower quality of water than that of the Skeerpoort River to the north-west.

Human inhabitation and activities are more prominent in this part of the nominated WHS, with the main access points to the area being located here. The residential areas of Oaktree, Swartkrans, Kromdraai and Protea Ridge Agricultural Holdings contain small holdings and plots with further potential for subdivision and development. This area currently includes residences and small scale industrial and commercial activities with an eclectic collection of building styles.

The area to the south of the central watershed has in places, a rather disheveled appearance. This appearance has been created by a combination of factors including:

- a low level of investment in the maintenance of buildings, road verges, vegetation and properties;
- the types and diversity of land uses in this area;
- the eclectic use of signage and advertising;
- the lack of a central theme or unifying features.

Key characteristics of the south and south-east buffer zone of the nominated WHS can be summarised as follows:

- Rolling hills flattening out towards the south and south-east and broken by isolated low ridges and koppies.
- Wide expansive views from the vantage points and visually exposed to the encroaching urbanisation from the south and south-east.
- Dense woody and exotic vegetation in the drainage lines, sparser transformed vegetation and cultivation in the valleys and flatter parts of the area, and patches of woody vegetation on the ridges and rocky outcrops.
- Plots and small holdings and a variety of land uses including crop cultivation, indoor farming, residential, commercial, industrial and tourism activities.

2.3. Economic context

The region within which the nominated WHS is located is primarily dependent on the mining industry as an employer and contributor to the Gross Geographic Product (GGP). Manufacturing, and mining and quarrying are the main contributors to the GGP of Krugersdorp Local Authority and Rustenburg Local Authority respectively. However the nominated WHS provides a strong economic contrast to this in that the main activities practised in the area are: conservation and farming, tourism, and limited light industry and commercial activities, presenting a relatively diversified local economy (economic data is presented in Appendix B).

Detailed census data for the nominated WHS is unavailable at this time. Data from Rustenburg and Krugersdorp local authorities has been extrapolated. In both Rustenburg and Krugersdorp, there has been a steady decline in the number of people with formal employment. This comes despite significant levels of growth in the populations in both these areas. Increases in population with declining employment opportunities have placed significant social and economic pressures on the area. The economic pressures on the nominated WHS are manifest in the poor provision of social services including health and welfare, disaster management services, education, and the provision of water and disposal of waste.

There has undoubtedly been an increase in the informal sector of the economy in the Western Gauteng Services Council (WGSC), which contributes to the GGP of the area and the Gauteng Province. This sector however, by its very nature, does not contribute to the local or provincial fiscus, which places additional burdens on local authorities and compromises their ability to provide basic services and infrastructure.

The WGSC Regional Development Objectives (RDO) document states that there has been a high urbanisation trend, particularly in Krugersdorp local authority. Significantly the RDO states that there has been a widening of the income gap between the rural and urban populations and that the rural population (including a vast majority of the population in the nominated WHS) is very poor.

2.4. Tourism

The current tourism plant in the nominated WHS is outlined in this section. A spatial representation of the dispersion of the various tourism establishments by category is shown in Map 2.

2.4.1. Fossil/Cave sites

Currently the owners of only two of the 12 identified fossil sites allow general public access to their site. These are Sterkfontein and Wonder Caves. Both of these sites have a cave network through which guided tours are conducted. Drimolen, Zwartkrans, Kromdraai and Plover's Lake sites have limited access for the general public via local tour operators who provide tours, game drives, scientific lectures and hiking and horse-back trails in the area. The remaining fossil sites, which are all privately owned, are, largely, only accessible to scientists.

Sterkfontein Caves
Sterkfontein caves, although one of the richest and most productive palaeo-anthropological sites in the world, currently only attracts in the region of 75 000 visitors per annum of which 75% are school children.

The Sterkfontein excursion includes a 30 to 45 minute guided tour through the cave system followed by a brief glance into a fenced-off, active, excavation site. There is also a small, self-guided interpretative centre and a canteen area serving light refreshments.

The caves themselves were mined of lime in the late 19th and early 20th century and hence no longer portray impressive stalagmites or stalactites as a tourist cave visitor might expect. In addition, the railings, pathways, steep stairwell at the cave exit and entrance and other facilities inside and outside the cave system are in need of upgrading and repair.

These caves form part of the Isaac Stegman Reserve, owned by the University of the Witwatersrand.

Wonder Caves
Although not being able to lay claim to any significant fossil findings, Wonder Cave provides the visitor with an impressive display of stalagmites and stalactites. Access to the cave system is initially via a steep staircase, followed by an elevator ride deep into the cave system. Access for the physically impaired is not possible.

The cave currently attracts in the region of 40 000 visitors per annum, however, access to the cave system is limited by the elevator access point. The tour of the cave, with a professional guide, lasts 30 to 45 minutes. No interpretation or orientation centre is provided at the site.

Other fossil sites
The remaining 10 identified fossil sites in the nominated WHS have no or very limited amenities to cater for visitors. The owners of Plover's Lake have developed pathways that meander through their property – eventually leading to the fossil site and caves on the property. There are no interpretation centres at any of these sites. Orientation information is not provided at any site or anywhere in the nominated WHS.

2.4.2. Other attractions and tourism facilities

The tourist attractions in the area are concentrated on the main arterial routes in the southern and central parts of the nominated WHS. These attractions include horse trails, art galleries, craft manufacturing facilities, cultural villages, picnic sites, a trout farm, an old gold mine, an old mill house, a game reserve, etc. With some exceptions the general standard of the facilities is medium to low.

The area is well supplied with a wide range of tourism attractions that can add to the character and range of facilities on offer to visitors to the nominated WHS. Currently these attractions are under utilised and hence there is some available capacity to cope with the anticipated demand generated by the promotion of the nominated WHS.

Tourism facilities in the area are as follows:

- Accommodation facilities. There are currently 29 accommodation establishments in the nominated WHS. In total these facilities can accommodate in the region of 1 400 guests per night. Average room occupancy for the area is approximately 40% with an average of 200 000 bednights sold per annum. Current demand for these facilities emanates largely from conference delegates (77%). 23% of all bednights sold are to overseas tourists who visit the area for the palaeo-anthropological attractions and/or the natural setting. A further 500 additional beds are mooted as part of numerous projects for the area. At the current demand levels, the area will not be able to sustain the proposed increase in supply.

- Conference/wedding function facilities. The area currently has a total of 19 conference and 12 wedding function venues of varying standard, size and range of components. In total there are approximately 3 500 conferences and 1 300 weddings per annum held in the study area. These functions currently attract about 175 000 conference delegates and 140 000 wedding guests annually. The area is popular with the Gauteng Province market for conference and other events due to it close proximity to Johannesburg, its affordability, and the country atmosphere. Currently the conference and

wedding markets rarely incorporate visits to palaeontological sites for delegates or guests.

- Restaurants. Currently there are 10 restaurants in the nominated WHS most of which are only open to the public from Thursday through to Sunday. These restaurants are mainly family or upmarket facilities, with only one being a tea-garden. Most of the 150 000 annual patrons frequent the restaurants in the area because of the country atmosphere. In general the area has a diversified product base ranging from palaeontological, palaeo-anthropological, archaeological, historical and well preserved natural resources to various attractions, accommodation establishments, restaurants and conference/ wedding venues.

The natural beauty and rural atmosphere is currently the most important factor in attracting visitors to the area. The historic and pre-historic riches will play a major role in the attraction of new markets and extending the stay of current markets in the area.

The current quality and standard of products is very diverse. In general the quality of the tourism plant in the area is not of the standard expected of a WHS destination. In addition, the area lacks orientation and educational facilities in terms of the area's global and regional significance

The area has a wide range of attractions with the potential to attract different markets. The poor overall quality and the lack of access to the natural attractions such as the caves and fossil sites limits the current potential to attract visitors and in particular repeat visitors to the nominated WHS. The sensitivity of attractions such as the caves and fossil sites results in limitations to the number of people that can be accommodated at any one time.

2.5. Institutional context

The South African government has a three-tier system of government incorporating national, provincial and local authorities. The nominated WHS is spread across the area of jurisdiction of two provinces, namely Gauteng Province and North West Province. The effect of this is that regulations and consultation in respect of the management and control of the area lies with two independent authorities. This could be a challenge during the execution of the various management and development plans due to differences in approach and resources.

The greater part of the nominated WHS is located in the area of jurisdiction of the Western Gauteng Services Council (WGSC), which is the composite body of smaller rural and Representative Councils (RC) which have political decision making powers, but no execution powers. The WGSC acts as the exchequer. Under the auspices of the WGSC, the nominated WHS falls within the area of jurisdiction of the Magaliesberg Representative Council, and the Crocodile River Representative Council.

The nominated WHS also area falls within the area of jurisdiction of the Skeerpoort RC and Hartbeespoort LC within North West Province. The political decision-making authority as well as the exchequer for Skeerpoort RC is the Eastern Region District Council (ERDC).

The southern section of the nominated WHS is located within the Krugersdorp TLC area of jurisdiction. Krugersdorp LA is an authorised and independent local authority, having its own political decision making and exchequer powers.

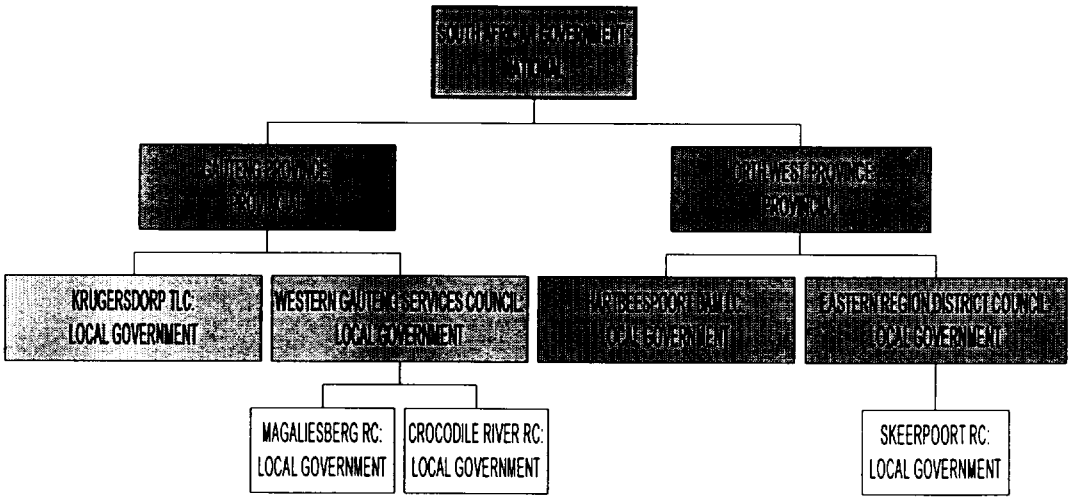
South-east of the site, between Krugersdorp TLC, Magaliesberg RC and Crocodile River RC, the Northern Metropolitan Local Council (NMLC) area of jurisdiction is of importance, due to the existence of Lanseria Airport and the industrialised activities conducted around the airport.

From a land use and infrastructure point of view, the various local authorities operate independently, in accordance with their own approaches and available resources. The stimulation of development, as well as the control thereof, could therefore present a challenge in terms of a uniform approach.

Other bodies with jurisdiction in the nominated WHC include:

- The National Monument's Council (NMC) which is responsible for implementation of the National monuments Act No 28 of 1969 (Table 2.7.1).
- The Provincial Department's of Environment. The existing procedures requiring prior authorisation and environmental authorisation for specified activities in terms of the Environment Conservation Act are administered in terms of the Provincial Department's of Environment.
- In the absence of the establishment of Catchment Management Agencies for the area, the Department of Water Affairs and Forestry (DWAF) is primarily responsible for use of water and water pollution in the area.

The following diagram reflects the participating administrative structures:



From a land use and infrastructure point of view, the various local authorities operate independently, in accordance with their own set of differences in approach and resources.

The responsibilities for implementation, maintenance and control of land use and infrastructure are summarised in Table 2.5.1.

TABLE 2.5.1: RESPONSIBILITIES FOR IMPLEMENTATION, MAINTENANCE AND CONTROL OF LAND USE AND INFRASTRUCTURE IN THE NOMINATED WHS

Local Authority	Decision Making Power			
	Political	Exchequer	Veto	Authorised
Krugersdorp TLC	Yes	Yes	Yes	Yes
WGSC	Yes	Yes	Yes	Yes
Magaliesberg Representative Council	Local decisions	No	No	No
Crocodile River Representative Council	Local decisions	No	No	No
Eastern Region District Council	Yes	Yes	Yes	No
Skeerpoort Representative Council	Local issues	No	No	No
Hartbeespoort Local Council	Yes	Yes	Yes	Yes

If "authorised," it means that the local authority has the power to approve land use applications. If not authorised, it must be referred to the higher level authority. In the case of Skeerpoort and the Eastern Region District Council, the decision making power is vested in the North West Province.

2.6. Physical planning

2.6.1. Land Use

Land use within the nominated WHS is managed under a variety of legal mechanisms and pieces of legislation, including:

- Land Development Objectives in terms of the Development Facilitation Act, Act 67 of 1995
- Integrated Development Plans in terms of the Transitional Local Authorities Act, Act 203 of 1993
- Town Planning Schemes as per the Ordinance on Town Planning and Townships (Ordinance 15 of 1986)
- Title restrictions
- Physical Planning Act of 1986

Subdivision of land is managed by:

- The Division of Land Ordinance (Ordinance 20 of 1986)
- The Division of Agricultural Land Act (Act 19 of 1970).

The general interpretation of South African law is that the most restrictive condition applies. Therefore, in cases where the Town Planning Scheme would allow a land right, but it is not supported by Land Development Objectives (LDOs) of the specific area, then the Local Authority may not grant permission for the land use to be exercised.

Land Development Objectives are set by the local authorities and must be approved by the Provincial MEC concerned. The MEC may withhold approval if in terms of Section 27(1)(9a)(ii) of the Development Facilitation Act: "*the land development objectives are, in the opinion of the MEC, inconsistent or cannot be reconciled with other objectives set or planning done in terms of any other law in the province*".

One objective set by the Government for the area is compliance with the WHC requiring certain standards of protection, management and conservation.

If the land use is compatible with the LDOs, but in contravention of the Town Planning Scheme, then the Town Planning Scheme must be amended to allow the land right to be executed.

2.6.2. Transportation

Promoting access and mobility for inhabitants of and visitors to an area is a key policy approach in dealing with transportation issues.

Roads
The main routes for passenger transport (bus and taxi) in the area of the area are from Krugersdorp to Magaliesberg and Rustenburg along the K76; from Rustenburg to Hartbeespoort Dam and Pretoria along the P31-1 and from Hartbeespoort Dam to the Johannesburg metropolitan area along the K29.

The following roads provide regional access to the nominated WHS: (Map 3)

- The K26 (rural two way paved road) links Pretoria with the western part of the Magaliesberg TLC and also gives access to Krugersdorp
- The K17 (rural two way paved road) linking Krugersdorp with Hekpoort
- The K29 (rural two way paved road) is an important link between the Witwatersrand area and Hartbeespoort Dam.
- The K19 (rural two way paved road) links the K29 with Krugersdorp. This road is not used as extensively as the K29. A major regional dual carriage freeway the P158-2 (R27) linking Pretoria with Krugersdorp is towards the south of the K19.

Future roads that are incorporated in the planned road network of the Gauteng Province Department of Transport in the area of the site are (Map 3):

- PWV1 (dual carriageway) will link Pretoria with Krugersdorp, via the Magaliesberg TLC. The proposed alignment will be almost the same as that of the K26.

- PWV3 (dual carriageway) will link the Johannesburg Metropolitan area with the Hartbeespoort Dam. It is expected that the interaction between the Witwatersrand area and Hartbeespoort Dam will increase substantially in the near future, thus increasing the pressure to upgrade the existing K29.

- PWV8 (dual carriageway) that is to be an extension of the existing P158. This road will pass the nominated WHS along the most southern boundary.

None of the proposed roads are planned to cut through the Core of the area. These roads may, however, improve access to the area and will have to be taken into consideration in planning regional access to the area. Finalisation of the routes and detailed planning will be subject to environmental authorisation.

Local access roads linking the nominated WHS with the regional road network, and road interval on the nominated WHS, are limited. The main local access roads are:

- From the North-South DF Malan – Swartkops road (K31), which links to the R28 to the south, a gravel road provides entry from the east. This is presently the main entry road to the area.

- The second main point of entry is from the south, linking the East-West N14 route (from the R28 to Hekpoort, Magaliesberg and Ventersdorp) to the site. This road is partly tarred and partly gravel.
- A gravel road providing entry from the north, linking to the Broederstroom-Lanseria road (K29).

- Access to farms from the main access roads is also along gravel roads. Farms in the north and north-west can only be accessed by four-wheel drive.

The local access roads will have to be planned and possibly improved to support proposed development of the site and to facilitate access to and movement within the area.

Rail transport
There is no rail transport in the area of the nominated WHS with the nearest railway stations at Krugersdorp, Magaliesburg, Hekpoort and Meerhof (Hartbeespoort Dam).

Air transport
There are two airports near the nominated WHS:

- Krugersdorp airport – suitable for light aircraft with unpaved runway.
- Lanseria airport – suitable for aircraft up to B737 size with paved runways and maintenance facilities.

Lanseria has the potential to be developed into an international airport to serve the future aviation needs in the region.

2.6.3. Infrastructure

The engineering or technical infrastructure associated with the built environment includes:

- Water supply
- Sanitation
- Electricity and energy supply
- Waste management
- Roads and storm water drainage
- Telecommunication

Infrastructure is required to support and sustain human settlement and to reduce the impact thereof on the natural environment. Effective and efficient infrastructure is an essential element required to achieve the fundamental purpose of human settlements: the creation of life-enhancing environments for people.

Well-developed formal services and infrastructure serve the urbanised areas of Krugersdorp, Magaliesberg, Hartbeespoort and the Johannesburg Northern Metropolitan Substructure. However within the nominated WHS the responsibility for the provision of services lies with landowners or occupiers.

Water supply
There is no water supply scheme owned by a water supply authority in the area. Water is obtained from groundwater sources and, to a limited extent, from surface water sources. Rand Water that has the Vaal River as a main source provides bulk water supply to adjacent local authorities.

Sanitation
There is no sewerage disposal scheme in the area. Wastewater is disposed on site by means of septic tanks and French drains. Waterborne sewerage networks and wastewater treatment works serves developed areas in adjacent local authorities. Three wastewater treatment works (WWTW) discharge upstream of the area: the Randfontein WWTW, the Percy Stewart WWTW and the Driefontein WWTW. Water discharge by the WWTW is subject to the National Water Act No 36 of 1998 and the Water Services Act No 108 of 1997.

Electricity supply
The rural areas receive electricity from Eskom while smallholdings obtain electricity from the adjacent local governments. The electricity supply infrastructure servicing users in the adjacent local authorities does not impact

on the area. Dual high voltage (400 kV each) transmission lines between the Minerva (in Centurion area) and Pluto (in Carltonville area) transmission substations traverses the nominated WHS.

Waste management
In the areas where land use consists mostly of agricultural holdings and farms, inhabitants dispose of solid waste on site. The urban developed areas are served by waste removal and disposal services rendered by the local authority. There are no registered disposal sites in the area.

Storm water drainage
No formal management systems for stormwater drainage exists within the rural areas, other than that associated with surfaced road construction.

Telecommunication
Typical rural Telkom systems, as well as cellular networks, serve the area. Local and regional communication towers have been erected on high ground.

2.7. Legal context

A summary of existing legislation applicable to the nominated WHS and the proposed new legislation to ensure the protection, management and conservation of the WHS is set out in Table 2.7.1.

The key legislation for the protection of fossil hominid sites in the area was the National Monuments Act No. 28 of 1969. Recently, legislation has focused more on controlling development. This is achieved by the planning control mechanisms in the Development Facilitation Act No. 73 of 1989 and the requirements for environmental authorisations in the Environment Conservation Act No. 67 of 1995 and most recently the National Environment Management Act No. 107 of 1998. Finally, since South Africa's ratification of the World Heritage Convention the process of drafting and negotiating specific legislation to ensure that the obligations and objectives set out in the World Heritage Convention are complied with has begun. A World Heritage Convention Bill will be gazetted for public comment in June 1999.

TABLE 2.7.1: SUMMARY OF APPLICABLE LEGISLATION FOR THE PROTECTION AND MANAGEMENT OF THE NOMINATED WHS

Legislation	Discussion
National Monuments Act No. 28 of 1969	Swartkrans, Sterkfontein Caves and the Kromdraai palaeo-anthropological sites are declared National Monuments in terms of the National Monuments Act. The Act provides that no person may damage, destroy, excavate or alter any monument without the authority of the Monuments Council. The effect is that where an environmentally significant place or site is a national monument, the Council enjoys the ability to supervise the use and management in a way that conserves its environmental significance. Section 12(2A) of the National Monuments Act provides that no person shall destroy, damage, excavate, alter, remove from its original site or export any: • fossil anthropological or archaeological contents of caves, rock shelters, middens, shell mounds or other sites; • archaeological or palaeo-anthropological finds, material or object; • except under the authority of and in accordance with a permit issued in accordance with the provisions of the Act. All the existing sites and palaeo-anthropological material in the area are protected by the Monuments Act.
National Heritage Resources Act No. 25 of 1999	The National Heritage Resources Act was signed on 14 April 1999. The Act has not yet been proclaimed but ultimately the National Heritage Resources Act together with the National Heritage Council Act No. 11 of 1999 will completely replace the National Monuments Act from mid-2000 or later. The existing Monuments Council which will be replaced by the Council of the South African Heritage Resources Agency in terms of the National Heritage Resources Act has suggested declaring all the hominid sites in the area as National Monuments. National Monuments will become "*Heritage Sites*" in terms of the new Act. Section 27 of the National Heritage Resource Act provides for the protection and management of heritage resources. No person may destroy damage, deface, excavate, alter, remove from its original position, sub divide or change the planning status of a heritage site without a permit. A heritage authority may also make regulations providing for specific protections. This Act provides an integrated and interactive system for the management of national heritage systems. Section 35 of the National Heritage Resource Act provides for the protection of archaeological and palaeontological heritage. In terms of the Act the protection of archaeological and palaeontological sites and materials are the responsibility of the provincial heritage resources authority. No person may destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site without a permit issued by the responsible heritage resources authority. Section 26 provides that the Minister or MEC may make regulations to enable a heritage resources authority to delegate in writing any of its functions or powers under the Bill to "*any other authority which shows competence to perform such functions*" or "*any other body which is competent to perform such functions, by agreement with such authority or body.*" This section makes it possible for the powers and obligations conferred by the National Heritage Resources Act to be delegated to a council or structure established by other Legislation appointed specifically for the management and protection of the nominated WHS.

Legislation	Discussion
Environment Conservation Act No 73 of 1989	Regulations promulgated by the Minister of Environment and Tourism in terms of section 21 and 22 of the Environment Conservation Act provide a process whereby an environmental impact assessment must be undertaken before a number of identified activities can be undertaken. The activities identified by the Minister include activities such as the construction or upgrading of facilities for commercial electricity generation and supply, structures associated with communication networks, transport routes, building of roads, public and private resorts and buildings and structures for industrial manufacturing. This therefore controls the undertaking of the identified activities in the nominated WHS and where the activity threatens the integrity of the area, authorisation of the activity may be declined.
National Environment Management Act No. 107 of 1998	This new Act commenced in January 1999. Chapter 5 of the National Environment Management Act No. 107 of 1998 ("the NEMA") provides for Integrated Environment Management and environmental impact assessments. The Chapter differs in certain respects from the existing provisions of the Environment Conservation Act No. 73 of 1989 pertaining to environment impact assessment. These will be repealed once they are made redundant by the NEMA. In particular Provincial MEC's now have the power, with the concurrence of the National Minister, to prohibit activities from occurring within geographical areas determined by them. One objective of Integrated Environmental Management is to assess the actual and potential impact on the environment, socio-economic conditions and cultural heritage with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management. This is consistent with the Integrated Environment and Conservation Management Plan which is proposed for the nominated area. Section 24 provides that the MEC may, with the concurrence of the Minister, identify geographical areas within which specific activities may not be commenced without prior authorisation from the MEC and identify existing authorised and permitted activities which must be considered, assessed, evaluated and reported on. This therefore provides a tool for the management of existing activities in addition to the control over new developments which EIA's generally provide.
National Water Act No 36 of 1998	Water conservation is identified in the proposed IECMP as of critical importance for the conservation and protection of the fossils and the water bearing dolomite in which the fossils are preserved. The National Water Act provides for the establishment of Catchment Management Strategies for the protection, use, development, conservation, management and control of water resources within Water Management Areas. The Government can ensure that Catchment Management Agencies are established for the area and ensure that objectives identified in the Integrated Environment and Conservation Management Plan which the Gauteng Provincial Government is in the process of developing are realised in the Catchment Management Strategy. The Department of Water Affairs has also set certain guidelines to regulate the abstraction of ground and surface water and the disposal and discharge of waste. Licenses will therefore be required for water use in the area including excessive extraction of groundwater, or pollution of ground water.

Legislation	Discussion
Minerals Act No 50 of 1991	Mining and prospecting in the area is limited by the Minerals Act. Mining may only be undertaken by permit holders. A prerequisite for the commencement of mining by a permit holder is the approval of an environmental management programme. The Director-General may also require that an environmental impact assessment be carried out in respect of intended prospecting or mining operations.
National Veld and Forest Fire Act No 101 of 1998	Some of the provisions of this new Act are already in force and the remaining provisions will come into force in the near future. The purpose of the Veld and Forest Fire Act is to prevent and combat veld, forest and mountain fires throughout the Republic. The Act provides for a variety of institutions, methods and practices for achieving the purpose. In particular Chapter 2 regulates the establishment, registration, duties and functioning of fire protection associations. These associations must deal with all aspects of veldfire prevention and fire fighting. The appointment and duties of a fire protection officer are also regulated. A fire protection association may be formed by owners who wish to co-operate in respect of an area which has- • regular veldfires; or • a relatively uniform risk of veldfire; or • relatively uniform climatic conditions, or • relatively uniform types of forest or vegetation. If no fire protection association is registered within one year after the Act comes into effect the Minister may take certain measures to ensure the establishment of a fire protection association. A fire protection association has been established in the nominated WHS. The Veld and Forest Fire Act will facilitate the control of fire hazards caused by tourists and ensure a structured fire protection system which is essential for a rural area such as the nominated WHS.
Housing Consumer Measures Protection Act No 95 of 1998	The National Home Builders Registration Council established by section 2 of the Housing Act requires that registered home builders obtain the approval of the Council prior to the installation of services in areas underlain by dolomites. Dolomite runs through most of the nominated area. The Council must be satisfied about consumer safety before they will approve construction. This provides an obvious limitation on development over the dolomite zone.
Transvaal Nature Conservation Ordinance No 12 of 1983	This provincial ordinance was assigned to both the Gauteng and the North West Provincial Governments by Proclamation. Section 14 of the Ordinance provides for the declaration of Nature Reserves which are subject to certain conservation measures. The Ordinance is enforced by nature conservators who have wide powers to monitor, inspect and ensure compliance with the Ordinance. There are a number of Nature Reserves within and surrounding the nominated area. The Ordinance also protects animals and indigenous plants identified in a schedule to the Ordinance. The schedule includes the red data species identified in the nominated area. Section 99 provides that no person may remove a cave formation or disturb, destroy damage, mutilate or spoil a cave formation without a permit.

Legislation	Discussion
Local Authority Controls	Local planning and the formulation of Land Development Objectives consistent with the need to protect the area is also a mechanism for the protection of the area supplementing any other measures taken. Land Development Objectives are developed through a consultative process in terms of the Development Facilitation Act 67 of 1995 ("the DFA"). Section 29 of the DFA provides that no competent authority may approve a land development application if the application is inconsistent with any Land Development Objective. The Main Reports for the 1997 Land Development Objectives for the Western Gauteng Services Council stated that the vision statement for the Land Development Objectives in the area should be: *"... to improve the quality of life of all its residents while ensuring the protection of the rural character and the unique beauty and regional environmental importance of the area by:* • *strengthening existing nodes;* • *encouraging agricultural related land uses, tourism and recreation;* • *preventing further urban sprawl and harmful land uses into the area;* • *promoting conservation and the protection of natural resources."* Land Development Objectives must be continually reviewed and the review process has commenced. Although Land Development Objectives are set by the local authorities they must be approved by the Provincial MEC concerned. The MEC may withhold approval if in terms of section 27(1)(a)(ii) if *inter alia*: "*the land development objectives are, in the opinion of the MEC, inconsistent or cannot be reconciled with other objectives set or planning done in terms of any other law in the province*" One objective set by Government for the area is World Heritage Site Listing which requires certain standards of protection, management and conservation. Even if the nominated site is not listed the area has been identified by Provincial and National Government as an area of outstanding universal value and in terms of the provision of the World Heritage Convention the State is bound to protect and conserve the area. The Provincial Departments concerned will not approve the Land Development Objectives unless they comply with the objectives determined in the Integrated Environment and Conservation Management Plan for the area. A Gauteng Province Cabinet Memorandum in January proposing the inclusion of the proposed IECMP in Land Development Objectives was approved by the Cabinet.

Legislation	Discussion
Customary and other controls	In addition to the legislative controls set out above many of the landowners in the area are also vigilant conservationists. There are therefore existing management and conservation plans on many of the privately owned properties in the area. The landowners in the area have community based resident/land owners associations. Most of these associations, share the following common objectives: • Protection of the rural nature of the area. • Control of massive urban development. The resident/land owners associations are community based organisations and their policies do not have any formal legal status. However, they have been very effective over the years because they enjoy the support of the community. The formation of a conservancy by some of the residents indicates a commitment to conservation issues. A conservancy is a group of farms whose owners have combined resources for the improved conservation and well being of fauna and flora in the area. Conservancies, which are controlled and financed by the landowners over whose property they extend, have no legal nature conservation status although the residents may bind themselves to a constitution which would then be enforceable between members. The commitment to conservation by many of the landowners in the area is also demonstrated by the many National Heritage Sites in the area. Natural Heritage Sites are established in terms of a national programme under the auspices of the National Department of Environment and Tourism. Private owners may apply for their land to be registered as a National Heritage Site in terms of the programme. In order for an application to be successful the owner must give an undertaking that they will not destroy or degrade the area, and that they will report any adverse impacts on the area to the National Department.
World Heritage Convention Bill	This Bill envisages the creation of a framework to incorporate the World Heritage Convention into South African Law and ensures that the World Heritage Convention and its operational guidelines are effectively implemented in the country. The Bill provides a national policy framework and sets out principles for the protection and conservation of cultural and natural heritage. Chapter II of the World Heritage Convention Bill establishes authorities which will be vested with powers to carry out the objectives set out in the Bill. The various World Heritage Sites in the country will be controlled by dedicated authorities. Every authority must prepare and implement a management zone plan for the World Heritage Site under its control. Section 35 of the Bill makes provision for the Minister to prescribe a model management zone plan or sections thereof. What is envisaged in this section is a plan similar to the current integrated environmental and conservation management plan being currently developed by the Gauteng Department of Agriculture, Conservation and Environment in respect of the nominated area. In preparing a management zone plan an authority must have due regard for, and seek to integrate and harmonise the management zone plan with applicable provincial, regional and local planning and development plans, as well as plans in terms of the National Environment Management Act, the National Parks Act and the National Heritage Resources Act.

3. SPECIAL FEATURES AND MANAGEMENT REQUIREMENTS

3.1. Introduction

This chapter outlines the environmental management requirements for sustainable use of the nominated WHS. It does this through review of the environmental assets that will be used to realize the vision for the area and other environmental aspects requiring specific management attention in the development of the area. General good environmental management practice requirements and disaster management requirements are also reviewed.

The environmental assets of the nominated WHS are palaeontological and palaeo-anthroplogical sites, archaeological sites and areas where the ecology is well conserved. Aspects requiring specific management attention are the visual character of the area, dolomite and water resources.

Environmental management requirements have been identified through consideration of sensitivities and threats. The environmental management measures presented in Chapter 6 are directly linked to these management requirements.

This chapter also covers existing environmental management initiatives that are applicable to the identified environmental management requirements and that were taken into consideration in the preparation of the proposed IECMP.

3.2. Palaeontological and Palaeo-anthropological Sites

3.2.1. Discussion

The dolomite in the core of the nominated WHS hosts abundant plant and animal fossil sites of outstanding universal value to current and future generations. The greatest interest in these sites arises from the discovery of remains of early hominids that provide a record of the emergence and evolution of humanity over the past 3.5 m.y. Twelve dolomite cave sites have been identified as having particular conservation importance. Seven of these bear hominid deposits. The other five sites have yielded fossil animals and, in some cases, plants but not, as yet, hominid remains. There are many more caves within dolomite core that host fossils, but their conservation value has not yet been determined.

The most important of 12 sites is the Sterkfontein Caves, being the richest source of two different species of early hominids, namely *Australopithecus africanus* and *Australopithecus (Paranthropus) robustus.* Furthermore it is in this cave that a recent discovery was made of a 3.3 to 3.33 m.y. skeleton. This is not only the oldest skeleton yet found but also may belong to a different species.

The importance of each of the 12 cave sites is summarised in Table 3.2.1. Map 1.2 indicates the location of each cave within the WHS.

TABLE: 3.2.1 SUMMARY OF IMPORTANT FINDS AT EACH PALEONTOLOGY AND PALAEO-ANTHROPOLOGY SITE

Palaeo site (ownership)	National monument	Important finds
Bolt's Farm (privately owned)	No	Fauna recovered from this site includes fossil elephant, pig, antelopes and microfauna. The various deposits are clearly of a variety of ages, with some microfauna dating to about 4.5 m.y. (the oldest in the conservation area), other specimens to 2.9 – 3.4 m.y. and yet others to around 1.5 m.y. No hominids have been recovered from the deposits, but the potential exists for their discovery.
Swartkrans (privately owned)	Yes	To date more than 200 hominid specimens, most attributable to *Australopithecus (Paranthropus) robustus* but including a few representatives of early *Homo*, have been recovered, together with numerous animal remains and stone tools. In 1988 the site attracted international attention because of the discovery there of evidence for the earliest known deliberate use of fire some 1.3 m.y. ago. Hominid and faunal specimens from Swartkrans are housed at the Transvaal Museum in Pretoria.
Sterkfontein (privately owned)	Yes	First site in South Africa to yield an adult specimen of the ape-man *Australopithecus africanus* in 1936. Early work at Sterkfontein brought to light several notable hominid specimens, including the adult skull of Mrs. Ples. The discovery of stone tools, in association with teeth of a more advanced hominid renewed interest in the caves and excavations were reinitiated in 1966. This excavation has brought to light more than 500 hominid specimens, a huge sample of animal remains, fossilised wood and stone tools belonging to two distinct Early Stone Age industries. At least three species of early hominid are represented, and the 3.3 m.y to 3.33 m.y skeleton discovered in 1998, is not only the oldest skeleton yet found, but may belong to yet another species.
Coopers B (privately owned)	No	Large numbers of fossils are exposed in the sides of pits left by lime miners. Apart from a significant sample of faunal remains, the site has recently yielded the face of a specimen of robust ape-man (*Australopithecus robustus*, known otherwise as *Paranthropus*) and some isolated teeth.
Kromdraai (privately owned)	Yes	The first specimen of *Australopithecus (Paranthropus) robustus* was discovered at this site in 1938. Since then other hominids, stone tools and a substantial number of auna have been excavated. The hominids (and a few artefacts) come from a deposit known as Kromdraai B, while Kromdraai A has yielded only fauna. These finds are characteristic of a period between 1.3 and 1.8 m.y., with Kromdraai A apparently older than Kromdraai B.
Minaars (privately owned)	No	Although small-scale lime quarrying was responsible for the initial exposures, no subsequent excavations have been carried out. The potential of these sites is therefore unknown, as is the case with other sites that have thus far yielded only faunal remains. There is potential for hominids to be preserved in these deposits, and they certainly merit further investigation.
Plover's Lake (privately owned)	No	The site has yielded abundant faunal remains including baboon crania, but thus far no hominids. An age of around 1 m.y. is indicated.

Palaeo site (ownership)	National monument	Important finds
Wonder Cave (privately owned)	No	The cave serves as a good example of the kind of depository which most of the fossil sites of the area must have provided shortly after they first became open to the surface. Soil and some bones have accumulated comparatively recently below the shaft and are being excavated by a team from the Geological Survey. The cave has a resident bat population.
Drimolen (privately owned)	No	Drimolen is one of the newest fossil hominid sites to be discovered. To date the remains of more than 30 individuals of the robust ape-man *Australopithecus robustus (Paranthropus)* have been unearthed, together with a substantial faunal sample.
Gladysvale (privately owned)	No	Gladysvale includes three underground caves and a considerable volume of breccia. The latter apparently belongs to a number of periods, having yielded the remains of *Australopithecus africanus* and early *Homo*. The site may therefore span a period from 3million years onwards. It was originally mined for bat guano in the early years of this century. Apart from the few hominid specimens the site has yielded abundant fauna and some plant remains.
Haasgat (privately owned)	No	Early lime mining removed a basal flowstone from the cave, causing part of the roof to collapse. The collapsed blocks of breccia have yielded a significant faunal sample, although the bone concentration is not particularly high. No hominids have been found thus far. The animals represented include some fairly early forest-dwelling monkeys, which hint that the deposits may exceed 2.8 m.y. in age.
Gondolin (privately owned)	No	Exposed by early lime mining, the cave breccia is richly fossiliferous, having yielded some 90 000 specimens in 1979. Renewed investigations have recently brought to light two teeth of *Australopithecus (Paranthropus) robustus*, and further excavation is justified. The remains appear to be about 1.2 - 1.3 m.y. old.

3.2.2. Management requirements: sensitivities and threats

- Uncontrolled access is a threat to the palaeontology and palaeo-anthropological sites. Such activities might include scavenging and vandalism of excavations, the indiscriminate use of fire in caves and uncontrolled movements within sites.

- Researchers can damage the resources through unsound excavation practices. Researchers in search of particular types of fossils, such as hominids, could damage other fossil resources that are not of interest to them but may be of interest to other researchers in the international community and to future generations of researchers.

- The palaeontology and palaeo-anthropology sites are unstable in some areas, particularly in areas where excavations have rendered the cave surfaces friable. This is a threat to both the fossil resources and to visitors to the fossil sites.

- Increases in carbon dioxide levels in the caves due to human activity can result in changes in humidity levels that can, in turn, result in changed

weathering patterns and increased disintegration of some of the cave systems. This has been identified specifically as a problem in the Sterkfontein Caves and Wonder Cave.

- The presence of cave disease (histoplasmosis) in some of the enclosed caves with bat habitations, such as Wonder Caves, is a threat to tourism. Some of the other caves within the nominated WHS that have not been included in the list of 12 identified sites may also have histoplasmosis present.

- The caves inhabited by bats are sensitive to human activity, in particular noise disturbances. Some caves are also known to be dens for leopard, hyena and porcupines, and are sensitive to human activity.

- The exposed sites are sensitive to the possible scavenging of artefacts that may take place in the absence of management controls.

- The myriad of caves that have not been studied in detail by palaeontologists need to be recognised as fossil resources that require conservation.

The individual sensitivities of each of the identified sites are summarised in Table 3.2.2.

TABLE 3.2.2: SPECIFIC SENSITIVITIES IN EACH CAVE

Palaeo sites	Sensitivities						Discussion
	Instability	Friable	Carbon dioxide levels	Cave disease or presence of bats	Removal of artifacts	Sensitive ecosystems	
Bolt's Farm	No	No	No	No	Yes	No	The breccias are considered to be stable, however a complete lack of infrastructure suggests that this site may require proper fencing if tourism to this cave is to be encouraged both for safety reasons and to discourage souvenir hunters.
Swartkrans	No	Yes	No	No	Yes	No	The breccias are considered to be stable, however the excavated faces are both friable and fossiliferous and will need to be fenced both for safety reasons and to prevent souvenir hunters.
Sterkfontein	Yes	Yes	Yes	No	No	Yes	The cave and fossil site have many sensitivities, but these are all currently being managed via stabilisation of portion of the cave, rerouting and diverting tourists away from unstable areas, providing walkways and viewing platforms rather than direct access. In some cases stairways, handrails and fences are in need of repair to continue managing some of the sensitivities of this site effectively. The cave's ecosystem is sensitive to human activities, overuse and carbon dioxide (and humidity) levels. This is currently being managed by imposing upper limits on tours through the cave.
Coopers B	No	No	No	No	YES	No	The breccias are considered to be stable, however some excavations are deep and precipitous and are unsafe for uncontrolled access by the public. The fossils are also at risk from souvenir hunters.
Kromdraai	No	Yes	No	No	Yes	No	The breccias are stable. The excavation faces are friable, and this area and other exposures will have to be fenced for safety reasons and to exclude souvenir hunters.
Minaars	?	?	?	?	?	?	Pending further scientific investigations it is recommended that public access to these sites be limited to visits in the company of professional researchers.
Plover's Lake	No	No	No	No	Yes	Yes	The breccias are considered stable. The fossils are well exposed and require fencing to prevent uncontrolled access by souvenir hunters and to protect the integrity of the site.
Wonder Cave	No	No	Yes	Yes	No	Yes	The breccias are stable. The site is a known bat cave and as such is sensitive to tourism activities and high numbers of tourists. Numbers are currently limited to manage this sensitivity. There is the potential to contract histoplasmosis in this cave. Visitors are currently actively alerted to this.

Palaeo sites	Sensitivities						Discussion
	Instability	Friable	Carbon dioxide levels	Cave disease or presence of bats	Removal of artifacts	Sensitive ecosystems	
Drimolen	Yes	Yes	No	No	Yes	No	The site is considered to be fairly sensitive in relation to the friable nature of the excavations and the instability of the breccias. This sensitivity is compounded by a lack of infrastructure and the high potential for increased tourism to this site.
Gladysvale	No	Yes	No	Yes	Yes	Yes	The site is richly fossiliferous and precipitous in places and requires adequate fencing and protection if tourism is to be promoted. The area that this site is located in would also be considered sensitive to increased access to tourists.
Haasgat	Yes	No	No	No	Yes	No	The site is sensitive because of the instability caused by early mining, and the accessibility of the fossils to potential souvenir hunters. The area that this site is located in would also be considered sensitive to increased access to tourists.
Gondolin	No	No	No	No	Yes	No	The breccias are stable, however increased tourism to this area would probably render the site sensitive to the removal of fossils by souvenir hunters. The site is currently unfenced and access to this site is often gained illegally.

3.2.3. Existing management measures

The National Monuments Act (28 of 1969) protects palaeontogical, palaeo-anthropological and archaeological sites. Sterkfontein, Swartkrans and Kromdraai are declared National Monuments and are afforded protection by the Act which states that no person may damage, destroy, excavate or alter any monument without the authority of the Monuments Council.

The other caves and fossil sites also enjoy a level of protection under the Act. Section 12(2A) provides for undeclared sites. It states that no person shall damage, destroy, excavate, alter, remove from its original state or export any fossil, anthropological or archaeological contents of caves, rock shelters, middens, shell mounds or other sites; archaeological or palaeontological finds, materials or objects except under the authority of and in accordance with a permit issued under the Act.

Researchers' access to the cave and fossil sites is controlled by the permitting system of the National Monuments Council (NMC). The permitting system includes a strict screening procedure in which the qualifications and experience of an applicant are thoroughly screened by a committee of the NMC. Other existing measures protecting the cave and fossil sites include: controlling and using walkways and other infrastructure to divert tourists away from friable excavation faces.

Specific conservation measures in place at each of the caves and fossil sites are summarised in Table 3.2.3. Sterkfontein Caves and Wonder Caves are the only sites that are directly accessible by the public. This access is by means of guided tours and is subject to a fee. High levels of infrastructure, entrance fees, and guided tours all contribute to the measures in place to conserve these two sites from the impacts of tourism. Drimolen, Swartkrans, Kromdraai and Plover's Lake have limited access for the general public via local tour operators. The remaining sites are in theory only accessible to scientists who have NMC permits, providing them with the right to excavate and remove fossils for research purposes. Excavation is to an extent limited by available information.

Some landowners have in the past provided permission for educational tours subject to the presence of a palaeontologist or researcher. Few of the landowners are integrally involved in the preservation of the caves and fossil sites on their land. Most landowners do however show interest in their sites. There is a relationship of trust with the Transvaal Museum and the University of Witwatersrand when conducting educational tours to these sites to ensure the preservation of the sites.

TABLE 3.2.3: SPECIFIC CONSERVATION INITIATIVES IN PLACE AT THE CAVE AND FOSSIL SITES

Cave	Conservation initiatives		
	Access controls	**Infrastructure**	**Other measures**
Bolt's Farm	Located on private land and currently not made known to the general public. (It is expected that this site will only be of interest to a limited number of specialists and of no interest to the public.)	Rough tracks lead to each of the exposures. Currently, there are no fencing or protective measures to prevent direct access to the exposures once inside the site.	None
Swartkrans	Limited public access via a local tour operator.	Infrastructure is currently limited to a series of tracks through the excavations. There is no protective fencing in any of the sensitive areas.	Protected National Monument.
Sterkfontein	The open caves are accessible to the public for a fee. No access to the fossil site is permitted except to the excavation team. Researchers and excavation team are provided access to the excavation site via constructed walkways.	Sterkfontein is equipped with extensive infrastructure (fencing, walkways, viewing platforms, stairways, handrails etc) to direct tourists through the cave and away from sensitive areas. Much of the infrastructure is in need of repair. Stairways, handrails and safety fences in need of repair and lighting must be improved.	Protected National Monument Tours into the cave are limited to 40 people per half-hour with a maximum of 500 people per day.
Coopers B	Access is currently limited to research teams from the Transvaal Museum and the University of the Witwatersrand.	There is no protective infrastructure at present.	None
Kromdraai	Limited public access via a local tour operator and the Transvaal Museum and University of the Witwatersrand.	There is currently no fencing of friable surface and other exposures.	Protected National Monument No formal management plan.
Minnaars	No access to the public.	No protective infrastructure in place.	None
Plover's Lake	Access to the site is provided for school children in small groups (~50 people per month), and accompanied by the owners or a researcher from the University of the Witwatersrand. Access has also been provided for researchers (~6 parties per year) from the Transvaal Museum and the University of the Witwatersrand.	No protective infrastructure in place.	None
Wonder Cave	Public access to the cave via a local tour operator.	Protective infrastructure includes, walkways, handrails, lighting.	

Cave	Conservation initiatives		
	Access controls	**Infrastructure**	**Other measures**
Drimolen	Limited public access via a local tour operator. Researchers are permitted access via the National Monuments permits.	There is currently no protective infrastructure provided.	There is no management plan in place.
Gladysvale	There is currently no access to the public except by prior arrangement with the owner, and then subject to limited numbers and accompanied by a researcher or the farm manager. Researchers from the University of the Witwatersrand are allowed access to the site.	The site is fenced off, from the rest of the farm however there has been evidence of the site being accessed without permission. There is inadequate protective infrastructure around the fossiliferous and precipitous parts of the site.	Environmental management plan for the farm.
Haasgat	Access to this site is not open to the public.	There is no protective infrastructure in place.	None
Gondolin	The site is not advertised to the public. However there has been uncontrolled access to the site by people exploring in the area or on hikes. There have been cases of people removing trucks full of rock for ornamental gardens, however it s impossible to detect whether any damage has occurred to fossils as a result of lack of control. Educational tours to the site have also been organised in the past for university and school groups. These have been run by the Transvaal Museum or the property owner (teacher).	There is no fencing or protective infrastructure at present. There is potential for limited overnight educational tours for schoolchildren. This is currently limited by the lack of water and ablution facilities on site. The access road will also need upgrading if tours to this cave are to be promoted.	None

3.3. Archaeological Sites

3.3.1. Discussion

The region in which the nominated WHS is located is rich in Stone Age, Iron Age, Rock Art and historical sites. Several archaeological sites of conservation importance are known to occur on the nominated WHS. The area has not however been systematically surveyed to determine the full extent of archaeological resources.

Rock Art in the region consists of rock engravings, the richest concentration of which has been discovered in the Hekpoort area. The Broederstroom National Monument, one of the first agro-pastoralist sites in the Gauteng area, is close to the nominated WHS.

Known archaeological sites in the nominated WHS are reviewed below. The relative conservation importance of the sites is distinguished.

Sites of high conservation importance
Fossil bearing deposits in Sterkfontein, Swartkrans and Kromdraai have been studied by archaeologists and have yielded archaeological remains. The other nine fossil sites have some potential to yield archaeological remains with further workings.

Archaeological remains in Sterkfontein, Swartkrans and Kromdraai span the period from 3.5 to 1.0 m.y., the most important phase in early human and cultural evolution. The Earlier Stone Age is represented in the Oldowan and Early Acheulian deposits (between 2 and 1 m.y. old). Sterkfontein and Swartkrans also contain younger deposits of the Middle Stone Age (250 000 to 40 000 years), a time during which our modern human ancestors evolved. Swartkrans also contains more recent Later Stone Age deposits (younger than 12 000 years).

Sterkfontein has some potential to yield artefacts older than 2 m.y. within the Name Chamber deposits. Sterkfontein and Swartkrans have proven potential to yield larger samples of Earlier Stone Age from 2 to 1 m.y. At Kromdraai, archaeological deposits 2 to 1 m.y. old have potential to expand our knowledge of early human behaviour in southern Africa.

Numerous Stone Age finds in the WHS are of value in that they demonstrate the widespread use of this landscape during the Stone Age.

Sites of general interest
Sites that may be of general interest to the public are outlined below.

- Late Iron Age sites of the early Sotho-Tswana tradition (ca. 1550 + 100 years). These occur in the colluvial and alluvial soils along streams and rivers where a handful of pre-stone wall farming sites, such as Swartkops, are found.

- Stone-walled Late Iron Age sites (ca. 1780-1830 AD) represent a time of trouble. They include defensive hill-top settlements that were common by the 1820s. The historic period of the Anglo-Boer War reveals two blockhouse sites in the region and it is likely that systematic surveying may reveal further sites in the area.
- Lime-mining activity occurred in the area in the 1920s and 1930s. A number of early lime mining kilns are still preserved at many of the palaeontological and palaeo-anthropological sites such as Sterkfontein. Some of these kilns could benefit from excavation and archival documentation.

3.3.2. Management requirements: sensitivities and threats

The archaeological artefacts in the area are, in most cases, exposed and unprotected. At present this is not seen to be a problem, particularly as the locations of sites are generally unknown to the public.

Uncontrolled movements near the sites could increase with increased tourism. Scavenging of artefacts is probably the greatest threat to the sites.

Stone Age sites in the fossil and caves sites (Sterkfontein, Swartkrans and Kromdraai) are subject to many of the threats listed in Section 3.1.2.

3.3.3. Existing management measures

Archaeological sites and artefacts are protected under the National Monuments Act (Section 3.1.3). The primary conservation measure at present however, is the assumption that the public, in most cases, is unaware of the presence of archaeological sites in the area and thus cannot damage them intentionally or otherwise. There is no written evidence to suggest however that a lack of public knowledge of these sites is an effective conservation measure. The majority of archaeological sites are located on private land and access to this land is controlled.

3.4. Ecology

3.4.1. Discussion

Vegetation

The site falls on the edge of the grassland biome of southern Africa. It is at the transition between grassland and savanna. It is within the Highveld Grassland biome, specifically the Bankenveld ecozone of this biome. The Bankenveld is a fire climax grassland of potential savanna. If fire was kept out for long enough it would eventually become savanna. The grassland type occurring on the site is classified as the Central Variation of the Bankenveld. A synonym for this classification is Rocky Highveld Grasslands.

The Central Variation of Bankenveld, falling as it does into the transition zone between two different vegetation biomes (savanna and grassland), has a rich

species diversity. It includes grassland, savanna woodland, dry forest and mountain (Drakensburg) elements. Also, it occurs in an area with topographical variation that creates many habitat types including gorges (kloofs), dykes, sinkholes, north and south-facing slopes, and ridge tops, each with a characteristic assemblage of species.

In addition to a high plant-species diversity, the vegetation on the site features several rare species. Seven of the 53 red data species recorded in Gauteng occur on the site. A red data species with top plant-species conservation priority in Gauteng, the rare ground orchid, *Habenaria mossii*, occurs in the area

The site and surrounding area is also rich in medicinal plants that are traditionally used by a wide variety of culturally different people. Many of these plants may be facing the consequences of over-exploitation and non-sustainable use, in addition to the habitat destruction by urbanisation.

As a World Heritage Site, the site could play an important role in safe guarding a small but valuable portion of the diminishing grassland biome. Grasslands are one of the most transformed biomes in the world. In South Africa, it is the most transformed biome. Bankenveld grassland is highly threatened by urbanization and mining. The Bankenveld on the site is particularly well conserved. This high conservation status motivates ongoing active conservation of this veld type in the area.

The general high conservation status of vegetation in the area is reflected in the following interpretation of a recent (1999) satellite image of the site:

- approximately 9% of the total area has been transformed, the remaining 91% of the site is covered with natural vegetation (32.2 % wooded grassland, 9.6% thicket and bush, and 49.5% grassland);
- approximately 2 % of the core area has been transformed, the remaining 98% of the site is covered with natural vegetation (32.1% wooded grassland, 3.1% thicket and bush, and 62.5% grassland);
- approximately 13% of the buffer zone has been transformed, the remaining 87 % of the area is covered with natural vegetation (32.2 % wooded grassland, 14% thicket and bush, 40% grassland, 8% cultivated, 2% urban, and 2% peri-urban).

Specific statistics on the extent of transformation of the Bankenveld grassland in the area are not available, but it is expected that they correlate with the above general figures for vegetation in the area. Regionally, the Bankenveld grassland falls into the heavily urbanized, industrialized or agricultural areas of Gauteng. About 65 % of the land on which it occurs (approximately 2 355 800 ha or 2% of the area of South Africa) has been transformed, with 23% lost to urbanization. It is generally poorly conserved with only 1.38% falling into protected areas. The Central Variation of the Bankenveld is not protected by any national or provincial nature reserves. Conservation of vegetation in this veld type variation is therefore currently dependent on management policies of private landowners.

Animals

The Bankenveld arguably has one of the highest ungulate mammal species diversity in the country, with around 27 species naturally occurring in the area. The reasons for this are the high habitat diversity, and the fact that this area forms a transition zone between three distinct zoogeographic zones (Section 3.3.).

Many of the species, historically found in the area are on the edge of their natural distribution range and may represent populations that have become fragmented from their centre of distribution. Fencing has also prevented movement and genetic mixing.

3.4.2. Management requirements: sensitivities and threats

- Transformation through urbanization is a threat to the vegetation in the nominated WHS. Transformation through cultivation is a lesser threat in the area because the cultivation potential of the land in the area is generally low, only the land in the wide valley bottoms is suitable for cultivation.

- Invasion by alien plant species can reduce the plant species diversity in the area. At present, there is little evidence of invader plant species. The highest risk of proliferation of invasive species is in the more densely populated southern and south-eastern parts of the area, particularly in the riparian zones in these parts.

- Rangeland management needs attention in the central and northern parts of the area, particularly in the areas with high conservation status. Herbivore stocking rates and species mix ratios are the major variables that management can influence. Game or cattle stocking rates that are too high can lead to overgrazing, trampling and soil erosion. These impacts can lead to a decline in biodiversity and eventually, in soil nutrient status. Stocking rates that are too low, combined with a low fire frequency can be just as harmful, resulting in grasslands becoming rank and moribund - unfavorable conditions for the growth of many sensitive non-grass plants, resulting in loss of biodiversity, and a decline in soil nutrient status. These potential problems are exacerbated by an imbalance in the species mix ratios of herbivores (the mix of bulk and roughage eaters, concentrate selectors and intermediate feeders). Furthermore, stocking of game to maximize production (off-take), will favour plant species resistant to high grazing pressure, leading to a loss of plant biodiversity. The principle of Limits of Acceptable Change (LAC) needs to be incorporated into a monitoring-management program to prevent these problems from arising. Such limits have not been defined for the area.

- The presence of cattle may compromise the conservation integrity of the area, particularly in the central and northern parts of the core area.

Localized trampling and overgrazing by cattle may be difficult to avoid, and in areas with a high conservation status it is recommended that cattle are kept out. Cattle also affect tourist perceptions, detracting from the wilderness feel of these areas.

- The parts of the area that are worthy of a high-priority biodiversity conservation objective are divided into small management units by fences (mainly along property boundaries) and firebreaks. Conservation management measures are difficult to apply effectively in management units that are small.

- Fire is an important natural disturbing force that promotes biodiversity in the grasslands in the area. Fire that is too frequent, too infrequent, too intense and too regular will affect biodiversity. Currently burning of the grasslands in the area is too controlled. Landowners tend to control fires so that they are of moderate intensity occurring in springtime every year.

- Uncontrolled and unmonitored subsistence/ commercial harvesting of flora and fauna species could eventually lead to the loss of some species in the area.

- The genetic health of isolated populations can deteriorate if the populations are too small. Fragmentation of habitats in the area needs to be avoided as far as possible.

- Introduction of species and ecotype not indigenous to the area, particularly those that can cross breed, will threaten the genetic integrity of species in the area.

3.4.3. Existing management measures

There are many conservation initiatives in and around the area. These have differing status and are generally not well co-ordinated. Among the conservation initiatives are private game farms and nature reserves, officially recognised Private Nature Reserves, Conservancies and Natural Heritage Sites.

To get official recognition as a nature reserve, private game farms and nature reserves have to be registered by DACE (as the provincial nature conservation authority). DACE grants this registration if it is satisfied that the farm is worthy of this. The area of the farm and the conservation status has to be adequate to justify the registration. The main benefit of registration is that DACE takes an interest in the conservation practices in the nature reserve and provides advice where possible. This benefit is limited by the capacity of DACE.

Conservancies are groups of neighbouring farms and are formed when landowners agree to collectively promote nature conservation. The investment in nature conservation by partners in a Conservancy varies between conservancies and depends on the motivation of the partners. DACE (as the provincial nature conservation authority) promotes and facilitates the formation

Conservancies. Known conservation initiatives on and neighbouring the proposed WHS are listed in Table 3.4.1. This information requires further verification.

The ecological management history of the area varies between properties. Most of the information available pertains to the John Nash Nature Reserve. A few extrapolations for other areas can be made. The John Nash Nature Reserve (formerly Jack Scott Nature Reserve) has been a private reserve for almost two decades, prior to which it belonged to mining companies for more than half a century. Throughout the area occasional small diggings, old, deserted stone enclosures and a few abandoned farmlands with characteristic vegetation, bear witness to earlier human activities. Historical records indicate that fires occurred annually until the fifties, but are now restricted by roads and firebreaks. Except for firebreaks, no formal burning programme has been followed although fires were occasionally burnt to remove excess plant litter. Many of the properties are fenced and a few are sub-divided into camps. Apart from the areas around salt licks, and regularly burnt firebreaks, the grasslands generally appear to be in good condition. Some areas of dolomite grassland show signs of overgrazing.

DACE has identified an extensive Conservation Priority Area between the Magalies River and the Crocodile River. It extends from the Witwatersberg ridge southwards to the southern tip of the nominated WHS. The nominated WHS falls in the central part of the area. The DACE Conservation Priority Area, therefore, includes land to the west and east of the proposed WHS.

TABLE 3.4.1: CONSERVATION INITIATIVES ON AND NEIGHBOURING THE SITE

Conservation initiatives	Description
Tweedesmere Ranches Natural Heritage Site (Hartebeeshoek 498JQ)	This 12000 ha area is privately owned. It is situated on the proposed WHS, in the catchment of the Skeerpoort River. There are a variety of vulnerable and rare species occurring in this area. It also has several fountains of pristine quality water. The caves thereon house several breeding bat colonies.
The John Nash Nature Reserve (formerly known as the Jack Scott Reserve) (Uitkomst 499JQ, Diepkloof 496JQ and Tweefontein 523JQ)	This is a privately owned and managed nature reserve. Red data plant species have been found in this reserve.
The Hartebeeshoek Nature Reserve (Hartebeeshoek 501JQ and 502JQ)	This is a privately owned nature reserve. Red Data plant species have been found in this reserve.
The Motsetse Game Reserve (on the Bailey family farms: Mooiplaats 524JQ and Rhenosterspruit 495JQ) The name of this reserve is to be changed. The status of the reserve is likely to change to a formerly recognised Nature Reserve.	This 1000ha private reserve supports a variety of bird and animals. Historical sites to be found on the reserve include Bartons Blockhouse, General Schoeman monument, and Kareeboom and Voortrekker grave sites.
The Rhino and Lion Nature Reserve	This tourist attraction features a variety of game, including white rhino, and the Wonder Caves.
The Isaac Edwin Stegmann Nature Reserve	This houses the Sterkfontein Cave Site. It is owned by the University of the Witwatersrand.
The Witwatersberg open space in the Witwatersberg mountainous area	This area has a high diversity of plant and animal species including a number of Red Data and vulnerable species. This has typical Bankenveld vegetation.
The Kingskloof Natural Heritage Site on the Kingskloof ridge	The Kingskloof Natural Heritage Site lies north of Krugersdorp covering approximately 800 ha and is one of the few places in Gauteng where stands of the rare *Aloe peglerae* still occur. The uncommon *Protea*, sub species *roupelliae* is also found here.
Kromdraai Residents Association (KRA) which has proposed limited development area (LDA)	The KRA was formed to conserve the natural beauty and diversity of the area. Their aim is the preservation of the natural environment with only limited development being permitted to take place. They have proposed a LDA to protect the dolomite caves, natural fountains, ridges and feeding sites of the Cape Vulture.
The Rhenosterspruit Conservancy (formerly known as the Kareebosrand Conservancy)	The Rhenosterspruit Conservancy consists of over 100 properties. It amounts to close to 9000 ha. Part of the area has been included in the buffer. The partners in the conservancy have invested in baseline collection to inform nature conservation practices in the area. An application has been submitted for Nature Reserve status.
Regional Conservation of Cape Vultures	An initiative involving conservation of Cape Vultures, has been ongoing. It focuses on conserving the nesting sites, educating inhabitants of the area, the establishment of special feeding sites and habitat protection measures. This initiative is undertaken by the Endangered Wild Life Trust (Vulture Study Group).
Neighbouring Witwatersrand Botanical	The gardens are an important habitat for raptors in the province and include a nesting site for a resident pair of

Conservation initiatives	Description
Gardens	black eagles.
Other conservation initiatives	Kroningspark, Kenmare Kloof, Wonderfontein Spruit, Pretorius Park, the Ndabushe Wildlife Sanctuary, Vleiloerie Bird Sanctuary and Reserve.

3.5. Visual character

3.5.1. Discussion

The landscape character of the site is described in Section 2.1.

It is desirable to preserve the wilderness character of parts of the site. Of particular conservation importance, are the central and northern parts of the core zone. These parts are almost completely visually undisturbed by human intervention. The well conserved Bankenveld grassland with its mosaic of microhabitats, rolling hills and incised valleys to the north, and abundant game make these parts visually and psychologically important.

Conservation of the visual character of the remainder of the nominated WHS is desirable. In order to conserve the landscape character of the area it is important that enclosing ridges and highpoints are retained free of development. Enclosing ridges also play a role in protecting the area from encroachment of incompatible land uses. It is important that visually detracting features are not developed in the landscape. Improvements to character of the site could be made by removing existing visually detracting features where possible and promoting development with distinctive character in the south and south-eastern parts of the site.

3.5.2. Management requirements: sensitivities and threats

The visual sensitivity of the nominated WHS, with respect to future developments, has been broadly mapped using a tool called visual absorption capacity (VAC). VAC assesses the landscape's ability to accept a new development structure without undergoing a significant modification to overall visual character. It has been used to provide an indication of areas in the site where tourism activities and structures could be located, or where further concentration of activities could occur without undue alteration to the visual character.

A low VAC indicates a visually sensitive area with a low ability to visually accept new developments. Map 4 indicates the broad VAC for the different parts of the nominated WHS. Map 4 must be read in conjunction with Table 3.5.1 which broadly describes the varying VAC for the nominated WHS.

Features in the site that are currently considered to be visually detracting and that threaten the visual integrity and the general enjoyment of the nominated WHS include: communication and transmission towers, power pylons, telephone poles, roads and paths, fences, and signage. Table 3.5.2 summarises these features. Recommendations for their management are discussed as a separate item in Section 6.4.3.

TABLE 3.5.1: DESCRIPTION OF VAC[1] IN DIFFERENT PARTS OF THE SITE

Portion of the site	Description of VAC	Interpretation of the VAC
Southern and south eastern portion of the buffer zone; Southern portion of the core zone	VAC values in this area range from 3 to 8. The majority of values are in the intermediate range from 4 to 7. The ability of the landscape to absorb development in this area relates mainly to the presence of existing development. Additional development will not appear out of place.	There is scope for further development in the southern and south-eastern portion of the buffer zone. Modifications to existing developments could be appropriate to suite the purposes of the WHS. Development of a general and varied nature aimed at attracting large numbers of tourists would not be inappropriate. Future development must conform to a WHS theme in terms of architectural design and colour schemes.
South west section of the buffer zone	The values in this area range from 4 to 8. There are relatively large areas of low VAC, indicating areas that would be visually sensitive to development. This is created by a combination of uniform topography, lack of dense vegetation and relatively few built components. Isolated areas of higher VAC do occur and this is mainly as a result of localised increases in the topography.	There is scope for future development and modification of existing development to suit the purposes of the WHS. The type of development should be limited to accommodation and ecotourism initiatives, or a secondary interpretation centre aimed at attracting fewer tourists than the amenities in the south east sector. Areas of low VAC should not be used for building construction but can be used to accommodate horse and hiking trails and similar activities. Future development should conform to a WHS theme in terms of architectural design and colour schemes.
Northern and north western portion of the buffer zone and areas along the R512 and roads	This section has large areas of intermediate VAC mainly due to a combination of steep, vegetated slopes, but little existing development. Slope angles increase towards the northern boundary and areas of lower VAC occur towards the centre of the site. The landscape in this sector is less varied and therefore not as scenically attractive as the northern portion of the core zone.	There is limited scope for further development in this area and this development would be new rather than modifications to existing developments. Development in this area should be particularly sensitively located to avoid disruption of views from the higher northern portion of the core zone. Restrictions should be placed on the height and style of buildings to ensure that sense of place is maintained.

[1] VAC values do not reflect environmental sensitivity. An area of high VAC may be suited to development from a purely visual perspective but development may still be precluded on the basis of environmental sensitivity.

Portion of the site	Description of VAC	Interpretation of the VAC
Northern portion of the core zone	The lower portion of this area has a low VAC, indicating sensitivity to development. The upper section of this area reflects varied landscape attributes in terms of vegetation, topography and land use. Values are intermediate to high suggesting that this area is visually sensitive, but there are locations within this area where development could be absorbed without causing significant visual impacts.	Development of this area should be avoided except in sections where the VAC is high, indicating an ability to absorb additional development. Any new developments should be rustic, eco-tourist style and aimed at attracting fewer and more discerning visitors. There is scope for establishing a limited number of high-class accommodation offering visitors scenic vistas, a wilderness experience and access to game viewing within close proximity to Greater Johannesburg. Restrictions should be placed on height and style of buildings to ensure that sense of place is maintained.

TABLE 3.5.2: SUMMARY OF VISUALLY DETRACTING FEATURES OF THE WHS

Feature	Description and location
Communication and transmission stations	Telkom DECT masts comprising a 35m high mast and equipment room located in the southern portion of the site in proximity to the mixed land use zones. Approximately four satellite dishes and associated equipment rooms located on Hartebeeshoek 502 JQ below the Witwatersberg ridge. The majority of the infrastructure is hidden in the topography and vegetation. The dishes that are visible are in contrast with the natural visual resources, but not in conflict. 50 m high concrete Telkom microwave tower located approximately 2100 m south west of the satellite research station below the Witwatersberg ridge. The Telkom tower is located on a flat piece of land and immediately visible as one approaches along the road from a distance of about 4 km (from the north) but screened until one is immediately adjacent to the structures when travelling from the south. The colour of the tower and ancillary buildings (blue) contrasts with the landscape and is a distraction to the viewer.
Power lines	ESKOM power pylons and cables occur in the core area of the site and are visible from Wonder Cave as well as the many game farms in the core. The power pylons pass through the southern portion in a north-east south-west direction and disrupt the skyline.
Telephone poles	Telephone poles and associated wires occur alongside primary and secondary roads on the site. These structures interrupt views from these roads. Most roads with telephone poles alongside are situated in the buffer zone in the northern and southern portions of the site.
Roads and paths	There are relatively few roads in the core area and buffer zone and, therefore, represent minimal visual impact. There is, however, potential for impacts associated with new roads or hiking trails. Road use is concentrated in the southern portion of the site on the Krugersdorp Highway and the R563.Roads in the northern portion comprise one secondary road and numerous unsurfaced tracks on farms and in nature reserves.
Fencing	The presence of extensive fencing is a visually intrusive feature of the site. Much of this fencing is poorly maintained. Fencing creates an impression of exclusion and has a visual and psychological impact on the visitor. Various types of fencing occur throughout the core and buffer areas. The function of the fencing is to demarcate ownership and/or manage domestic animals and wildlife.
Signage	Extensive signage comprising advertising boards and directional information occurs on site. The presence of this signage has a negative visual impact and is not in keeping with the theme of the nominated WHS. Most signage is associated with the main access points into the site and along roads in the southern buffer zone although the negative impact of signage was observed throughout the buffer zone and outskirts of the core area of the site. The signage in these areas causes distraction to the viewer and detracts from the character on the area as one enters the nominated WHS.

3.5.3. Existing management measures

The Advertising on Roads and Ribbon Development Act (21 of 1940) makes provision for the regulation of advertising outside urban areas in places visible from roads, erection of structures next to roads and access to certain land from roads. The controlling authorities are not well defined in this Act and it is poorly enforced. The Environment Conservation Act (73 of 1989) also makes provision for aesthetic controls but there is no direct legal mechanism to enforce these. A policy needs to be adopted for signage in the area in accordance with DEAT guidelines. Additionally, signage should be standardised and used to create a sense of identity.

3.6. Dolomites

3.6.1. Discussion

The dolomite in the Core area of the nominated WHS requires special management attention for the reasons outlined below.

Conservation of fossils

- The rocks contain early records of life in South Africa in the form of algal structures known as stromatolites.
- These rocks also host most of the sites in South Africa that have yielded the remains of early hominids and other fossils of fauna and flora and stromatolites.

Constraints to development of infrastructure

- Karst weathering of the dolomites produces subterranean caves, subsidences (small depressions), dolines (large depressions) and sinkholes. Large areas of the dolomite are therefore geotechnically unsuitable for development. Development on the dolomites needs to be restricted and controlled.
- Hard dolomite outcrops occur on surface, creating an irregular micro-relief, across which it is costly to construct linear infrastructure.

Hazards to visitors to the caves

- Caves can be unstable where the cave roofs comprise fills (breccias) that have not been well cemented by calcium carbonate or have undergone dissolution. Changes in surface drainage that channel runoff down new conduits aggravate the problem.
- Shafts, excavations by lime miners (early 1900s) and excavations by some scientific investigators are hazards to the public. Shafts are particularly hazardous where they are narrow and covered with bush.

3.6.2. Management requirements: sensitivities and threats

The factors listed below can adversely affect the integrity of the dolomites by promoting erosion of the soil infillings of solution cavities, create voids in the

unconsolidated weathered mantle and propagate the formation of sinkholes and dolines.

- Overexploitation of ground water resources on the site. This may result in lowering of the water table that will affect support of the karst structures. Subsidence on surface may then change drainage patterns and cause accumulation of water in depressions.
- Alteration of drainage patterns and concentration of surface runoff through development of infrastructure. Canalisation of water is an obvious threat. Linear infrastructure such as roads and footpaths can significantly alter drainage patterns. Urban development also alters drainage patterns.
- Development of water holding facilities such as dams and ponds.
- Concentrated discharges of water.
- Leaks from pipelines, including sewerage.

3.6.3. Existing management measures

Development on dolomite is controlled through various pieces of legislation that control land development. Most of this legislation is township development and home-building legislation. In general, this legislation requires that approvals are obtained for development and that geotechnical constraints to development are assessed. Where the development is on dolomite land, approval is only granted after a geotechnical study has been undertaken. The approval includes conditions of approval that specify management measures to be implemented. All applications for township development in Gauteng are referred to the South African Council for Geoscience (also known as the Geological Survey of South Africa). This has been the required practice since 1965. The council advises on the scope of the geotechnical study and the required management measures. Relevant legislation includes:

- the Transvaal Provincial Ordinance (25 of 1965) that were submitted before the succeeding ordinance was implemented;
- the Transvaal Provincial Ordinance (15 of 1986);
- the Less Formal Township Establishment Act (113 of 1991);
- the Development Facilitation Act (67 of 1995);
- the Housing Consumer Protection Measures Act (95 of 1998).

In addition to the above legislation, the National Home Builders Registration Council (NHBRC) requires that registered home builders obtain the approval of the NHBRC prior to installation of services in areas underlain by dolomites. The NHBRC will enroll housing units in areas underlain by dolomites, but does not warranty the housing, if the home builder does not have its plans, particularly storm water and sanitation plans, reviewed by a Technical Advisory Group. The NHBRC designates dolomite areas according to the risk of sinkhole and doline formation. The designation determines the controls that have to be applied as follows:

- D1 low risk, no precautionary measures are specified;
- D2 medium risk, general precautionary measures apply;

- D3 high risk, general and special precautionary measures apply;
- D4 construction of housing units is not permissible, no precautionary measures can reduce risks to acceptable limits.

The general and special control measures focus on prevention of concentrated ingress of water into the ground and establishment of appropriate foundations. A list of these control measures is available from the NHBRC.

It is not known which, if any, housing units in the nominated WHS have been enrolled by the NHBRC. A detailed survey would be required to ascertain this.

Control of ground water abstraction is covered in the following section on water resources, specifically Section 3.7.3.

3.7. Water Resources

3.7.1. Discussion

The catchments on the site are relatively undisturbed and therefore the runoff from the site is relatively clean. This runoff dilutes contamination in the Magalies River, Crocodile River and the Hartbeespoort Dam. Although this effect is limited, deterioration of water quality emanating from the site could adversely affect downstream water users. The clean water on the site is also important to the conservation of the ecology and the aesthetic integrity of the site.

The dolomitic rocks on the site are an important water resource, both locally and regionally. Many springs emanate from the dolomite core on the site and sustain baseflow in both the watercourses on the site and the Magalies River and Crocodile River upstream of the Hartbeespoort Dam. The springs could also contribute to the dilution of the receiving waterbodies.

3.7.2. Management requirements: Sensitivities and threats

Current water quality impact sources within the site include localised intensive agriculture, small industries and sewage treatment works upstream of the site. Future impact sources include increased demand for residential development and the rising water levels in the mines located to the south of the site. These are discussed below in more detail.

Agriculture
Low intensity agriculture will have few impacts on water resources providing the farms are managed in a sustainable way. The current low-intensity farming practice is not a major source of impacts.

- The impacts arising from a more intensive form of agriculture are: an increased demand for water; contamination of water from animal wastes, activities, fertilisers and pesticides; and erosion and suspended solids.

- There were no known discharges from the chicken and pig farming units in the Bloubankspruit catchment on the site, however storm water run-off and wash water from these sites will need to be managed.

- There is a trout fishery located near the Bloubankspruit. Excess food, fish waste products, treatment chemicals from fish rearing can have a toxic effect on the ecology of the receiving water and need to be used carefully. From present information there is no evidence that the trout farm is having a detrimental effect.

- Increased consumption of surface and ground waters for use in irrigation or construction of dams could reduce the available water resources within the WHS and impact on the downstream users.

- Impounding of nutrient rich water can lead to algal blooms, which may be toxic to both humans and livestock. In addition ad-hoc impoundment affects the general hydrology of the area and hence downstream users.

Industries

There is some industry in the Bloubank catchment, mainly in the Krugersdorp area.

- Raw materials and waste products could be released into the environment as a point source discharge, through disposal to land by accident, or during rainfall events when the materials are not stored correctly. Wrong connections in the drainage system with waste streams being directed into surface water systems leading to potential pollution in the receiving water body. Alternatively surface water is directed to the foul sewer which during heavy rainfall events can lead to surcharges in the sewer.

- Industries in the Krugersdorp area mainly discharge to the sewerage system and so should be treated by Percy Stewart sewage works, however there may be mis-connections and contaminated storm water run-off which drain directly to the Rietspruit catchment and hence to the Bloubankspruit.

- Within the WHS, the industrial sites seem to be dominated by carpentry workshops. If wood is being treated at these sites there is a potential for the wood preservative to contaminate ground or surface water supplies. The substances used can be toxic and persistent. Prevention of pollution is important, as the clean up for this type of pollution can be very expensive and technically difficult.

- Milk and cheese factories are also present within the area. Milk products are not considered toxic but do have a very high oxygen demand and if they are released accidentally into watercourses can cause serious pollution incidents.

- Most industries have some requirement for oil. Safe storage of new and used oils is important. Small releases of oil are not necessarily significant with respect to toxicity, as there are natural bacteria that can break down

the hydrocarbons, however even very small amounts of oil can have a significant visual impact. Large or chronic spills of oil can lead to problems with soil and ground water contamination, which can be expensive and technically difficult to clean up.

Residential development

Both within and around the site there are three types of residential development each of which will have different impacts on water resources. These are:

- the serviced settlements of Krugersdorp, in the upper reaches of the Bloubankspruit, that have established sewer and storm water systems and mains supply of drinking water;
- un-serviced settlements, in the upper reaches of the Bloubankspruit, that have little or no sanitation or sewers, and access to potable water supplies by means of standpipes;
- rural development on the site where there is no sewerage system and residents are reliant upon septic tanks to treat domestic waste. Drinking water will usually come from ground water sources.

Serviced urban settlements should not be a major problem as long as local residents do not use the storm drains for disposing of waste car oil, garden chemicals, pool drainage or other waste products. The main concerns of storm water runoff relate to rubbish and oil, which can be washed off roads and into rivers during rainfall events. Sewer overflows can also occur, arising as a result of blockages, pump station failures and/or excess stormwater ingress.

There is more concern for existing un-serviced settlements where there is inadequate sanitation and drainage. There is a much greater risk of both inorganic (rubbish) and organic pollution (untreated sewage) reaching the ground and surface waters, especially in wet weather. The lack of any treatment could have significant impacts on the bacteriological quality of the water.

Within the rural community the abundance of septic tanks can be a problem if they are not properly installed and maintained. Treatment plants should be opted for as they will treat the effluent to a higher standard and reduce the threat to ground water resources.

Waste disposal in landfill sites on agricultural holdings and farms could contaminate ground water.

Intensive abstraction of ground water can cause ground water levels to drop and affect the yield of spring water and hence the quantity of clean water available for dilution of any effluents.

Mining

There is a concentration of mining activity located to the south of the WHS near Randfontein and Krugersdorp. The network of mines is linked together underground and there is currently a problem with rising ground water levels.

The water becomes contaminated with acid mine drainage. The water could reach a level where it comes into contact with the base of the dolomitic aquifers. Thereafter the mine water will mix with the dolomitic aquifer leading to contamination of ground waters. If the mine water continues to rise the reversed flow through the aquifer can lead to contaminated water coming to the surface in springs and streams.

The mining companies are currently carrying out a feasibility study into how to deal with the rising mine water. They propose to pump the water out of the mines and treat it to a standard suitable for supply purposes. This may, or may not, be economically feasible.

Municipal sewage treatment works

Percy Stewart Sewage Works, located near the Krugersdorp Game Reserve, treats sewage and industrial effluent produced by Krugersdorp. The sewage works sustains flow in the river in the dry season. Improvements are planned for the works, which should improve the quality downstream. However future developments within the Krugersdorp area will involve an increase in rate of discharge, which means that the overall load of pollutants carried by the river may not change in the long term. The relative impact of these changes will depend on the use to which the river downstream is put. Development of further intensive arable agriculture will welcome constant supplies of reasonable quality water. However the recreational use of the water will be limited if the bacteriological quality is not improved.

3.7.3. Existing management measures/ initiatives

Most historic legislation relating to water resources was contained in the Water Act (54 of 1956). The permit controls were limited to industrial water use and discharge, large-scale abstractions of surface water and changes to public streams. Domestic use was exempt from permit requirements (except for large water-care works) and farmers had riparian rights to water on their land. Ground water abstraction was not controlled, except in declared ground-water control areas. The nominated WHS was not declared a ground-water control area.

The new National Water Act (36 of 1998) introduces significant changes to the legislation, requiring all water uses to be controlled. However, certain parts of the Act have not been brought into force and other parts will require some time to implement. Furthermore a 'General Authorisation' is to be passed so that small-scale users do not have to go through a licensing process and prevent the national Department of Water Affairs and Forestry (DWAF) from being swamped with licence applications. The authorisation will set standard conditions on certain users (such as existing lawful users). In time, it is intended to withdraw the General Authorisation. A draft General Authorisation has been prepared.

The draft General Authorisation allows for:

- discharges of up to 2 000 m^3 / day of domestic and industrial waste;

- abstraction of up to 100 m^3 / day of water for purposes other than irrigation;
- use of up to 5 000 m^3 / year for irrigating up to 25 ha of land;
- storage of up to 50 000 m^3 in a single dam.

It is expected that the General Authorisation will apply to most water users in the nominated WHS. This implies that effective control of water uses on the site is unlikely to be achieved directly through the National Water Act in the short to medium term. Control of water uses could be achieved through planning legislation.

The National Water Act also includes a section limiting development within the 1:100 year flood plain and making detailed maps showing the flood plain available to the public upon request.

No existing permits for water abstraction or discharge were identified for users in the nominated WHS. The permit for Percy Stewart sewage works expired a number of years ago and the municipality is currently negotiating a new permit with DWAF.

A pro-active approach to regulation of abstractions and discharges (routine monitoring and pollution prevention visits) is not currently possible with the limited resources available to the relevant government bodies.

Monitoring
DWAF currently monitors the receiving environment (quality and flow) at the confluences of rivers. In this way major problems may be identified and if necessary tracked back upstream.

The Krugersdorp Transitional Local Council (TLC) records water quality above and below Percy Stewart sewage works in addition to monitoring the effluent quality. No other routine monitoring of the receiving environment or of known abstractors or discharges could be found.

3.8. Good environmental practice

3.8.1. Discussion

Special management measures are to be put in place to conserve the important assets of the area (the palaeontology, palaeo-anthropology, archaeology and ecology). Special management measures are also to be put in place to manage sensitive resources (the visual character of the area, the dolomites and water resources). Good environmental practice would complement this management. The principles of good environmental practice should be encouraged throughout the nominated site.

3.8.2. Management requirements: sensitivities and threats

- Environmental authorisations for new developments. Any new developments in the area need to be controlled. Currently many smaller developments can evade this requirement as the criteria for requiring an environmental authorisation are not or not obviously applicable to them.

- Existing developments constitute a threat to the area because they are subject to less control than new developments.

- Existing waste removal and disposal practices consist of many small private land fills scattered across the area particularly within the areas where land uses consists of agricultural holdings. Problems associated with poor waste management include the proliferation of pests, odours, ground water contamination, scavenging of waste and wind blown dispersal of waste.

3.8.3. Existing management measures

A vast range of legislation applies to environmental management and good management practices. The legislation is more fully explained in Table 2.7.1. The range of legislation extends from the Constitution to numerous policies and Acts with significant bearing on environmental management in South Africa, through to regulations promulgated in terms of the Acts, to guidelines complementary to authorisation processes and local bylaws.

It is expected that large numbers of landowners are not compliant in all respects with environmental legislation. This is in part due to a lack capacity of relevant authorities to monitor and enforce compliance of small landowners. A lack of awareness on the part of landowners can also be attributed to likely non-compliance.

3.9. Visitor management

3.9.1. Discussion

Visitors must be managed to control their numbers and actions and therefore their impact in order to maintain a balance between conservation, tourism and development opportunities.

Over-visiting can cause damage to the landscape and palaeontology sites in the nominated WHS. Thus visitors need to be managed such that their sheer numbers do not adversely affect the environment and historic resource in the Area.

In addition visitors need to be managed so that they themselves do not detract from the enjoyment and education of the visitor experience in terms of large crowds, pollution and congestion.

Access and proximity to population and tourist centres are the main determinants of the potential number of visitors to an Area and therefore, the potential demand for the attraction. The nominated WHS's close proximity to Gauteng's population centres, Johannesburg and Pretoria, and current access to the Area, indicate that potential demand for the Area could be in the region of 600 000 visitors per annum. Many of the sensitive sites will not be able to handle such volumes of visitors and therefore it is proposed that access to sensitive sites is managed to safe-guard these assets.

3.9.2. Management requirements: sensitivities and threats

Visitors to the nominated WHS present many risks, including:

- Defacement of the sites through souvenir hunting;
- Movement around sites thereby destroying existing excavation sites, ruining potential discoveries, collapsing caves, etc;
- Application of graffiti;
- Pollution of the area;
- Erosion and abrasion of sites through touching, walking, etc;
- Increasing carbon dioxide levels in the caves.

In addition the nominated WHS faces the following threats:

- Lack of information regarding the importance of the nominated WHS could limit visitor awareness of the importance of protecting the area and hence lead to destruction of the area;
- Uncontrolled visitor access may result in over-usage and destruction of sensitive areas;
- The visitor experience may be ruined by a poor standard of facilities and services provided at the sites and/or tourism plant in the area;
- Lack of information or understanding of the aspects of the nominated WHS could limit visitor enjoyment or the educational value of the area and hence discourage visitors, new and repeat, to the nominated WHS;
- Uncoordinated activities could result in local community benefits from tourism not being optimised.

3.10. Disaster management

3.10.1. Discussion

Disaster management is an important aspect of any management plan. Its importance is particularly recognised in this proposed IECMP considering the international significance of the assets of the nominated WHS, as well as the increased presence of human activities as the area is increasingly made accessible for tourism. Any disaster or emergency of significant proportions has the potential to alter the character of the area for a prolonged period. A disaster could even permanently destroy the assets of the nominated WHS resulting in both the loss of assets of international import, as well as the

degradation of an area which is a living and working environment for thousands of people.

3.10.2. Management requirements: sensitivities and threats

Incidents that may result in a disaster and require coordinated disaster management are listed below.

- Lightning. The area is located in the Highveld climatic region which is characterised by volatile convection storms and lightning. There is a high potential for lightning striking causing veld fires, loss of life and damage to property.

- Uncontrolled fires. Uncontrolled human-initiated or spontaneous fires pose a threat to vegetation and animals, infrastructure, biodiversity, and human life. The threat of uncontrolled fires increases with the opportunity to open up this area for tourism and related activities.

- Sinkholes. The incidence of sinkhole formation in the dolomite area highlights the need for careful planning with regard to the location and construction of new roads, hiking trails, infrastructure, with particular regard to pooling and leakages of water.

- Drought. Drought has been a problem in the past but this has largely been from the perspective of crop production, veld fires and cattle grazing.

3.10.3. Existing management measures

A White Paper on Disaster Management has been published (1999) to give direction to disaster management in South Africa. Within this policy an approach to disaster management is advocated that focuses on proactively reducing risks – the risk of loss of life, economic loss, and damage to property, especially to those sections of the population most vulnerable due to poverty and a general lack of resources. It is also aimed at protecting the environment.

The primary responsibility for disaster management in South Africa rests with national and provincial government. Local government is also empowered to deal with a number of functions that are closely related to disaster management including fire fighting, municipal planning, and municipal health services. National and provincial governments are also to assist local government to develop sufficient capacity to carry out their functions in the event of a municipality not having sufficient resources to deal with a disaster. The reality however is that most municipalities do not have the capacity to engage in disaster management to full effect. Furthermore municipalities are poorly equipped in terms of coordination between municipalities in the event of a disaster that crosses local boundaries.

In the nominated WHS responsibility for provision of disaster management services falls primarily under the jurisdiction of the WGSC, although approximately 15% of the area is under the jurisdiction of the adjoining North

West Province. The WGSC has a standard disaster management plan and operates rural fire fighting stations in Magaliesburg, Lazonia and Hennops. Assistance is also available from Pelindaba (Atomic Energy Corporation) if required. None of these stations is located within the nominated WHS and the first line of intervention is usually local residents and in particular the Spioenkop Emergency and Disaster Management (SEDM).

The SEDM is formed by a voluntary group of residents in the Kromdraai area of the nominated WHS. The SEDM has about 250 members of whom some 50 are trained in fire fighting and first aid. The SEDM is however hampered in their effectiveness by limited funding and equipment and are capable of dealing only with small-scale brush fires and minor injuries.

4. SPATIAL MAPPING OF SENSITIVE AREAS AND LAND USE INTENSITY ZONES

4.1. Introduction

The process of delineation of management zones called "land intensity zones" is outlined in this chapter. The application of the management measures to these zones is addressed in Chapter 6.

4.2. Environmentally sensitive areas

A spatial understanding of the environmental sensitivities of the nominated WHS has been developed. This was based on an understanding of existing land uses and activities in the area, the conservation importance, sensitivities and threats of the aspects of the area as outlined in Chapter 3, and the set of criteria as outlined in sections 4.2.1 to 4.2.6 include:

- Palaeontology and palaeo-anthropology;
- Future fossil finds;
- Ridges and high points;
- Riparian zone;
- Areas of high ecological and conservation importance and red data species;
- Visual quality and aesthetics.

4.2.1. Palaeontology and palaeo-anthropology

The 12 identified fossil and cave sites are identified as sensitive areas with respect to the types of infrastructure, activities and visitor numbers that can be allowed at these sites. While the archaeological sites in the nominated WHS are currently not considered to be sensitive, this is likely to change if these sites are incorporated in theme trails and hikes. A lack of spatial information on the location of these archaeological sites has rendered it impossible to indicate these sensitive sites spatially.

4.2.2. Presence of further fossil finds within the dolomite

The potential for further fossil finds and cave deposits of international significance within the dolomite renders this area sensitive to further development. This is in part protected for by the very fact that the dolomite poses several constraints to development. While many of these constraints can be overcome with suitable engineering solutions, there are associated costs. Furthermore, the potential for sinkhole development in the dolomite zone suggests that development of this area should be avoided unless the necessary engineering and financial solutions can be implemented.

4.2.3. Ridges and high points

Ridges and high points are identified as sensitive to development because of the protection they provide for the visual integrity and setting of the nominated WHS. The Witwatersberg and the secondary ridges within the nominated WHS provided visual enclosure for particular areas of the site, as well as microhabitats for a variety of plants and animals. Development of these ridges would alter both the character of the site as well as expose structures on the skyline. The 1400m contour line has been identified as a building height restriction along the north-west facing slopes of the Witwatersberg to protect the nominated WHS from potential development beyond the boundary of the site. This measure still needs to be negotiated with local authorities and incorporated into Land Development Objectives (LDO).

4.2.4. Riparian zone

The riparian zone and water courses within the nominated WHS are identified as sensitive areas. The nominated WHS is unlikely to have extensive wetland areas based on the shallow soils in the valleys and the narrow and incised water courses.

4.2.5. Areas of high ecological and conservation importance and red data species

Farms that are considered to contain particularly well-conserved areas of land or are of high conservation value, and include red data species were identified as sensitive areas.

4.2.6. Visual quality and aesthetics

The most sensitive areas from a visual perspective are those that are currently visually undisturbed by human interference, or are topographically exposed for example the rolling hills of the central watershed and the northern part of the site, ridges and high points. The areas that have been identified as having characteristics of wilderness or remoteness are particularly sensitive to an alteration in character.

4.3. Sensitivity zones

Five categories of sensitivity were identified as follows:

- Palaeontology sites (the 12 identified cave deposits in terms of which the nomination has been submitted).
- Most sensitive (those areas which have been least disturbed and provide habitat to red data species and plant and animal species of conservation importance, as well as the primary ridges and high points that provide for the visual integrity of the site)

- Sensitive (those areas that have been partially disturbed but have conservation important in terms of maintaining intact habitats and biodiversity – also includes secondary ridges and high points).
- Moderately sensitive (have undergone a degree of development and disturbance but are located on the dolomites).
- Least sensitive (those areas that have undergone a degree of development and disturbance, are located off the dolomite and are considered to have many visually detracting features).

4.4. Land use intensity zones

Land use intensity zones are based on the spatial sensitivities of the nominated WHS as discussed in Section 4.1. The six land use intensity zones that have been delineated and are represented in Map 5 are as follows:

- Palaeontological sites
- Very low intensity use: Wilderness
- Very low intensity use: Ridges
- Low intensity use
- Moderate intensity use
- High intensity use

While there are only five sensitive zones delineated, a sixth land use intensity zone has been identified. The 'most sensitive' zone is subdivided into two land use intensity zones: very low use intensity: wilderness (area providing habitat for red data species and other plants and animals of high conservation importance) and very low intensity use: ridges (corresponding with ridges and high points). This differentiation has been made because of differing measures required for their respective management.

The purpose of defining land use intensity zones, is to provide for areas of conservation and areas of opportunity within the nominated WHS in keeping with the overall aim of conserving the resources of the area while creating opportunities for increased access.

The World Union for Conservation of Nature (IUCN) has already defined categories for planning in protected areas. The definitions of these categories and the selection principles were used in a preliminary exercise to identify land use intensity zones within the nominated WHS. It is recognised that the definitions, principles and management objectives as outlined in the IUCN guidelines do not apply directly to the nominated WHS, but provided useful guidance in a preliminary zoning exercise. A comparison on the applicability of the management objectives suggested by the IUCN categories is provided in Appendix J.

The management objectives are those guiding the management of the nominated WHS, as outlined in Section 1.3.2 and are prioritised according to the purpose of each land use intensity zone (Appendix J).

5. MANAGEMENT PLAN

5.1. Introduction

Management measures that need to be implemented to achieve the vision of the nominated WHS are outlined in this chapter. These management measures are directly related to the vision outlined in Chapter 1 and the management requirements identified in Chapter 3. The vision presented in Chapter 1 includes principles and management objectives. The main sub-section headings used in this section correlate with those in Chapter 3.

The relative priority of the management measures has been identified based on ICCROM definitions as follows:

- Immediate - dangers to the public or a resource;
- Urgent - need to be attended to urgently to protect the resource;
- Necessary - need to be attended to, to protect the resource;
- Desirable - from a development perspective;
- Keep watch - monitor to see if the problem is serious.

A proposed schedule for implementation of the management measures is given in Chapter 6 and the costs are reflected in the proposed Financial Plan appended to this report (Appendix H).

5.2. Stakeholder participation

The overall intention of drawing out management measures is that the area be conserved in the future, as it has been to date. The conservation approach must recognise that human intervention has played a key role in the pre-history, history and present day times and will continue to do so into the future. A key objective of this proposed IECMP is to provide economic development for people living in the area in line with the conservation priorities for the nominated WHS. The role of stakeholders in the development and implementation of all plans remains a priority.

5.2.1. Management measures

Implement the remaining stakeholder participation tasks as outlined in the Stakeholder Participation Report (Appendix F) with special reference to the development of the proposed IECMP and other proposed plans.
Priority: immediate
Target: immediate (ending 31 March 2000)

Ongoing stakeholder participation in the setting up of the WHS management authority for the area and in ongoing implementation and review of the proposed IECMP and other proposed plans.
Priority: immediate
Target: starting January 2000 and ongoing

5.3. Palaeontology and Palaeo-anthropology sites

5.3.1. Management measures

Appropriate public access
Public access needs to be strictly controlled at all of the 12 identified palaeontology and palaeo-anthropology sites. Specific sites to which public access and tourism are to be promoted need to be controlled in terms of access entrances and access to fossil exposures within the sites.
Priority: immediate
Target: within a year

Access to those sites which are not to be promoted for public access and tourism, as well as the hundreds of other cave sites and exposures within the nominated WHS that have not been identified needs to be controlled. Access can be controlled by informing visitors who may come across these sites how to behave responsibly in and around these sites.
Priority: necessary
Target: within five years

Control of researcher access to further excavation sites
Researchers need authorisations to access and excavate fossil sites. These authorisations should be granted with consideration of the interests of other researchers and future generations of researchers in the site. The NMC authorisation process should be reviewed to confirm that it is congruent with the vision of the nominated WHS. Special conditions applying to the WHS should be formally drafted by a committee of palaeontologists representing the international research community with an interest in the site. These should be linked to the authorisation process. A database should be compiled of research being undertaken in the area.
Priority: urgent
Target: develop conditions within two years

Damage to fossil resources and instability of sites
No developments or alteration of drainage patterns should be allowed within the vicinity of palaeontology and palaeo-anthropology sites without an assessment of risk to the stability of the site.
Priority: necessary
Target: ongoing

Health and safety hazards
For palaeontology and palaeo-anthropology sites to be promoted for public access and tourism, a systematic assessment of unstable areas should be undertaken. Unstable areas must be delineated in these caves. An assessment of risks of injury should be undertaken and appropriate controls should be identified. The controls could include repair of unstable areas, fencing of unstable areas and diversion of visitors away from unstable areas.
Priority: immediate
Target: put in key controls in high risk areas within a year

The presence or absence of histoplasmosis and the risk of contracting the disease needs to be confirmed for each of the cave sites likely to be visited by the public and promoted for tourism. Public access may only be promoted at those cave sites where histoplasmosis is confirmed to be absent or where risks of contraction are within acceptable limits.
Priority: immediate
Target: risk assessment within a year

In addition the public must be informed and educated, both at the specific cave site, and at the main entrances to the nominated WHS and the interpretive centres. Information should include: the risks of contracting histoplasmosis; the likely symptoms of the disease; and how best to treat it.
Priority: urgent
Target: within two years

Carbon dioxide levels
For those cave sites where public access and tourism are to be promoted, the risks of increased carbon dioxide levels need to be quantified and upper limits need to be determined. An upper limit of 40 visitors per half-hour (a maximum of 500 people per day) is a preliminary recommendation for the Sterkfontein Caves.
Priority: urgent
Target: within two years

Opportunities
Make palaeontology and palaeo-anthropology sites more accessible for tourism and education purposes by:

- improving interpretive information and signage at the palaeontology and palaeo-anthropology sites that are to be promoted for tourism and public access;
- promoting guided educational tours and interactive activities;
- using the interpretive centres as an indirect way of accessing the palaeontology and palaeo-anthropology sites and promote interactive information-sharing (for example artificial digs).

Priority: necessary
Target: within one to five years

Development of management plans for palaeontology and palaeo-anthropology sites
A site-specific resource management plan needs be developed for each palaeontology and palaeo-anthropology site that is to be promoted for public access and tourism purposes in accordance with the National Monuments Act and the National Heritage Resources Act.
Priority: necessary
Target: within one to five years

5.3.2. Monitoring

Alterations in drainage patterns and new developments in the vicinity of the palaeontology and palaeo-anthropology sites need to be carefully monitored for signs of instability and sinkhole formation.
Priority: keep watch
Target: monitoring plan within a year, ongoing monitoring

The presence of histoplasmosis should be monitored. Researchers and visitors that contract histoplasmosis should report this to the cave manager. Increases in the prevalence of the disease should be an indicator determining whether a cave should remain open to the public or not.
Priority: keep watch
Target: monitoring plan within a year, ongoing monitoring

Carbon dioxide levels in cave open to the public should be monitored. Compliance with defined limits should be assessed.
Priority: keep watch
Target: monitoring plan within a year, ongoing monitoring

5.4. Archaeology

5.4.1. Management measures

Archaeological survey
Conduct a systematic Phase One archaeological survey of the entire nominated WHS in order to identify and document archaeological resources of the area. Distinguish archaeological resources of high conservation importance, sites holding information of conservation value, and sites of general interest. Define the management requirements for these classes of sites and for individual sites of high conservation importance. A database should be compiled of research being undertaken in the area.
Priority: desirable
Target: within five years

Use of resources
For those sites defined as having high conservation importance or holding information of conservation value, the following recommendations apply:

- researchers must get authorisation from the NMC to access sites for research purposes;.
- if trails are routed near archaeological resources that are sensitive to public access, protective fencing should be used to protect the resource;
- interpretive signage should be put in place to inform the public of responsible behaviour in the vicinity of archaeological sites;
- those archaeological resources that can be better managed by their removal to a museum in an interpretive centre should be removed.

Priority: necessary
Target: within five to ten years (corresponding with development of site)

Opportunities
The opportunity exists to develop theme trails linking specific archaeological resources. This opportunity could be maximised by providing interpretive information at each site, as well as designing a trail guide. For particularly sensitive archaeological resources, on site custodians are recommended.
Priority: desirable
Target: within five to ten years (corresponding with development of site)

Archaeologists must be involved in the design and routing of trails so as to identify archaeological sites of general interest that may require specific management measures.
Priority: necessary
Target: within five to ten years (corresponding with development of site)

5.4.2. Monitoring

Archaeological sites of conservation importance or holding information of conservation value need to be monitored regularly to ensure that public access is being controlled adequately and that damage to the sites and resources contained within the site is being kept to a minimum. Persons responsible for such monitoring should include researchers working on the site.
Priority: keep watch
Target: monitoring plan within five years, ongoing monitoring

5.5. Ecology

5.5.1. Management measures

Transformation of grasslands
Prevent transformation of grasslands in the wilderness and low intensity zones as outlined below.

Control the development of all infrastructure in these zones. Developments that need priority attention are road development which causes fragmentation of habitats and any development requiring extensive clearing of vegetation including housing and resort developments. All developments in these zones must be subject to environmental authorisation in the early planning stages and these must address the issue of transformation in detail.
Priority: immediate
Target: ongoing

Identify no-go areas for development and no-go areas for fragmentation of habitats by development.
Priority: immediate
Target: within two years

Alien invasive species
Undertake a survey of alien plant species that occur on the site and neighbouring areas. Identify invasive species in these areas. Map the occurrence of the invasive species. Predict the risk of invasion of the

wilderness and low intensity zones by alien species. Identify appropriate control measures. Implement these control measures.
Priority: keep watch
Target: within five years

Ecological management plan for very low use intensity: wilderness and low use intensity areas: fire, herbivory and fencing
Develop a detailed ecological management plan, with emphasis on fire management and herbivory, for the wilderness and low intensity areas in a stepwise process. A basic process is proposed below.

- Review ecological management practices in the wilderness and low intensity zones, with particular attention paid to the management of fire and herbivory.
- Define on a preliminary basis, the limits of acceptable change in the very low use: wilderness and low use intensity zones, from an ecological basis. Predict the management requirements to achieve these. Evaluate the existing management practices against these requirements.
- Develop a plan that is not over-prescriptive. It should be based on principles and criteria, not prescriptions.
- Implement the plan.
- Undertake monitoring to refine the plan (see next section on monitoring).

Priority: necessary
Target: within two years (develop plan), ongoing implementation and refinement

As part of the above-management planning exercise, and in consultation with the affected land-owners, explore the notion of taking down fences to create larger management units. Determine the land-owners concerns about this and identify measures that could be implemented to address their concerns. Develop a plan for removing fencing where possible.
Priority: necessary
Target: within two years (develop plan)

Introduce controls for import of plants and animals to the area. Every import should be subject to an assessment whether the species and/or ecotype would naturally occur in the area and whether it may threaten the genetic integrity of other species. The potential to introduce disease into the area also needs to be assessed.
Priority: necessary
Target: within five years, ongoing implementation

Opportunities
Promote research of the following and develop a data base to coordinate information and activities:

- types of plant communities occurring in the area and their distribution, with reference to existing research work in the area;
- the occurrence and distribution of rare species in the area, threats to the populations in the area and appropriate management controls;
- control of the spread of alien plant species in the area;

- the effects of different grazing management practices on ecosystem integrity and biodiversity;
- the effects of different burning regimes on ecosystem integrity and biodiversity;
- criteria that should be used to define limits of acceptable change;
- the appropriateness of the defined limits of acceptable change (when they are defined);
- the compatibility of various land uses with conservation objectives.

Ensure that the records of research projects are collected in a research database. Encourage collation of the findings of research projects.
Priority: desirable
Target: ongoing

Promote access as follows:
- very low impact activities such as hiking in the areas with highest conservation importance;
- higher impact activities such as tours and educational visits in less sensitive areas which offer a good perspective on the ecology of the area;
- develop interactive information-sharing centres in less sensitive areas that offer a good perspective on the ecology of the area.

Priority: desirable
Target: ongoing

Develop an inventory of specific ecological features of the area that should be brought to the attention of visitors. Develop means for the visitors to experience these ecological features without adversely impacting on the ecological well being of the area.
Priority: desirable
Target: ongoing

5.5.2. Monitoring

Set up a mechanism to collate all monitoring data and identify other monitoring needs that become evident during research programmes in the area. Facilitate the implementation of the appropriate monitoring programmes. Constantly review the effectiveness and value of the monitoring programmes.
Priority: immediate
Target: immediate

Monitor transformation of land cover in the area using satellite imagery. Land cover elements that should be included in the monitoring programme are: wooded grassland, bushland, natural grassland, planted grassland, exotic vegetation, water bodies, cultivated land, urban land (residential and small holdings), and quarries. The transformation should be measured on both a farm-by-farm basis, and in each of the delineated intensity use zones.
Priority: keep watch
Target: ongoing, annual checks

Monitor the spread of alien plant species and the effectiveness of controls applied.
Priority: keep watch
Target: ongoing, annual checks

Monitor the progress in the development and implementation of the ecological management plan.
Priority: keep watch
Target: ongoing, quarterly checks

Monitor compliance with the defined LACs (once these have been defined) for the very low use: wilderness and low use intensity zones, monthly. Review the appropriateness of these annually. Monitoring should provide information on changes in habitat distribution, the grass: bush ratio (an indicator of habitat change in grassland-savanna areas), fire impacts and herbivore impacts.
Priority: keep watch
Target: ongoing, annual checks

Monitor weather conditions on the site. Set up an automated weather station to measure site-specific rainfall, temperature and evaporation rates. This will provide useful baseline information for ecological monitoring, ecological research and, also, the management of water resources. Only one station is required as the site is close to several Weather Bureau Stations.
Priority: desirable
Target: within two years (set up), ongoing

Monitor soil erosion. An annual visual inspection of the site by a soil scientist is proposed to identify areas where erosion could be a problem. Erosion is currently not a significant problem because vegetation cover is good.
Priority: desirable
Target: ongoing

Monitor burning practices. Compile burning register that will be a record of accidental and planned burns on the site. Parameters to be recorded include the location and extent of each burn, season and date of each burn, weather conditions, and fuel loads (influences intensity).
Priority: desirable
Target: within two years (set up register), ongoing

5.6. Aesthetics and visual aspects

5.6.1. Management measures

Environmental authorisation
The management principles listed below are recommended to guide the visual aspects of conservation and concurrent development within the nominated WHS. These principles need to be observed in the planning of new developments. The principles can be introduced into development projects through an environmental authorisation process.

- Limit and carefully plan linear infrastructure and built components within the areas of the nominated WHS where the visual character is considered to be worthy of conservation.
- Remove disused or redundant infrastructure in conservation areas and rehabilitate the scars left by this infrastructure.
- Screen, as far as possible and in as natural a way as possible, visually displeasing infrastructure and buildings or land use activities that can not be removed.
- Control the spread of alien vegetation.
- Design signage (interpretive and directional) to minimise visual intrusion and blend with the character of the nominated WHS and where applicable with the specific land use intensity zone. Scale, type and colour of signage and the use of the nominated WHS logo needs to be considered.
- Develop distinctive character in moderate and high intensity zones through promoting specific architectural styles, colour palettes etc.

To support consideration and evaluation of visual aspects in environmental authorisations, guidelines defining the visual character objectives of the land intensity use zones need to be developed. An initial guideline is presented in Table 5.5.1. In addition, a complementary guideline defining the acceptable limits of change in the visual character of the landscape needs to be prepared.
Priority: immediate
Target: within two years (guidelines), ongoing (environmental authorisation of new developments)

Visually detracting features of the site include: communication and transmission infrastructure, power lines, telephone poles, linear infrastructure, fences and signage. Management recommendations for each of the above are outlined in Table 5.5.2. Those that should have been authorised in terms of the Environment Conservation Act, should be subject to this authorisation. The owners of the existing visually-detracting infrastructure should be encouraged to mitigate its impact. All new infrastructure with potential to be visually detracting should be authorised, including signage. Replacement of old signage with customised WHS signage should be encouraged.
Priority: desirable for existing visually detracting features and immediate for all new developments and signage
Target: ongoing environmental authorisation of new developments

5.6.2. Monitoring

A monitoring plan needs to be prepared and implemented to check that the character objectives of the various land intensity use zones are being achieved; and there is no undesirable change in the character of the site beyond acceptable limits.
Priority: necessary
Target: after two years (when the corresponding guidelines have been developed)

TABLE 5.5.1: INITIAL GUIDELINE RECOMMENDATIONS TO SUPPORT CONSIDERATION AND EVALUATION OF VISUAL ASPECTS IN ENVIRONMENTAL AUTHORISATIONS

Land use intensity zone	Guideline recommendations
Palaeo sites	Area surrounding the palaeontology and palaeo-anthropology sites to be kept as natural as possible. Existing infrastructure that is unused or considered redundant should be removed and the scars rehabilitated. Necessary infrastructure such as research buildings and ablution facilities to be kept out of direct view or designed to blend into or complement the surroundings. Interpretive signage at each palaeontology and palaeo-anthropology site to be consistent so as to retain a sense of place and maintain linkages between each site. Signage to be designed to blend into the surroundings. Supportive infrastructure such as stairways, fencing, and pathways to be designed to minimise visual intrusion while fulfilling their specific purpose.
Very low use: Wilderness	Existing infrastructure that is unused or considered redundant should be removed and the scars rehabilitated. Where possible existing roads should be rehabilitated with appropriate vegetation to minimise soil erosion and visual intrusion. Landowners should be encouraged to reach agreements with respect to removal of fencing where possible and maintenance of necessary fencing. New infrastructure should be kept to a minimum and designed to blend as far as possible into the surrounding landscape. Access to this part of the nominated WHS should be restricted to hiking trails, emergency vehicles and limited game drives. Where possible, hiking trails should not intersect with game vehicles so as to maximise the wilderness perception and the visual character associated with minimal human interference. Hiking trails in this area to be designed to minimise interactions between hiking trails and separate hiking parties. The VAC areas should be used as a guideline for possible location of desirable developments and any new development should be subject to a detailed Visual Impact Assessment.
Very low use: Ridges	Keep ridges and high points as undisturbed as possible. Existing infrastructure that is unused or considered redundant should be removed and the scars rehabilitated. The 1 400m contour line to be used as the upper limit for any development on the northern slopes of the Witwatersberg and any slopes with a gradient steeper than 1:4 should not be developed. Further communication infrastructure (masts etc) should be avoided as far as possible unless there is agreement that the visual detractions outweigh the usefulness of the technology. Linear infrastructure in these areas should be minimal and where necessary should be designed to follow the contours and remain as visually unobtrusive as possible.

Land use intensity zone	Guideline recommendations
Low use	Existing infrastructure that is unused or considered redundant should be removed and the scars rehabilitated. Landowners should be encouraged to reach agreements with respect to removal of fencing where possible and maintenance of necessary fencing. New infrastructure should be kept to a minimum and designed to blend as far as possible into the surrounding landscape. The VAC areas should be used as a guideline for possible location of desirable developments. Hiking and walking trails in this area to be designed to minimise interactions between hiking trails and separate hiking parties. Access to this area should be limited to private guided game drives, hiking and walking trails and limited numbers so as to minimise the visual impacts of tourism on local communities.
Moderate intensity use	New developments to be subject to architectural style criteria that are consistent and improve the visual image and integrity of this area. Existing infrastructure that is unused or considered redundant should be removed and the scars rehabilitated. Remove unnecessary and old signage and advertisements. The location, scale, colour and appropriateness of signage should be determined before any new signage can be put up. New signage should be subject to approval. The aesthetics of road verges should be improved by neatening them in a consistent manner and landscaping as appropriate. Alien vegetation should be removed and the spread of alien vegetation controlled. Visual access to features in conflict with the nominated WHS and which can not be removed could be minimised with the use of vegetation and tree screens. Most of these land uses are only visible from the roads. The natural grasses on the road verges could be allowed to grow in order to visually screen buildings or activities that are not visually pleasing.
High intensity use	New developments to be subject to architectural style criteria that are consistent and improve the visual image and integrity of this area. Existing infrastructure that is unused or considered redundant should be removed and the scars rehabilitated. Remove unnecessary and old signage and advertisements. The location, scale, colour and appropriateness of signage should be determined before any new signage can be put up. New signage should be subject to approval. The aesthetics of road verges should be improved by neatening them in a consistent manner and landscaping as appropriate. Alien vegetation should be removed and the spread of alien vegetation controlled. Main access points to this area and to the nominated WHS could be defined and a sense of place created with a change in textures, colours, vegetation, signage etc to create a contrast between the area included in the nominated WHS and the surrounding areas. Visual access to features in conflict with the nominated WHS and which can not be removed could be minimised with the use of vegetation and tree screens. Most of these land uses are only visible from the roads. The natural grasses on the road verges could be allowed to grow in order to visually screen buildings or activities that are not visually pleasing.

TABLE 5.5.2: MANAGEMENT RECOMMENDATIONS FOR VISUALLY DETRACTING FEATURES

Distracting features	Recommendations
Communication and transmission infrastructure	Existing DECT masts that have been constructed without environmental authorisation, should be subject to environmental authorisation. The satellite dishes and Telkom microwave tower are strategic installations that have been specifically located in a remote area. The introduction of an education centre or some form of interpretation information in relation to the satellite dishes should be considered. Also a colour study to establish recommended colour schemes should be unitiated. The colour and texture of the Telkom microwave tower should be changed to blend in more appropriately with the surrounding landscape.
Power lines	Given the strategic nature of the structures, it is unlikely that these can be relocated in the short term. This should, however, be considered as a long term objective for improving visual quality of the landscape. Once fibreoptic (or a similar technology) becomes common place, redundant infrastructure should be removed.
Telephone poles	The existing telephone lines that are in use should remain. Lines that are not in use should be removed.
Linear infrastructure	Existing roads should be utilised where possible. Where possible disused road scars should be rehabilitated with appropriate vegetation. New roads and paths should be carefully planned to follow the natural topography. Roads should preferably be tarred or vegetated to avoid impacts associated with dust and water erosion. Hiking trails should be professionally laid out to offer the visitor a wilderness experience that combines educational and scenic aspects.
Fencing	Only necessary fencing should be retained and this fencing should be repaired and properly maintained. Private land owners should be encouraged to co-operate with their neighbours around removal of fencing where this is feasible.
Signage	Old and unnecessary signage should be removed and no new signage should be permitted without authorisation from the management committee of the WHS. Guidelines for scale, type and colour of signage in the area should be introduced. A specific sign posting style including the logo of the WHS should be designed to provide relevant information about aspects of the WHS. The Department of Roads should be encouraged to provide brown standard signs containing directional information for visitors on their departure from Pretoria and Johannesburg.
Quarries	Rehabilitation of abandoned quarries and visual screening and landscaping of existing quarries, for example at Bolt's Farm.
Screening	Visual screening and landscaping of visually incompatible features.
Colour	Colour studies to reduce intrusion of incompatible or unattractive buildings and features, to be implemented in the course of maintenance and to guide use of colour in future developments.

5.7. Dolomites

5.7.1. Management measures

Hydrogeological investigation
Develop a better understanding of the ground water system on the site as follows:

- undertake a census of boreholes and springs;
- delineate ground water compartments;
- determine permissible abstraction rates.

Priority: necessary
Target: within five years

Control ground water abstraction
Introduce controls for ground water abstraction on the site. These must be in-line with the National Water Act (No 36 of 1998) and should input into a water catchment management plan for the area. Borehole water users should be both registered and licensed. The licences should define site- and user-specific management commitments that users have to comply with. The borehole census information should be used to prioritise the licensing of the water users.
Priority: necessary
Target: within five years

Delineate geotechnically sensitive areas and introduce controls
Collate any gravimetric survey and exploratory drilling information available for the site. Identify information gaps and obtain outstanding information to produce a plan that delineates sensitive areas. The relative sensitivity of the areas also needs to be distinguished and the corresponding general and specific precautions should be identified.
Priority: immediate
Target: within a year

Introduce controls for development of infrastructure on the site. These must be in-line with relevant legislation (Section 3.6). Developers should obtain approvals to undertake any development. Geotechnical and drilling investigations should be a prerequisite to obtaining a licence.
Priority: immediate
Target: within a year

A list of management measures to be applied in the development of infrastructure on the site should be compiled as a guide to the above-mentioned approval process. This should be based on the existing guidelines for development on dolomite land (Section 3.6). Among the special precautions to be included in the list are:

- structural precautions in buildings to bridge open, soil-filled joints in areas of discontinuous rock outcrop;

- use of special pipe couplings and trench backfill procedures in the provision of piped services;
- measures to minimise the impact of roads, walkways, paved areas on natural patterns of surface and sub-surface water flow, in particular, prevent ponding;
- use of septic tanks, soak-aways or unlined pit latrines must be avoided so as to minimise the risk of groundwater pollution.

Priority: immediate
Target: within a year

See management measures for palaeontology and palaeo-anthropology sites (Section 5.3).

5.7.2. Monitoring

Set up a ground water monitoring programme to monitor changes in ground water levels on the site on a seasonal basis. Drilling of monitoring boreholes may be required for this.
Priority: necessary
Target: within five years (set up), ongoing

5.8. Water Resources

5.8.1. Management measures

Census of water users on the site
Collection of baseline information on ground water abstraction is covered in the section on dolomites (Section 5.6).

Baseline information on surface water abstraction and discharges is also required. A census of the abstractors and point-source dischargers of water on the site needs to be undertaken.
Priority: necessary
Target: within five years

Control water use
Introduce controls for surface water use on the site. These must be in-line with the National Water Act (No 36 of 1998), but will probably have to be introduced through more site-specific legislation (Section 3.7). Water users should be both registered and licensed. The licences should define site- and user-specific management commitments that users have to comply with. The census information should be used to prioritise the licensing of the water users.
Priority: necessary
Target: within five years

Prevent contaminated surface water entering the site
DWAF and other the relevant authorities need to raise the priority of water management in the Bloubankspruit catchment upstream of the site to ensure that the water flowing through the site is of an acceptable quality as follows:

- water users in this catchment must be motivated to obtain the relevant water use licences and comply with the conditions of approval of the licences;
- it must be ensured that discharges from the Percy Stewart (and other) sewage works are of acceptable quality;
- service provision to un-serviced settlements needs to be prioritised

Priority: necessary
Target: within five to ten years

Prevent contaminated ground water entering the site
DWAF and other relevant authorities need to raise the priority of ensuring that contaminated ground water from mines does not reach the site.
Priority: immediate
Target: now, ongoing

Prevent contamination of ground water by activities on the site
Environmental authorisation of new developments should take account of the fact that sewage and waste disposal practices can significantly impact on ground water quality.
Priority: necessary
Target: ongoing

5.8.2. Monitoring

Water quality monitoring to supplement the monitoring data collected by DWAF should be undertaken. Water quality upstream and downstream of the site should be monitored in the main watercourses flowing from the site (the Skeerpoort River that arises on the site and the Bloubankspruit that flows through the site). Ground water quality on the site also needs to be monitored.

Parameters to be monitored must be defined. They should not only include pH, conductivity, suspended solids, major cations and anions, but also some heavy metals, organics and complex organics. The frequency of monitoring the various parameters should be a function of their pollution indicator value and the costs of analyses (frequent costly analyses will be prohibitively expensive).

A comprehensive programme for monitoring of surface water quality (upstream and downstream) and ground water quality needs to be developed and implemented.
Priority: keep watch
Target: within a year (programme), ongoing

5.9. Good environmental practice

5.9.1. Management measures

Good environmental practice (Section 3.8) pertains to the management of existing activities and future developments. Special reference is also made to management of waste. Management measures to ensure good environmental practice in the area are discussed in Table 5.8.1.

It is expected that good environmental practice can be promoted through the authorisation of developments which has alerady been discussed in preceding sections of this management plan.

In addition, there is a need to motivate existing land users to follow good environmental practices as discussed in Table 5.9.1.
Priority: necessary
Target: within five years

TABLE 5.9.1: MANAGEMENT MEASURES FOR GOOD ENVIRONMENTAL PRACTICE

Environmental management requirement	**Management measures**
Environmental authorisation of new developments	Every new development should be subject to an environmental authorisation process which should include the following aspects: • provision of information and increased awareness to developers on their environmental management obligations; • consultation of interested and affected parties (where necessary); • relevant investigations undertaken to inform management planning for the development; • preparation of an environmental management plan (EMP); • developer to be legally committed to the implementation of an EMP through the authorisation process; • developer to demonstrate financial resources for implementation of the EMP; • environmental considerations to be taken into the design. Issues to be covered in the environmental authorisation process include: • threats to the palaeontological, palaeo-anthropological, archaeological and ecological assets of the area; • threats to the sensitive resources of the area including visual resources, water resources, dolomite containing potential further fossil finds; • storm water management; • water availability; • water quality; • sanitation.
Existing developments	Advise and encourage existing activities and land users on how to achieve good environmental practice. Develop a list of criteria for good environmental practice and share information with land owners. Implement a certification scheme developed to recognize compliance with good environmental practice criteria for instance separation of waste, separation of clean and dirty waste stream, reuse, and recycling initiatives and so on. Existing land owners need to be made aware of existing legislation and how it applies to them. A sunset clause needs to be negotiated for compliance (for example with respect to water use licences).

It is expected that good environmental practice can be promoted through the authorisation of developments which has alerady been discussed in preceding sections of this management plan.

In addition, there is a need to motivate existing land users to follow good environmental practices as discussed in Table 5.9.1.
Priority: necessary
Target: within five years

TABLE 5.9.1: MANAGEMENT MEASURES FOR GOOD ENVIRONMENTAL PRACTICE

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Existing developments	Advise and encourage existing activities and land users on how to achieve good environmental practice. Develop a list of criteria for good environmental practice and share information with land owners. Implement a certification scheme developed to recognize compliance with good environmental practice criteria for instance separation of waste, separation of clean and dirty waste stream, reuse, and recycling initiatives and so on. Existing land owners need to be made aware of existing legislation and how it applies to them. A sunset clause needs to be negotiated for compliance (for example with respect to water use licences).

Environmental management requirement		Management measures
Waste management	Control of littering	Implement a campaign to increase awareness of visitors and residents to the environmental problems and impacts associated with littering. Provide adequate facilities for the disposal of litter and ensure that they are regularly maintained and emptied. Place an emphasis on recycling. Develop guidelines for appropriate technologies for example in waste disposal. Provide facilities for recycling of plastic, paper, glass and metal.
	Private waste sites	Land owners to be advised of recognized and acceptable waste disposal practices in line with the Regional Waste Management Strategy. The following process needs to be followed: • register waste disposal facilities • define acceptable waste disposal practices; • share information and provide advice coupled with inspection of waste disposal facilities; • ongoing inspection of waste disposal facilities; • as far as possible gradually move to a situation of removing landfill facilities to a centrally controlled and run off-site location, especially with respect to those located on the dolomite aquifer.
Energy conservation		Develop guidelines on conservation of energy and disseminate information to land owners and residents in the area. Provide technical advice on energy conservation measures.

5.10. Disaster management

5.10.1. Management measures

A disaster management plan / strategy for the nominated WHS should be prepared. It should be guided by and accord with the key policy proposals set out in the Disaster Management White Paper and the National Veld and Forest Fire Act. It should include:

- identification of the specific issues making the nominated WHS vulnerable to disasters.
- ensure that efforts are adapted to local conditions
- capacity to track, monitor and disseminate information on phenomena and activities that trigger disaster events;
- ensure involvement of interested and affected parties
- provide for a coordinated response to emergencies and disasters through partnerships between different stakeholders and through co-operative relations between all spheres of government;
- provide for institutional emergency preparedness and response capacity at local, provincial and national levels;
- promote and implement disaster management training and community awareness.

Priority: urgent
Target: within two to five years

5.11. Legal and Institutional Framework

5.11.1. Management Measures

The establishment of a World Heritage Management Authority as contemplated in the proposed World Heritage Convention Act to administrate and manage the nominated WHS.
Priority: urgent
Target: within one year

The establishment of a World Heritage Advisory Board as contemplated in the proposed World Heritage Convention Act to:

- be responsible for the policy of, and general oversight over the Management Authority;
- provide direction to the Management Authority;
- monitor the activities of the Management Authority.

Priority: immediate
Target: within one year

5.12. Land use management

5.12.1. Management Measures

In the description of the Land Use Intensity Zones, permissible land uses have been identified. In some instances the existing land use pattern may not be perceived to be compatible with the proposed land use pattern as defined by the Land Use Intensity Zones. In order to achieve compatible land use pattern and further development that is consistent with the goals and vision for the nominated WHS, the following management measures need to be implemented:

Negotiations with land owners, business operators and interested and affected parties to:

Cease the operation of the perceived incompatible land uses within an agreed time period, and to reinstate the environment to its natural state.
To convert the perceived incompatible uses into an activity conducive to and in support of, the WHS objectives
Priority: urgent
Target: ongoing

Develop a set of incentives by means of a participatory process between Government, property owners and interested and affected parties, that will encourage, not only the conversion of land uses, but also the stimulation and further development and conservation of the area.
Priority: Urgent
Target: Ongoing

Strategic Development Plan. By means of intensive participation by interested and affected parties, the formulation of a strategic plan (or further refinement of the proposed IECMP) for physical development and local economic growth addressing, but not restricted to, the following matters:

- details of permissible activities within each land use intensity zone
- terms and conditions of conducting the identified activities
- prohibition of certain activities
- provisions regarding the frequency, size, impact or manner of conducting activities in a particular zone

Priority: urgent
Target: within two years

5.12.2. Monitoring

This entails a physical inspection of randomly selected sites by the WHS Management Authority, to assess whether the physical development and management of the site meets the WHS goals and objectives. The inspection programme should be carried out bi-annually or when complaints against the use or management of a parcel of land have been lodged.

5.13. Infrastructure

5.13.1. Management Measures

Sectoral master or strategic planning of the provision of infrastructure to the nominated WHS and the surrounding area is needed to co-ordinate the specific requirements of the site with other developmental and regional strategies for provision of services:

Transportation Master Plan
Priority: urgent
Target: within two years

Infrastructure Master Plan
Priority: urgent
Target: within two years

Appropriate public access to area. Measures to support appropriate public access are required at palaeontology and palaeo-anthropological sites where tourism is promoted as well as at other sites. Planning, design and implementation of infrastructure is required.
Priority: immediate
Target: within one year or as sites are opened up

Structural instability at sites: Protection measures to address the risk or potential damage to structural instability and other identified safety hazards at sites. Measures to prevent damage and deterioration of sites are included under this initiative.
Priority: immediate

Target: within two years

Appropriate public access to sites. Infrastructure to make palaeontology and palaeo-anthropological sites more accessible for tourism (e.g. catering and toilet facilities, access roads and parking).
Priority: desirable
Target: within five to ten years

Appropriate infrastructure development. Guidance to owners in planning and implementation of appropriate infrastructure provision and maintenance to ensure environmental sustainability.
Priority: desirable
Target: ongoing

Implementation of recommendations of the Transportation Master Plan. Implementation of recommendations of the Transportation Master Plan in co-operation with Provincial and Local Authorities (Regional access roads) to address improved access, potential traffic congestion, internal transport movements and other identified issues.
Priority: necessary
Target: as identified by traffic studies

Provision of bulk infrastructure to High Intensity of Use Zones. Provision of bulk infrastructure to High Intensity of Use Zones according to development priorities as an initiative to stimulate growth by opening up selected areas to private sector development. Recommendations of the Infrastructure Master Plans will also be implemented under this initiative.
Priority: urgent
Target: within five years

Monitoring of functioning of infrastructure systems and planning remedial measures where the need for improvement has been identified.
Priority: urgent
Target: ongoing

Management and appropriate maintenance of service delivery by the service providers.
Priority: urgent
Target: ongoing

5.13.2. Monitoring

Monitoring, evaluation and modification is crucial where the management plan is not prescriptive in detail. Monitoring and evaluation is needed to evaluate the process and results of the implementation or operation and maintenance activity. This ensures that the previous planning and implementation cycle is judged with regard to effectiveness and assists in the formulation of improved future activities. Policy and strategy can also be modified by input from the monitoring and evaluation activity.

5.14. Visitor Management

5.14.1. Management measures

Area Protection
Some of the sites in the nominated WHS are more sensitive than others. The sensitivity of a site is based on, amongst others, ecology, ownership, palaeontology and size criteria and issues. Thus these sites should be zoned for tourism usage. These zones should be in accordance with land-use intensity zones. However the zoning strategy should not be static but rather adapted should sites be harmed by tourists or prove capable of handling more tourists.

Any facilities developed should be in accordance with the tourism attractiveness and sensitivity of the site and should be inline with the guidelines for the land use intensity zone.

To manage tourism in sensitive areas visitors should be made aware of the sensitivities of the site and visitor numbers should be managed. Visitor management in sensitive areas can be achieved through:

- appropriate orientation which diverts visitors away from sensitive sites and encourages visits to areas that can sustain higher visitor pressure;
- appropriate interpretation facilities that outline the fragility of the Area and the importance of protecting the site; and
- a code of conduct for visitors which details appropriate visitor behaviour whilst visiting the Area.

Information should explain why the Area is sensitive and instruct visitors where to go and how to behave. WHS policies should also encourage affected communities to take responsibility in conserving the sensitive environment.

Awareness and understanding of WHS designation will assist visitors in respecting the need to protect and conserve the Area and may stimulate visitor interest in the management and conservation issues surrounding the nominated WHS.

The significance of WHS designation, with a description of the unique importance of the nominated WHS, should be included in any educational or interpretation material produced. All promotional material should mention that the Area is a World Heritage Site.
Priority: immediate
Target: within a year

Visitor access
Access is important for visitors to readily reach sites of interest and educational value, however, access should be managed so that the inherent palaeontological, historical and natural value of the nominated WHS is sustained.

It is proposed that access to sensitive sites be controlled through:

- scheduling techniques whereby visits to sensitive areas are pre-arranged and tours depart at pre-determined times;
- conducting guided visits to sensitive areas and discouraging or preventing unguided visits;
- charging an entrance fee to sensitive areas and charging a higher fee for areas of high sensitivity and high demand;
- channelling visitors along designated pathways and roads with detailed signage, thereby limiting and managing access to sensitive areas;
- regulating or limiting the use of private transport in sensitive areas by reducing speed limits, encouraging the use of tour operators or group transport and encouraging cycling and walking in the area; and
- educating visitors about the sensitivity of the area through a visitor code of conduct brochure, or the like, handed to visitors on entry into the nominated WHS, use of interpretation facilities to detail the area's sensitivity, etc.

Priority: immediate for the 12 palaeontological sites, necessary for other sites
Target: one to five years

Quality tourism experience
WHS designation is of global significance and visitors to the area expect and are entitled to a quality experience that meets the needs of the tourist.

In order to enhance the visitor experience it is important that the nominated WHS is managed as a single entity to ensure quality and integration. The area should offer the visitor an holistic tourism experience, catering to different markets and varied levels of interest as well as providing access for the elderly and disabled.

Management should ensure that visitor and local community understanding of appropriate behaviour is developed through high quality interpretation located at sites, orientation centres and car parks. Improving the behaviour of visitors and local communities improves the overall tourism experience.

In order to ensure an holistic quality experience for visitors to the area all tourism developments should offer a quality experience for visitors in terms of both service levels and facilities on offer. Incentives for adhering to the minimum quality standards could include:

- Recognition as being part of the nominated WHS;
- Usage of the nominated WHS logo on marketing material;
- Incorporation of the facility in marketing material published by the WHS; and
- Incorporation of the facility's marketing material at Visitor Information Centres.

Signage should be designed to minimise visual intrusion and blend with the character of the nominated WHS. The scale, type and colour of signage and use of the nominated WHS logo needs to be considered and coordinated.
Priority: necessary
Target: ongoing but initial guidelines within two years

Interpretation and Orientation

Interpretation and orientation play a major role in visitor management and increasing visitor understanding. The success of a visit to the nominated WHS will depend on the availability and quality of information. Excellent interpretation facilities and material will be one of the main generators of visitor demand to the nominated WHS.

The interpretation strategy for the nominated WHS should be aimed at developing a high quality tourism experience that meets the needs of the tourist.

It is important to ensure that the interpretative and orientation strategy is linked throughout the Area and carries a uniform theme.

Orientation facilities should be located at the key entry points to the WHS Area, close to the major roads. The information provided at orientation points should be presented such that visitors are able to understand the range of facilities available within the nominated WHS and to be able to plan their visit accordingly.

Visitor information centres should:

- be located at key attractions and/or at orientation points;
- provide visitors with information about the nominated WHS code of conduct;
- provide information with regard to the extent and importance of the nominated WHS;
- detail visitor attractions in the WHS;
- provide information in respect of local services available and other places to visit in the surrounding Area.
- provide information highlighting the need for conservation in the Area and the part the visitor can play in supporting the nominated WHS; and
- provide a local accommodation, tour and attraction booking service.

Visitor Interpretation: To convert the nominated WHS into an attraction, the tourist experience should be actualised or transformed to facilitate consumption of the Area. This may be achieved through interpretation.

Interpretation may take the form of:

- interpretative sign boards;
- guides;
- exhibition or museum;
- live displays;
- audio-visual displays;
- interactive multimedia displays; and
- written material.

The ultimate aim of interpretation is to aid the visitor in discovering and understanding the Area and encouraging learning leading to greater enjoyment of a visit.

Purpose built interpretation facilities may serve the interests of the tourist better than upgrading or modifying the palaeontological sites for general tourist consumption. It is thus recommended that one or more interpretation centres are developed to facilitate the visitor experience. These centres should be developed to cater for mainstream tourism - those tourists seeking a more superficial, entertainment orientated experience.

It must be accepted that the level of knowledge of most of the tourists visiting the Area will be limited and hence interpretation should be adjusted accordingly. In addition interpretation should be developed for all age groups.

Attractions, such as the palaeo-anthropological sites, will draw people who specifically want to see the site and who are therefore somewhat more knowledgeable about the subject. Thus the quality of interpretation and presentation will differ at such sites to that provided at general tourism attractions.

To ensure an holistic and quality experience, good interpretation should be provided at all of the palaeo-anthropology, palaeontology and archaeology sites of interest.

Interpretation should be informative and aim to increase respect and understanding of the WHS. It should not be taxing mentally or ideologically nor should it be negative. In addition to encourage repeat visits and remain contemporary, interpretation should be continually updated and altered.

Interpretation should cover a broad story-line and not be restricted to the palaeo-anthropological importance of the Area. Different sites may have different interpretative themes, e.g. lime mining history, the natural environment, etc.

All interpretation should have an implicit conservation message to highlight the importance of sustainability.

To enhance the quality and interactive experience for visitors trained guides, from the local community, should form part of the interpretation strategy
Priority: necessary
Target: in phases starting within a year

Community
Tourism generally brings income into an area. In order to ensure that the benefits of tourism are passed on to the local communities their interests must be integrated into the development of the tourism opportunities within the WHS.

It is important to ensure that local communities feel a sense of ownership/co-management of the nominated WHS so that tourism is something welcomed and not imposed on the community. In order for this to be achieved relevant educational and information programmes should be in place to ensure that

local communities understand and respect the Area and its values as well as the visitors to the Area.

Tourists should be encouraged to extend their visits and undertake repeat visits to the nominated WHS thereby encouraging additional tourism spend in the area.

The relationships between tourists and the local community should be developed through, inter alia:

- local entrepreneurial projects such as curio stores, guiding companies, etc;
- selling of locally produced arts, crafts and foodstuffs;
- locals taking an active part in the nominated WHS interpretation through live displays, guiding etc;
- local communities should all be knowledgeable about the nominated WHS thereby being able to guide and/or inform tourists about the Area; and
- training and capacity building programmes should be aimed specifically at local communities and be youth and gender sensitive.

Priority: necessary
Target: ongoing

5.14.2. Monitoring

An integrated monitoring programme is vital to the successful management of public access to the nominated WHS. This programme should identify where visitor pressure is compromising the quality of the environment or visitor experience.

Therefore it is recommended that the principle of Limits of Acceptable Change (LAC) be used to monitor tourism impacts on the environment. LAC should define management actions that would be triggered in response to defined signs of visitor pressure. Areas that should be monitored in order to manage visitor impacts include:

Footpath and road condition:
Any signs of visitor pressure on footpaths and/or roads such as excessive erosion, destruction of surrounding ecology, aesthetic value, etc, that may indicate that the conservation value of the Area is being threatened should be considered. If the area is being adversely affected then mitigating measures need to be put in place such as limiting the number of visitors to the site/Area, improving the quality of the road/footpath to accommodate more visitors, increasing the number of roads/footpaths to spread the visitor pressure, etc;
Priority: desirable
Target: management plan within a year, ongoing monitoring

Disturbance to palaeontological sites:
Carbon dioxide in caves open to the public should be monitored. Compliance with defined limits should be assessed. In the event that carbon dioxide levels exceed these defined limits then visitor numbers to the cave should be decreased accordingly.
Priority: urgent

Target: monitoring plan within two years, ongoing monitoring

Caves open to the public need to be monitored for visitor damage e.g. broken stalagmites/stalactites, graffiti, pollution, etc. Any damage beyond predefined levels should indicate that visitor numbers to the cave should be reduced or mitigation measures need to be introduced to reduce the negative impact of visitors.
Priority: necessary
Target: management plan within a year, ongoing monitoring

Fossil sites need to be monitored for signs of visitor damage such as graffiti, pollution, damage to the surrounding areas, destruction of excavation sites, illegal removal of fossil bearing breccias, etc. Should visitor numbers to the site/Area cause any of these criteria to exceed predefined tolerance levels then visitor numbers need to be reduced or mitigation measures need to be set up.
Priority: necessary
Target: management plan within a year, ongoing monitoring

Condition of vegetation and soils and wildlife populations:
Monitoring the effect of visitor impacts on the condition of the vegetation and soils and wildlife populations in the Area should form part of the LAC defined for the monitoring of the Area's ecology (see Section 5.4.2). Visitor impacts that negatively affect the ecology of the Area e.g. fires caused by visitors, disturbance to habitats, changes in vegetation, decreasing wildlife populations, etc, should be monitored and visitor numbers decreased if no appropriate mitigation measure can be identified to minimise the negative visitor impact.
Priority: necessary
Target: management plan within two years, ongoing monitoring

Visitor pressures:
Visitor pressures which have an adverse effect on the conservation of the Area as well as visitor satisfaction levels such as queue lengths, litter and pollution levels and vehicle parking facilities, should be monitored. Predetermined tolerance levels should be identified and mitigation measures developed in the event that these levels are exceeded i.e. the development of additional entrance points to reduce queue lengths, improved information and the supply of additional waste disposal facilities to decrease littering and the development of additional parking facilities to reduce irresponsible vehicle parking, etc.
Priority: necessary
Target: management plan within a year, ongoing monitoring

Visitor satisfaction levels:
To monitor visitor satisfaction levels and hence the overall visitor experience it is recommended that surveys of visitors to the Area be conducted. These surveys should address the visitor's overall experience whilst visiting the Area as well as the nature of the visit. WHS employees should be trained to monitor visitor reactions and interpret satisfaction levels by behaviour patterns, visitor requests and complaints or complements. It is recommended that visitors be encouraged to complete questionnaires at the end of their visit or stay in the Area.

Priority: necessary
Target: management plan within a year, ongoing monitoring

Visitor impacts on local communities:
The economic effect of visitors to the nominated WHS on the local communities should be monitored. The impact should be monitored every 2-years by community sample surveys to determine the number of local people employed within facilities associated with the WHS as well as the average household income of the Area. Ongoing employment levels can be tracked via the operators of facilities and services associated with the nominated WHS.
Priority: necessary
Target: management plan within a year, ongoing monitoring every two years

5.15. Communication Management Plan

Communication will play a vital role in positioning the area as a World Heritage Site with key stakeholders in South Africa. The proposed Communications and Promotions Plan is located in Appendix G.

Objectives of the communication management plan are as follows:

- To communicate vital information on the site to the public in the immediate area as well as the general South African public.
- To promote a sense of pride and appreciation for South African heritage.
- To promote the existence and unique features of the nominated WHS to the international community
- To educate people living in or visiting the nominated WHS on the significance and contribution of this site to the preservation and management of this area to the benefit of the community.

Guided by the above objectives the following elements are included in the communication management plan:

- Create a high level awareness among the surrounding communities, the province and the country through the execution of a focused information and education campaign.
- Encourage "shared ownership" of the nominated WHS and commitment to promote the area through building strong relations with the surrounding communities. This will include providing communities with promotional material to promote the area.
- Strong relationship building initiatives to promote national stakeholder involvement.
- A media-relations campaign aimed at using the media as an effective channel to reach the general public and to manage public perception.
- Popularise the area to the youth as key to preserving South African heritage far into the future.
- Develop quality and user-friendly promotional and communication material.

- Position the nominated WHS as a unique tourist site for national and international tourists through the execution of a marketing campaign combined with strong branding.

5.15.1. Management measures

Communication Implementation Plan
Implementation of the communication plan was initiated in December 1998 and will run through to March 2000. In March 2000 recommendations on communication activities for a period of five years from March 2000 will be submitted. The emphasis will be on future communication activities with special reference to creating and maintaining awareness regarding the proposed IECMP and other proposed plans, and also the future monitoring of the effectiveness of the activities.
Priority: immediate
Target: August 1999 - ongoing

Identity / branding
To ensure that all communication activities are cohesive and that there is a strong identity, the first activity of the communication team was to develop a logo that would strongly link with printed and visual material.

The activities completed and to be completed under branding are: logo, poster, kiosks, billboards/signage, notice boards.
Priority: immediate
Target: immediate – September 1999

Printed material / educational material
To promote the area and provide details to various stakeholders, a range of printed material is being, and is still to be produced. This material includes an information booklet, a map (for both directional and educational use), a folder (for media and other use), a newsletter and a poster.

The newsletter has as its core objective to keep the immediate community updated on the status, and is produced two-monthly initially.
Priority: immediate
Target: immediate – March 2000

Promotional material
T-shirts and banners have been produced. The T-shirts promote the logo and are also to be used in some of the media activities planned.
Priority: immediate
Target: immediate

Media campaign
An ongoing media campaign has commenced and will be sustained to March 2000. The first media activity was the launch of the logo and this was followed by the launch of a pledge campaign that will run throughout 1999. Media site visits, stakeholder profiles and television programmes are activities that are still to be scheduled.

Priority: immediate
Target: immediate – March 2000

Public support and commitment
To highlight the significance of the area and encourage support for the bid, a pledge campaign has been introduced which will run throughout the nomination period. Pledge books have been placed at strategic points throughout the country and support is encouraging.

A conference is also planned at which key stakeholders and the scientific community will highlight the significance of the area and provide context to the strong cultural links and the heritage of Southern Africa.

An ongoing stakeholder participation programme is being implemented by DACE and the communications team attends to certain logistics. The communication strategy is essential to awareness raising with regards to the proposed IECMP and other proposed plans
Priority: immediate
Target: immediate – March 2000

Web Site
A web site, providing details of all the finds, as well as copies of all relevant material from the scientific community is being planned for the second half of 1999. Currently the various links that can add value to the web site are being investigated.
Priority: immediate
Target: August - Ongoing

5.16. Resources development

Geographic Information Systems (GIS) and Satellite Imagery (SI) have been identified as resources available to the Management Authority for use as monitoring tools as well as for further information gathering.

5.16.1. Management measures

Identify available resources in terms of type of resource, costs, functionality and service providers.
Priority: necessary
Target: within two years

5.17. Finalise IECMP

Finalise the IECMP and submit to the WHC
Priority: immediate
Target: end 1999

5.18. Report back to UNESCO

UNESCO requires a State of Conservation Report every five years

5.18.1. Management measures

Submit a State of Conservation report to UNESCO every five years on an ongoing basis.
Priority: Urgent
Target: within five years, ongoing

5.19. Training and capacity building plan

5.19.1. Objectives

The objectives of the capacity building and training plan are identified as follows:

- To mitigate for unintended consequences of the WHS listing;
- To conserve the area and build capacity so as to implement the proposed IECMP;
- To promote sustainable development by way of empowering people, creation of jobs, and shifting attitudes;
- To build knowledge and respect for our diverse heritage and the World Heritage Convention.

DACE has already initiated implementation of some of the above objectives. For example a communication plan for raising awareness has been drafted and is being implemented.

An analysis of the management institutions and their relevant roles, as well as a training needs analysis has been included in Appendix K.

5.19.2. Management measures

Develop a training and capacity building plan to meet the above objectives.
Priority: urgent
Target: within two years

5.20. Financial management plan

Sustainable conservation management relies on a comprehensive yet practical financial plan (included in Appendix H), currently being developed for the area. This plan sets forth capital expenditures and annual operating costs and provides a pro-active strategy for filling anticipated gaps in funding. The proposed Financial Plan also tests the feasibility of a variety of development options, generated to create additional revenues or to recover certain costs.

Having a Financial Plan will allow for better overall management and conservation planning. By anticipating expenditure requirements, managers are better able to prioritise and allocate resources accordingly. Financial planning allows more time to react on behalf of conservation efforts, in the face of changing government funding priorities or economic conditions. The economic benefits of conservation in the area will also be communicated, ensuring long-term local and national support.

5.20.1. Management measures

All proposed conservation and management costs must be reviewed and tested as part of the financial planning process. Any costs not yet accounted for must be identified and included. Responsibility for all costs must be attributed, so that adequate funding gets to the appropriate parties.

Capital costs, such as those required for infrastructure to protect the site from visitor impacts, must be projected and tested. Capital financing costs must be determined on an annualised basis.

Revenues for conservation management may be generated through on or off-site facilities or services. The revenue potentials from tourism and other markets must be tested.

Sources of funding and capital financing must be identified. The Financial Plan will assess investment and donor funding opportunities. Potential funding opportunities will be summarised in a pro-active strategy.

Gauteng Province is funding the initial Financial Plan effort. As management for the area's conservation devolves to specific entities, those entities would share responsibility for monitoring costs and carrying out aspects of the financial plan as they relate to fund-raising.
Priority: urgent
Target: immediate - August 1999

6. IMPLICATIONS OF THE MANAGEMENT MEASURES FOR LAND USE IN THE LAND USE INTENSITY ZONES

6.1 Introduction

Implications of the proposed IECMP for land use in the land use intensity zones are outlined in this chapter.

Land intensity use zones were delineated in Chapter 4. Each of these zones has key management objectives and requires specific management measures to achieve these objectives. Management principles and use for each land use intensity zone are outlined in Table 6.1.1. Management principles for the palaeontology and palaeo-anthropology sites have already been discussed under Section 5.1 and will not be dealt with again.

TABLE 6.1.1: MANAGEMENT PRINCIPLES AND USE GUIDELINES FOR THE LAND USE INTENSITY ZONES

Land use intensity zone	Management principles	Land use guidelines
Very low use: Wilderness	Conservation • Manage land for biodiversity purposes. • Conserve as an area of land substantially unmodified by human activities, without permanent or significant habitation (refer to land use guidelines). • Encourage cooperation between neighbours. • Manage this area to conserve its natural condition. • Roads that are not being used in this area should be rehabilitated with vegetation. • Refer to management priorities with respect to aesthetics (Section 5.4.4). • Design of trails and roads to maximise consider soil compaction, soil erosion, drainage problems etc and take steps to prevent these. Construction • No new buildings or communications infrastructure to be constructed without consultation with and approval from the proposed Management Authority. • Redundant infrastructure and buildings to be removed and scars to be rehabilitated. • Plans for management and maintenance of essential roads to be discussed with proposed management committee and a sub-committee for roads and tracks. Access • No new construction of linear infrastructure. • Existing roads to be used for emergency purposes and access by land owners only. Quality of roads to limit access to four-by-four vehicles as far as possible. • Roads that have been insensitively designed, or without consideration of contours, water courses, drainage patterns, the potential for soil erosion and effects on plant and animal communities should be rehabilitated and closed to access. • Limit human encounters to a maximum of one per day by careful design of trails, setting upper limits on visitor perceptions and appreciation of the wilderness area. • Minimal tourism and public access to this area. To be limited to footpaths with overnight camping by permit only. • Access for scientific research subject to permit requirements.	Existing • Existing residential and associated activities on farms to remain (subject to principle of removing and rehabilitating redundant infrastructure). • Conservation and game farming • Existing land uses to be encouraged to comply with current environmental legislation and regulations Proposed • Hiking and overnight camping subject to permits. Any proposed development to be subject to the EA process and commitments made within the EA.

Land use intensity zone	**Management principles**	**Land use guidelines**
Very low use: Ridges	Conservation • Priorities in this zone include the conservation of the ridges for visual and aesthetic purposes, as well as the conservation of plant and animal communities and habitats. Construction • No new linear infrastructure to be developed in this zone. • Proposed infrastructure and communication infrastructure to go through the EA process. Access • Access to be limited to existing footpaths. • Limited access subject to permit requirements. • Access for emergency vehicles, land owners and scientific researchers subject to permit requirements. • Any existing roads that do not follow contours and take no cognisance of water courses, drainage patterns the potential for soil erosion and the effects on plants and animals are to be rehabilitated over time and closed to access.	Existing • Communication masts are to be subject to a scoping exercise to determine recommendations in this respect. • Existing activities to be encouraged to comply with current environmental legislation. Proposed • No new infrastructure, except essential infrastructure to be determined through the EA process. • Limited walking trails • No overnight activities (except existing). Any proposed developments to be subject to the EA process and commitments made within the EA are to be upheld.

Land use intensity zone	Management principles	Land use guidelines
Low intensity	Conservation • Priority is given to the ecosystem conservation and the conservation and protection of the wilderness reserve (in terms of biodiversity, visual character and remoteness). • Encourage cooperation between neighbours. • Roads are to be maintained and vegetation of roads is to be encouraged. Construction • New infrastructure and buildings to be designed with consideration of water courses, drainage patterns, sedimentation of water courses, fragmentation of plant and animal communities. • Any infrastructure and buildings to be developed on the dolomite to take geotechnical constraints into consideration and all sewage and solid waste disposal must be in keeping with approved methods so as to avoid pollution of ground water resources. Access • New roads and other linear infrastructure to be kept to a minimum. All roads to be dirt roads or vegetated. Tarring of roads is not to be encouraged. • Access to be based on walking trails and hikes on existing paths (with minor realignments where necessary). • Horse trails and bicycle trails to be kept to a minimum and concentrated in the less sensitive areas within this zone. • Vehicular access (with the exception of emergency vehicles and land owners) to be kept to the periphery of this zone. • Tour busses and large capacity vehicles to be discouraged from this area. • Access to be allowed for scientific research purposes subject to permit requirements.	Existing • Existing residential and associated activities on farms to remain (subject to principle of removing and rehabilitating redundant infrastructure). • Conservation • Farming • Existing land uses are to be encouraged to comply with current environmental legislation and regulations Proposed • Hiking and trail activities subject to permit requirements • Low key interpretation facilities • Low density hospitality and tourism services Any proposed development to be subject to the EA process, and management commitments made within the EA are to be upheld.

Land use intensity zone	Management principles	Land use guidelines
Moderate intensity	Conservation • The primary purpose of this land use intensity zone is to encourage development opportunities in line with tourism activities to the nominated WHS. Conservation and improvement of the visual character is a priority and management principles in this regard are made in Section 5.4. Construction • New infrastructure and buildings to be designed with consideration of water courses, drainage patterns, sedimentation of water courses, fragmentation of plant and animal communities. • Geotechnical constraints of dolomite (where applicable) to be taken into account in the construction costs and design of linear infrastructure and buildings. • Solid waste and sewage disposal to be in keeping with approved methods so as to avoid pollution of ground water resources. Access • A transition from vehicular to low impact modes of transport (horse trails, hiking and walking and bicycles) to be encouraged in this zone.	Existing • Existing facilities to be encouraged to comply with current environmental legislation and regulations Proposed • Medium density hospitality (refer to proposed Tourism Plan) • Conference facilities • Orientation and interpretation facilities • Trails (horse, hiking/walking and bicycle) • Tourist services • Tourism oriented shops • Education and research facilities Any proposed development to be subject to the EA process and to comply with management commitments made in the EA.

Land use intensity zone	**Management principles**	**Land use guidelines**
High intensity	Conservation • This area is to provide for intensive recreation infrastructure and facilities. Ecosystem fragmentation has already occurred in this area, and conservation principles pertain to the conserving water and soil resources and areas of visual integrity. Construction • New infrastructure and buildings to be designed with consideration of water courses, drainage patterns, sedimentation of water courses, fragmentation of plant and animal communities. • Large accommodation facilities, developed and serviced camping and interpretive facilities are appropriate in this zone and management of solid, waste sewage and storm water need to be taken into consideration. Access • All levels of vehicular access to be allowed in this zone. • Transitions points from vehicular to low impact access and modes of transport to be encouraged in this zone.	Existing • Existing facilities to be encouraged to comply with current environmental legislation and regulations Proposed • Overnight accommodation facilities • Conference facilities • Orientation and interpretation facilities • Education and research facilities • Emergency and disaster management services • Low density retail Any proposed development to be subject to the EA process and to comply with management commitments made in the EA.

7. IMPLEMENTATION PLAN

7.1. Introduction

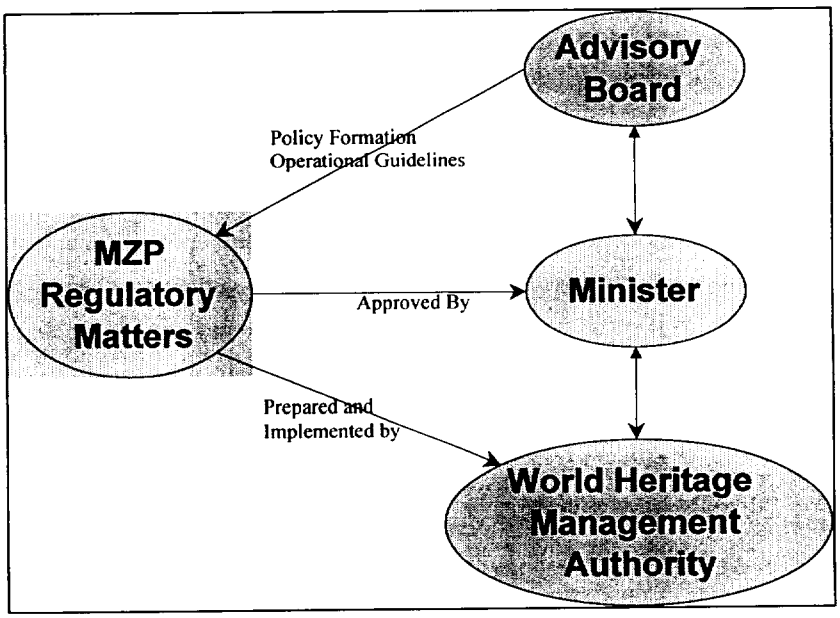
7.2. Institutional structure

The South African Government signed the World Heritage Convention in 1997 and submitted nominations at the end of June 1998, to the UNESCO World Heritage Committee, for the listing of three sites in South Africa as World Heritage Sites.

The South African government has a three-sphere system of government incorporating national, provincial and local authorities. The responsible provincial and local spheres of government support the South African proposals.

The Department of Agriculture, Conservation and Environment (DACE) in the Gauteng Provincial Government has been responsible for the preparation of the country application for the nomination of the fossil hominid sites of Sterkfontein, Swartkrans, Kromdraai and environs as a World Heritage Site (WHS). The DACE is also responsible for the planning phase of the project resulting in the preparation of a number of proposed plans.

Since various local authorities and two Provinces (Gauteng and North West) participate in the administration and adjudication of land uses, co-ordination of approach and use of resources is necessary. This is partly addressed by the institutional arrangements set out in the proposed World Heritage Convention Act (attached as Appendix I) which is illustrated as follows:



In terms of the proposed World Heritage Convention Act, the Advisory Board must include members / representatives of the various local authorities and Provinces as well as landowners, residents and other stakeholders. The role and function of the Advisory Board is to:

- formulate policy / operational guidelines
- monitor activities

The proposed World Heritage Convention Act further proposes the establishment of a Management Authority. This Management Authority can be seen as the implementing agent, as its role and function is to compile and implement a Management Zone Plan (MZP) that will :

- from the operational guidelines and policy prepared by the Advisory Board, prepare a co-ordinated and integrated policy framework
- formulate planning controls and performance criteria
- formulate provisions in respect of :
    - activities allowed within a particular zone, within the WHS
    - terms and conditions of conducting the identified conditions
    - prohibition of certain activities
    - regarding the frequency, size, impact or manner of conducting activities in a particular zone

The MZP as outlined in the proposed World Heritage Convention Act can be equated with the proposed Integrated Environment and Conservation Management plan (IECMP) for this nominated WHS.

In the interim (until such time as the World Heritage Convention Act is promulgated and the MZP is approved), the proposed IECMP, proposed Tourism and Marketing Plan, as well as the proposed Land Use and Infrastructure Management Plan will be submitted for inclusion as an addendum to the Land Development Objectives for the area in terms of the Development Facilitation Act (Act 67 of 1995), and be binding on all local authorities and Provincial Governments. In terms of Section 29 of the Development Facilitation Act, no local authority or any other local authority may approve any land right or use of land which is in contravention, or inconsistent with the Land Development Objectives.

7.3. Financial aspects

Refer to the proposed Financial Plan (Appendix H).

7.4. Key actions and sequence for implementation

Key actions and the sequence for implementation of the proposed IECMP are outlined in Table 7.4.1.

TABLE 7.4.1: KEY ACTIONS AND THE SEQUENCE FOR IMPLEMENTATION OF THE PROPOSED IECMP.

Action	Timing				
	One year	Two years	Five years	Ten years	Ongoing
Priority: Immediate					
1. Implement the remaining stakeholder participation tasks					
2. Ongoing stakeholder participation					
3. Appropriate public access to palaeontology and palaeo-anthropology sites					
4. Risk assessment of injury should be undertaken and appropriate controls should be identified.					
5. Risk assessment of presence of histoplasmosis					
6. Prevent transformation of grasslands in the very low use: wilderness and low use intensity zones by controlling development of all infrastructure.					
7. Identify no-go areas for development and no-go areas for fragmentation of habitats by development.					
8. Collate all monitoring data and identify other monitoring needs					
9. Prepare guidelines defining the limits of acceptable change in the visual character of the landscape. Ongoing environmental authorisation of new developments.					
10. Environmental authorisations for all new infrastructure with potential to be visually detracting. Replacement of old signage with customised WHS signage.					
11. Delineate geotechnically sensitive areas and introduce controls					
12. Introduce controls for development of infrastructure on the site					
13. Compile a list of management measures to be applied in the development of infrastructure in the area.					
14. Prevent contaminated ground water entering the site					
15. Establish World Heritage Advisory Board and Management Authority					
16. Prepare stategic plan for development (MZP)					
17. Support appropriate public access					
18. Promotional material to provide information and create awareness and understanding					
19. Implementation of the communication plan.					
20. Access controls					
21. Finalise IECMP					

Action	Timing				
	One year	Two years	Five years	Ten years	Ongoing
Priority: Urgent					
23. Control of researcher access to further excavation sites					
24. Inform and educate public about histoplasmosis					
25. Quantify carbon dioxide levels and determine upper limits					
26. Prepare a disaster management plan.					
27. Implement financial management plan					
28. Mitigation measures with respect to changes in legal system and provision of compensation					
29. Transportation and infrastructure master plans					
30. Provision of bulk infrastructure to high use intensity zone					
31. Management and maintenance of service delivery					
32. Monitoring of infrastructure and planning of remedial measures					
33. Submit State of Conservation Report to UNESCO					
Priority: Necessary					
34. Control access to those sites that are not to be promoted for public access and tourism.					
35. Risk assessment of stability of fossil sites for development purposes.					
36. Make palaeontology and palaeo-anthropology sites more accessible for tourism and education purposes					
37. Development of management plans for palaeontology and palaeo-anthropology sites					
38. Management of use of archaeological resources					
39. Identify archaeological sites of general interest that may require specific management measures					
40. Develop ecological management plan, emphasising fire management and herbivory, for the very low use: wilderness and low use intensity areas. Ongoing implementation and refinement of plan					
41. Explore the notion of taking down fences to create larger management units. Develop a plan for removing fencing where possible.					
42. Develop a plan and introduce controls for import of plants and animals to the area. Implement plan					

Action	Timing				
	One year	Two years	Five years	Ten years	Ongoing
43. Prepare and implement monitoring plan to monitor LACs of the land use intensity zones (once LAC's have been identified).					
44. Hydrogeological investigation					
45. Control ground water abstraction					
46. Set up a ground water monitoring programme. 47. Ongoing monitoring					
48. Census of water users on the site					
49. Introduce controls for surface water use in the nominated WHS					
50. Prevent contaminated surface water entering the site					
51. Prevent contamination of ground water by activities on the site					
52. Promote good environmental practice through the authorisation of developments and motivation of existing land users to follow good environmental practice.					
53. Develop detailed training and capacity building plan. 54. Implement					
55. Develop resources (GIS, SI and identify other resources)					
56. Implement recommendations of transportation plan					
57. Develop guidelines for a quality tourism experience. 58. Implement guidelines to provide a quality tourism experience					
59. Interpretation and orientation					
60. Develop a management plan with respect to visitor management 61. Monitor visitor pressures					
62. Develop a management plan with respect to visitor satisfaction 63. Monitor visitor satisfaction					
64. Develop a management plan with respect to impacts on the local communities Monitor impacts to local communities					
Priority: Desirable					
69. Archaeological survey					
70. Develop theme trails linking specific archaeological resources					
71. Promote ecological research and develop a database to coordinate information and activities.					

Action	Timing				
	One year	Two years	Five years	Ten years	Ongoing
72. Promote access to the nominated WHS.					
73. Develop an inventory of specific ecological features of the area.					
74. Set up an automated weather station to measure site-specific rainfall, temperature and evaporation rates. Monitor weather conditions on the site.					
75. Monitor soil erosion					
76. Compile burning register that will be a record of accidental and planned burns on the site. Monitor burning practices.					
77. Encourage landowners to mitigate for existing visually detracting infrastructure.					
Priority: Keep watch					
80. Develop monitoring plan. Monitor alterations in drainage patterns and new developments in the vicinity of the palaeontology and palaeo-anthropology sites.					
81. Develop monitoring plan. Monitor the presence of histoplasmosis.					
82. Develop monitoring plan.					
83. Monitor carbon dioxide levels in cave open to the public.					
84. Develop monitoring plan. Monitor archaeological sites of conservation importance or holding information of conservation value.					
85. Undertake a survey of alien plant species occurring in the area and neighbouring areas					
86. Monitor transformation of land cover in the area using satellite imagery					
87. Monitor the spread of alien plant species and the effectiveness of controls applied					
88. Monitor the progress in the development and implementation of the ecological management plan					
89. Monitor compliance with the defined LACs					
90. Develop a comprehensive programme for monitoring of surface water quality (upstream and downstream) and ground water quality. Implement.					

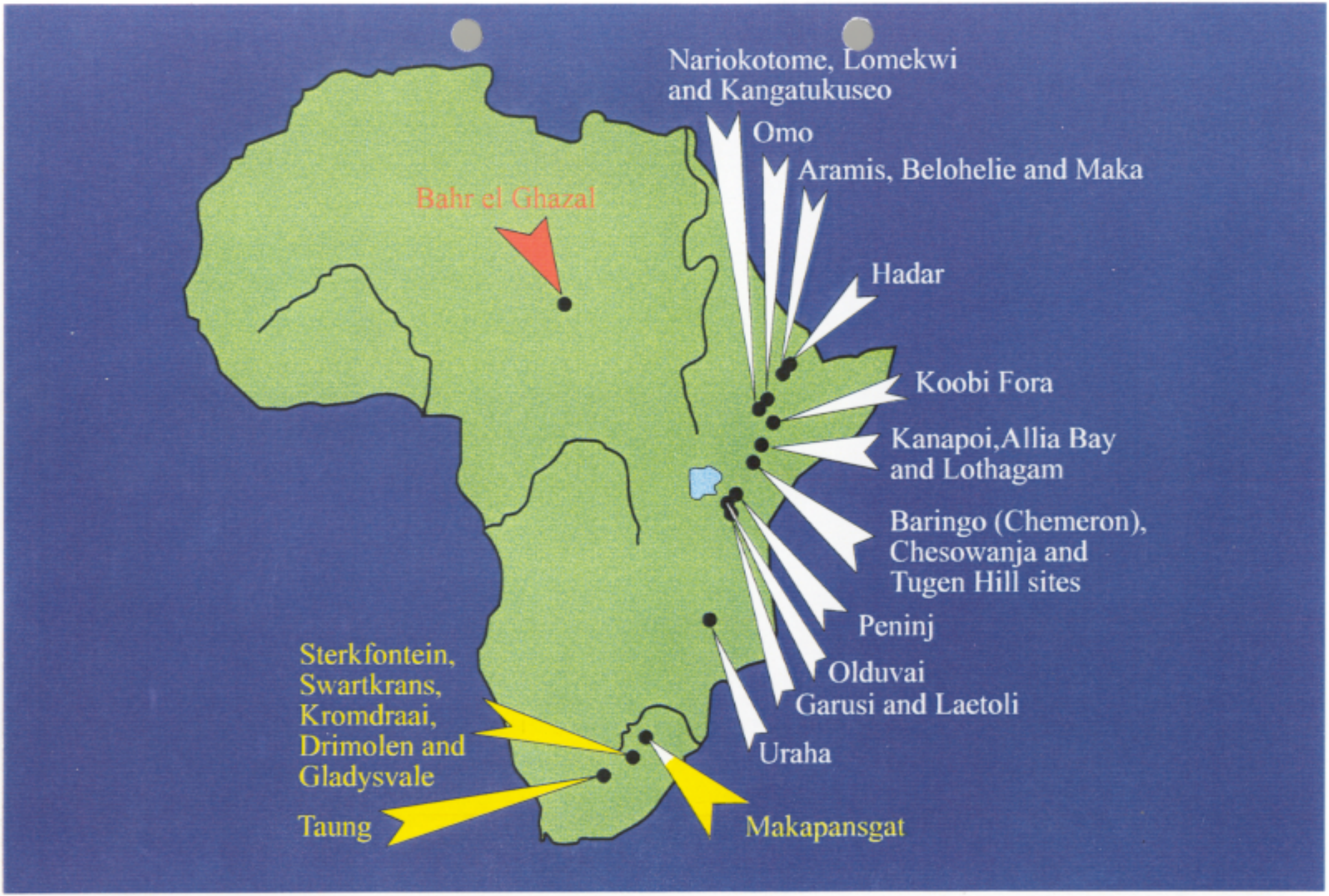
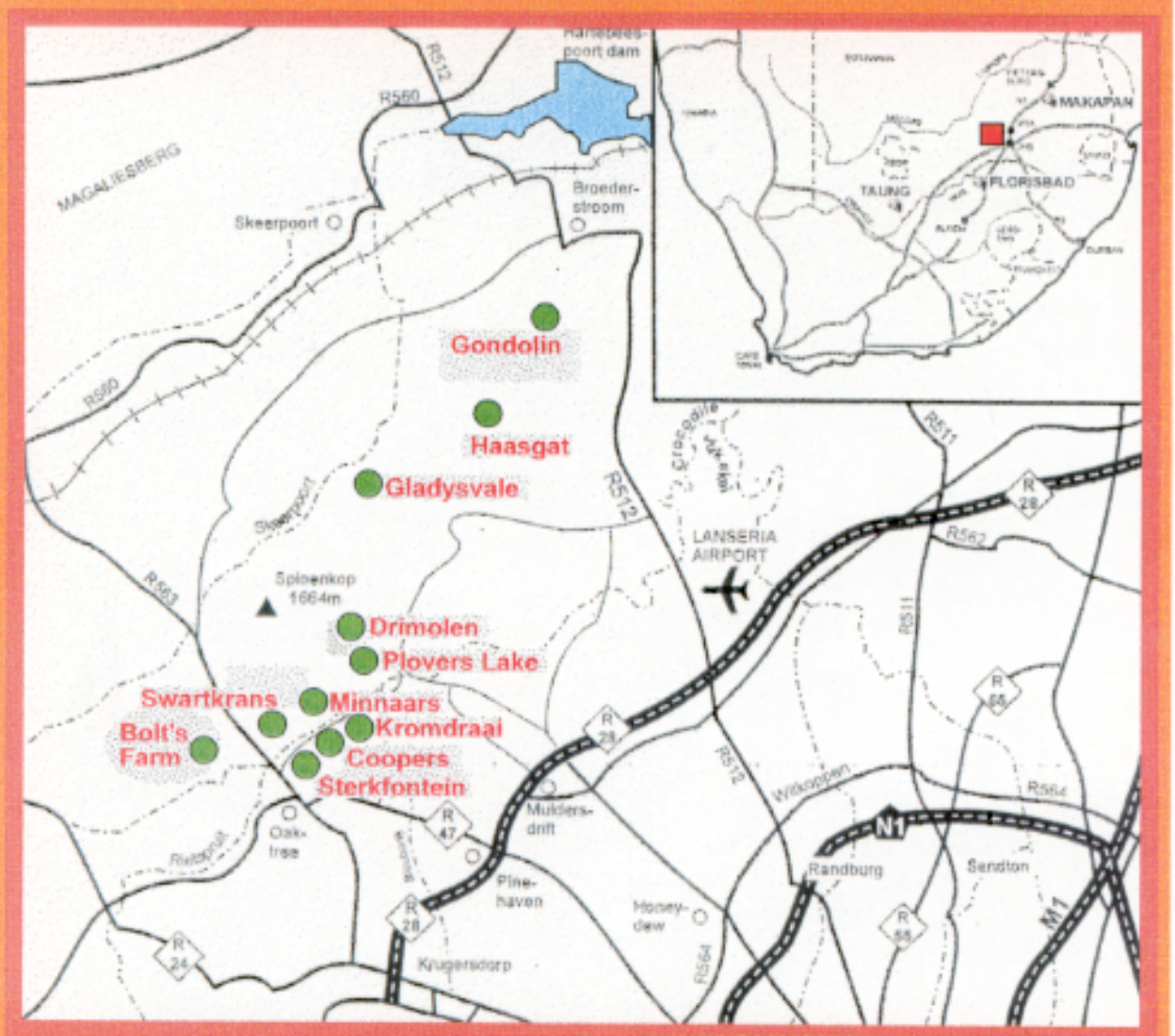


Figure 1

Map of major African sites of early hominids, showing the position of the proposed World Heritage Site of fossil hominid bearing caves of Sterkfontein, Swartkrans, Kromdraai and their Environs in Africa. Some of the main South African sites are indicated by yellow arrows.

Sterkfontein Valley Heritage Sites



Fossil locality

Eleven major fossil bearing localities in the area of the proposed World Heritage Site of Sterkfontein, Swartkrans, Kromdraai and their Environs.

Figure 2

FOSSIL HOMINID SITES OF STERKFONTEIN, SWARTKRANS AND KROMDRAAI
PHYSICAL AND VISUAL ENCLOSURE

LEGEND
- Proposed World Heritage Site
- Proposed Buffer Zone
- Fossil Site
- Important High Point
- Primary Horizon
- Secondary Ridge
- Protected Area
- Proposed Conservation Area (Province)
- Provincial_Boundary
- Arterial / Main Road
- Secondary Road
- Farm Boundary
- Subdivision Boundary
- Agricultural Holding
- River, Stream
- Railway Line

Projection:
Gauss Clarke
LO 29
Scale: 1:50 000

Magaliesberg Protected Natural Environment

Witwatersberg

Strong enclosing ridge - beyond glimpses of the Magaliesberg

Proposed Conservation Area (Province)

Eagle Kop

Spioenkop

Swartkop

Medium View

Long View

Strong Ridge Screen - Urban Area

Current urban edge

KRUGERSDORP

LANSERIA

Randburg
Urban Area

Source: Gauteng Nature Conservation
Conservation Advisory Services (PC Compaan)
File: whs.ucd, 50000.dft, whs.dsp
Date: 18.06.1998

Map 1: Fossil Hominid Sites of Sterkfontein, Swartkrans and Kromdraai
Physical and Visual Enclosure

The cranium of "Mrs. Ples" (Sterkfontein hominid 5), of the species *Australopithecus africanus*, which was recovered by Robert Broom and John T. Robinson in 1947 (above). Below is a large male cranium of "Mr. Ples" (Stw 505, *Australopithecus africanus)* discovered by Alun Hughes and Phillip Tobias in Sterkfontein member 4 breccia in 1989.

A close up view of the permanent grid and excavation at Swartkrans.

Figure 14

ADDENDUM TO THE

APPLICATION FOR INCLUSION ON THE WORLD HERITAGE LIST

THE FOSSIL HOMINID SITES OF STERKFONTEIN, SWARTKRANS, KROMDRAAI AND ENVIRONS, SOUTH AFRICA

SUBMITTED BY
THE GAUTENG PROVINCIAL GOVERNMENT
DEPARTMENT OF AGRICULTURE, CONSERVATION AND ENVIRONMENT

Introduction

Since the documents supporting the nomination of the above site for listing as a World Heritage Site were submitted on 30 June 1998, a new discovery has been announced of sufficient significance to warrant formal notification to the World Heritage Committee.

Please accept this new information in the form of an addendum to the initial dossier. The information is presented under the headings as they appear in this initial dossier.

2.0. JUSTIFICATION FOR INSCRIPTION

a. Statement of Significance

In 1998, a virtually complete skeleton of a heavily fossilised australopithecine ape-man dated at 3.3 million years old was discovered in Member 2 of the Sterkfontein Caves. It is thus the oldest, virtually complete skeleton of a human ancestor ever discovered, not only in South Africa but in all of Africa.

Its completeness will enable the scientific community to solve a large number of outstanding problems, such as the nature of the limb-bones associated with a specific identifiable form of cranium. It will also make possible more accurate studies on the proportions of the upper limb to the lower limb length.

This new discovery will add appreciably to the scientific importance of the Sterkfontein cave site and makes the case for the recognition of the Sterkfontein and other caves in this area even stronger.

3.0 DESCRIPTION

(ii) Detailed Description of the Cave Sites

Sterkfontein

On 9th December 1998, Dr. Ronald J. Clarke, Mr. Stephen Motsumi and Mr. Nkwani Molefe of the University of the Witwatersrand announced a new discovery at Sterkfontein. In Member 2, the oldest fossil rich stratum in the Sterkfontein Formation, a virtually complete skeleton of heavily fossilised australopithecine ape-man was brought to light. It comprises a complete skull, including upper and lower jaws with all of the permanent teeth, the braincase, and the bones of the skeleton below the skull right down to the toes. The skeleton has been dated at 3.3 million years old. It is thus the oldest, virtually complete skeleton of a human ancestor ever discovered, not only in South Africa but in all of Africa. It includes the first complete skull of an australopithecine and in respect of most of the limb-bones so far exposed, they are complete from one end to the other - also a first. Its completeness will enable the team of investigators, led by Dr. Ronald J. Clarke PhD, to solve a large number of outstanding problems, such as the nature of the limb-bones associated with a specific identifiable form of cranium. It will also make possible more accurate studies on the proportions of the upper limb to the lower limb length.

The bones of "Little Foot" which were announced by R.J. Clarke and P.V. Tobias in 1995 and which come from the same layer have now been shown to be the footbones of this very skeleton which had become separated from the rest of the skeleton during earlier excavations by lime workers.

After the skeleton has been exhumed from its solid breccia encasement, and removed to the laboratory for study by a team of investigators, a plastic replica of what the bones of the skeleton looked like, in position, before excavation, will be placed in position and it will be possible for visitors, scholars and tourists to be shown this important area of the Sterkfontein cave system.

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Appendix

South African Journal of Science, 94

Sterkfontein (South Africa)

No 915

Identification

Nomination	The Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai and Environs
Location	Gauteng, North West Province
State Party	Republic of South Africa
Date	16 June 1998

Justification by State Party

The Sterkfontein Valley landscape comprises a number of fossil-bearing cave deposits which are considered to be of outstanding universal value, because they encapsulate a superbly preserved record of the fauna, including an invaluable record of the stages in the emergence and evolution of humanity, over the past 3.5 million years. This makes it, without doubt, one of the world's most important sites for human evolutionary studies and researches.

For over sixty years the sites in the Sterkfontein area (of which there are twelve main and many subsidiary sites) have played a most important role in the establishment of Africa as the cradle of mankind. The juvenile status of the Taung child skull and some other factors militated against the acceptance by anthropologists that the species represented had any relevance to the origin and evolution of mankind. It was not until adult specimens started to emerge from Sterkfontein from 1936 onwards, and especially after World War II with the resumption of excavation at Sterkfontein by R Broom and J T Robinson, and the initiation of a new phase of excavation by P V Tobias with A R Hughes and R J Clarke, that the crucial clinching evidence was presented to the world of science. Above all, historically, it was the skulls and teeth and postcranial bones from Sterkfontein that established the truth of Dart's (1925) claim that these upright, small-brained creatures with small canine teeth were primates which were knocking upon the door of humanity.

It was the Sterkfontein adult specimens that finally converted the opponents of this view and permitted the conclusion to be drawn that *Australopithecus* could legitimately be regarded as a member of the Hominidae (the family of humans). Moreover, it was these southern African fossils (which were discovered earlier than the finds in East Africa) that helped to establish Africa rather than Asia as the cradle of mankind, as Charles Darwin had predicted in his 1871 work, *The Descent of Man*.

Hence, from both an historical and an heuristic point of view, the Sterkfontein discoveries gave rise to major advances, factually and conceptually, in the understanding of the time, place, and mode of evolution of the human family. This seminal role continued to the present with the excavation and analysis of more specimens, representing not only the skull, endocranial casts, and teeth, but also the bones of the vertebral column, the shoulder girdle and upper limb, and the pelvic girdle and lower limb. The Sterkfontein assemblage of fossils has made it possible for palaeoanthropologists to study not merely individual and isolated specimens, but populations of early hominids, from the points of view of their demography, variability, growth and development, functioning and behaviour, ecology, taphonomy, and palaeopathology.

The cave sites of the Sterkfontein Valley represent the combined works of nature and of man, in that they contain an exceptional record of early stages of hominid evolution, of mammalian evolution, and of hominid cultural evolution. They include in the deposits from 2.0 million years onwards *in situ* archaeological remains which are of outstanding universal value from especially the anthropological point of view.

If the Sterkfontein Valley landscape is considered as a cultural property, under the definitions of the World Heritage Guidelines, it is submitted that these cave sites are of outstanding universal value from the point of view of science, archaeology, and anthropology. They contain exceptional testimony to significant stages in human prehistory and to the development of cultural traditions. Further, they fulfil the criteria and test of authenticity under Section 24(a) (iv) of the *Operational Guidelines* as "an outstanding example of a landscape which illustrates significant stages in human history."

As a cultural property, the distinctive character and components reside in:

i the concentration of a number of different sites in a relatively small area, sites that differ in their geological ages, hominid contents, and palaeoecology;

ii the duration of the evolutionary stages represented in this one small area and even within a single cave formation (Sterkfontein);

iii the historical significance of the finds made before and after World War II (in the case of Sterkfontein) and since 1948 (in the case of Swartkrans), finds which provided the worlds of science with fossil evidence that convinced scientists that archaic hominids who lived in Africa marked the first emergence on the planet of the hominid family;

iv the revelation that some of the early hominids (the robust australopithecines from Kromdraai and Swartkrans) had developed specialized features which seemingly removed them from being on the lineage of

later forms of man - a concept which, although commonplace for other mammals, had not up until the time of Robert Broom's discovery of the Kromdraai robust form in 1938 and of the Swartkrans robust form from 1948 onwards been applied validly to hominid evolution.

For these reasons, the Sterkfontein Valley Sites meet the criteria for a cultural property.

[**Note** The State Party does not make any proposals as regards to the criteria under which it considers the property should be inscribed on the World Heritage List. However, criteria **iii** and **vi** are implied in the justification.]

Category of property

In terms of the categories of cultural property set out in Article 1 of the 1972 World Heritage Convention, this is a *site*.

History and Description

History

The fossils of the Sterkfontein Valley caves depict South Africa's landscape and fauna 3.5 million years ago. Some of the most important specimens of australopithecines (*Australopithecus* (*Paranthropus*) *robustus* and *Australopithecus* (*Plesianthropus*) *africanus*), collateral ancestors of modern man, have been discovered in this area. Sterkfontein geologically revealed the earliest record of hominid in southern Africa (close to 3.5 million years ago). It is also historically the earliest discovery of an adult australopithecine in 1936, by Robert Broom, the richest source of fossils of this species and the oldest stone tools recovered (2 to 1.5 million years BP). Specimens of *Homo habilis* have also been found in the breccias of Sterkfontein caves. They are key elements in determining the origin and the evolution of mankind. Their belonging to the lineage that gave birth to *Homo sapiens sapiens* (modern man) was demonstrated by proving that their cranial capacity, their diet, and their upright posture were all indicative of a kinship to modern man. Stone and bone tools, dating to around 2 to 1.5 million years BP, have been brought to light at Sterkfontein, Kromdraai, and Swartkrans which support this hypothesis.

Evidence for the controlled use of fire has been observed in the Swartkrans cave (1.8 to 1 million years BP), another specific trait of human behaviour. The antiquity of these fossils and their relative position as primates with indisputable hominid traits proclaimed Africa as the cradle of humanity.

Description

The site proposed is located 45km west of Johannesburg and 5km north of the closest urban centre. A band of dolomites and their associated breccias run through the entire area, creating a hilly terrain. The area is covered mainly by grass, with more dense vegetation along the rivers.

The total area proposed for inscription is *c* 25,000ha (with a buffer zone of *c* 28,000ha). The area selected for nomination was determined by the topography, both so as to include potential additional fossil-bearing sites and also to ensure that the visual quality of the landscape as a whole is preserved against incompatible or undesirable intrusions.

The palaeontological and palaeoanthropological sites are a series of caves found in the dolomite band and its associated breccias. Some of them were discovered as a result of lime-mining activities, new discontinued.

Sterkfontein is located on a hill to the south of the Rietspruit river valley, midway in a straight line between Swartkrans (1.2km to the WSW) and Kromdraai (1.6 km to the ENE). These three main cave sites are surrounded by a string of fossil-bearing caves from which, of the nine included in the proposed area, only three (Drimolen, Coopers B, and Gondolin) have so far revealed hominid remains. Wonder Cave, Gladysvale, Bolt's Farm, Minnaar's Caves, Plover's Lake, and Haasgat have only produced faunal remains but they possess a strong potential for revealing hominid remains.

Sterkfontein has produced some 500 catalogued specimens, most being representative of the *Australopithecus africanus* species (found in Member 4) and some, from more recent deposits, belonging to the species *Australopithecus robustus* and *Homo habilis*. Thousands of stone tools, of the Oldowan (2 million years BP) and Acheulean (1.5 million years BP) industries have been recovered. There are thousands of faunal remains and hundreds of fragments of fossilized wood testifying to the past environment. Very recently the first ever complete *Australopithecus* skeleton has been discovered; this is of great scientific interest, since preliminary tests suggest that it may be of a species other than *A. africanus* or *A. robustus*.

Swartkrans is the greatest source of *Paranthropus crassidens* (robust apeman), and a second species has been found in the same members as *Paranthropus*, thus assumed to be contemporary, which is regarded as *Homo erectus*. It contains the largest collection of *A. robustus* remains. The site also holds an important number of stone and bone tools (nearly 900 dating to 1.8 to 1 million years BP) and the evidence for the controlled use of fire (assumed from the discovery of charred bones). Thousands of faunal remains have been collected.

Kromdraai is the site of the first recognized *A.* (*Paranthropus*) *robustus* specimen in 1938. Kromdraai A brought to light essentially tools and fossil fauna, whilst Kromdraai B revealed more specimens of *A. robustus*.

Close by Kromdraai, the excavations in 1938 and 1939 in the breccias of Cooper’s Caves revealed the presence of australopithecine remains and of non-hominid remains.

Just south of Swartkrans, the Bolt's Farm site has so far only yielded faunal remains. Of the four sites

forming the second cluster (Minaars, Plover's Lake, Wonder Cave, and Drimolen) north of the main cluster (Bolt's Farm, Swartkrans, Sterkfontein, Coopers, and Kromdraai), only one (Drimolen) has yielded hominid remains. The latter is the most recently excavated site (1992) with Gondolin. It brought to light the remains of the two youngest *A. robustus*, aged respectively 8 and 12 months, and dating to 2 million years BP.

Three sites are isolated from the main groups of sites (in order from south to north): Gladysvale, Haasgat, and Gondolin. Gladysvale, known to be a rich fossil-bearing site since 1936, revealed hominid remains for the first time in 1992 in the form of teeth and finger bones. Haasgat and Gondolin, two sites found in the North West Province, yielded both faunal remains. In 1997, the site of Gondolin revealed robust australopithecine remains.

Management and Protection

Legal status

The legal status is not uniform throughout the site. A number of legislative mechanisms control land use, land development, and environment impacts on the area. The present legislation aims at protecting the site and not managing or developing it. However, the present National Monuments Act (No 28, 1969) is shortly to be replaced by a new National Heritage Act, the objective of which is "to present an integrated holistic heritage structure which will coordinate the expressions of the living heritage of all who belong to South Africa"; this statute will take account of management and presentation as well as protection. The site also comes within the provisions of the National Environmental Management Act (No 107, 1999), which requires the formulation of management plans and their approval by the governmental Committee of Environmental Coordination.

Swartkrans, Sterkfontein, and Kromdraai and the palaeoanthropological material associated with them are protected by the National Monuments Act. Any interventions to be undertaken in the area, particularly mining activities, are subject to the Minerals Act (No 50, 1991) and the Environment Conservation Act (No 73, 1989), which stipulate that environmental impact assessments must be carried out before any major construction work is started.

The local provincial authorities are strengthening their control on local planning and development strategies, through Land Development Objectives, as provided for in the Development Facilitation Act (No 67, 1995) which would supplement the already existing national acts on development. These objectives encourage agricultural, recreational, and tourism-related activities. They also preserve and protect the site from any urban spread and harmful land use. The Draft Gauteng Development Planning Bill incorporates Land Development Objectives in the form of "local development plans" (see below).

In addition to these legislative controls, many landowners in the area implement their own management and conservation plans. The commitment of local landowners to conservation is also demonstrated by the many Natural Heritage Sites registered in the area. In this situation, private landowners apply to the Department of Environment and Tourism for their land to be registered. This status is conditional upon the owner agreeing that no destruction or degrading will be done by him and that he will report any infractions to the relevant authorities.

The Gauteng Draft Development Bill, in the process of being drawn up, aims at providing the Province with a single system of development planning. The nominated area would be specifically dealt with as a World Heritage Site, giving it a defined management strategy, a unique overall protection, and an administrative body responsible for its promotion, protection, and management.

Management

Some 98% of the land is in private ownership. Of the remaining 2%, the State owns 8ha and the rest, essentially the Nature Reserve on which the Sterkfontein Caves are located and the farm where Swartkrans is situated, are owned by the University of the Witwatersrand.

Until the administrative body provided by the new Gauteng Draft Development Planning Bill is established, the Gauteng Province Departments of Agriculture, Conservation and Environment, of Sports, Recreation, Arts and Culture, of Finance and Economic Affairs are responsible for the management mechanisms and day-to-day management of the site. Following approval of the Planning Bill, the Gauteng Province will then continue to coordinate the activities of the Board.

An interim management plan is being drawn up and will be effective by December 1998, concurrent with the draft legislation. The plan will focus on protecting known and future sites, on ensuring that the present uses of the land will continue without threatening the site in its landscape or its intrinsic nature, and on increasing public access. A programme for the continuous monitoring of the state of conservation of the site will be an essential component of the overall management plan. This will involve the staff unit that is to be appointed, and institutions such as the University of the Witwatersrand and Transvaal Museum will provide scientific inputs.

There are currently no staff responsible solely for the maintenance and management of the site. A Staff Unit is planned to be set up in the Planning Bill. The university and museum will continue managing all scientific aspects.

Tourism is an essential aspect of the development of the site. Already some 75,000 visitors annually visit Sterkfontein on horseback or on nature trails, for its gold mines, the oldest in the region, its game reserve, and its unique scenery. Public access is a subject of considerable debate at the present time.

The site is not easily accessible. There are few major highways, and mainly dirt roads lead to the area. Road improvements are thus considered a priority for the development of tourism and for the proper management of the site.

Agriculture and reserve-related activities are predominant on the site, accompanied by some light industrial and commercial activities. These are small in scale and are not considered to threaten the integrity of the park.

The main threat to the site comes from urban development, with Krugersdorp expanding northwards and approaching to less than 5km and Randburg expanding to the north-west to 15km from the boundaries of the site. This threat is considered to be very serious by the authorities and plans to regulate urban development and zoning are in preparation.

Conservation and Authenticity

Conservation history

It is inappropriate to examine this group of fossil hominid sites in conventional conservation terms, since their significance results essentially from investigations leading to the removal of scientific specimens. Instead, the history of excavation at each will be summarized briefly.

At *Sterkfontein* the fossil-bearing breccias were first discovered during quarrying for lime in the 1890s. It was not until the late 1930s that the search began in earnest for faunal and hominid fossils. Work ceased during World War II and was resumed in 1947-49. Following a short phase of work in 1956-58, P V Tobias began his present long-term investigation in 1966.

It seems likely that the potential of the *Swartkrans* site was first recognized in 1936, but no work was carried out there until 1948. This continued until 1953, and there was a further phase of investigations between 1965 and 1992, headed by C K Brain.

Specimens were collected from the breccias at *Kromdaai* and sent to London for examination, but the bones were not extracted from them for over sixty years, when they were "rediscovered" by L S B Leakey. However, work was carried out there intermittently from 1938 until the 1990s.

The first significant fossil was discovered at *Coopers B* in lime-working dumps in the late 1930s. However, despite several campaigns of excavation, the second hominid fossil was not identified until 1989. Plans are in hand for a further excavation campaign.

The important *Drimolen* site, which is especially rich in hominid fossils, was not discovered until 1992, by A W Keyser, who has been excavating it since that time.

The first discoveries were made at *Gladysvale* in the late 1940s. Systematic studies have been in progress since 1993, by a joint South African-Swiss university team.

Sporadic investigations at *Bolt's Farm* since World War II have produced considerable mammalian fossils but so far no hominid remains. There has so far been no systematic excavation there. Similarly, *Haasgat* and *Plover's Lake*, which were intensively excavated in the late 1980s and early 1990s, have so far failed to yield any hominid fossils.

Gondolin produced a substantial mammalian fauna during excavations in 1979, but it was not until the present excavations, begun in 1997, that australo-pithecine fossils came to light

Authenticity

Authenticity is similarly a concept that is not applicable to fossil sites of this kind. It might be more appropriate to evaluate them in terms of their integrity, as in the case of properties considered under the natural criteria. The breccias from which this wealth of fossils derive are intact and undisturbed. They are no longer being exploited for their minerals and the livestock farming and game ranching that are still being carried out there have no impact on the fossil-bearing deposits. The integrity of the nominated sites may therefore be deemed to be total. The entire landscape also has a high level of authenticity and/or integrity, for the same reasons: indeed, the landscape supports a domestic fauna in the same way that wild beasts grazed it in prehistoric times.

Evaluation

Action by ICOMOS

An ICOMOS expert mission visited the sites in January 1999.

Qualities

This group of sites is one of the most important in the world for an understanding of the evolution of modern man (*Homo sapiens sapiens*) from his ancestors. They have produced a wealth of hominid fossils, the oldest dated to some 3.5 million years ago, along with their tools and with fossils of the contemporary fauna. Investigations over the past sixty years have played a crucial role in establishing Africa as the cradle of mankind. The potential for further significant discoveries is enormous.

Comparative analysis

The comparative study of *Potential fossil hominid sites for inscription on the World Heritage List* prepared by two leading human palaeontologists for ICOMOS in 1997 establishes six criteria for evaluating such sites: good chronologies; number of fossils; antiquity of finds; potential for further finds; groups of closely related sites; and discovery and demonstration of human evolution. It divides human evolution into four periods, the earliest of which is from 5 million to 1 million years BP.

The authors of the study consider that the Sterkfontein Valley scores very highly under all of these criteria and that it is worthy of inscription on the World Heritage List.

ICOMOS recommendations for future action

The size of the nominated area and its associated buffer zone is a challenge to manage. The situation is made more complex because of the multiple and diverse number of stakeholders involved – landowners, local, provincial, and national administrations, scientific institutions, etc.

The State Party has addressed the major problems the site will face in the near and distant future in the eventuality of its nomination on the World Heritage List. The urban expansion of the neighbouring settlements constitute the major threat to the integrity of the site. Since most of the lots that make up the nominated area and buffer zone are privately owned, it is essential for the State Party to ensure that there is strict control on land-use, on zoning, and on visitor control and management. The fragility of the fossil hominid sites requires there to be special controls over access to them, so as to avoid destruction to important scientific data as a result of over-visiting.

Associated with this aspect of the site is the current appearance of several of the fossil sites. Bolt's Farm, Drimolen, and Gladysvale are in a sorry state. ICOMOS does not advocate backfilling, but suggests that the condition of the sites should be improved, so as to prevent further erosion of the breccias.

The nomination refers specifically to the fossil hominid sites. However, ICOMOS feels that the nominated property has another important quality. Archaeological investigations have shown that the area was continuously occupied by *Homo sapiens sapiens* until around 20,000 BP, that is, from the Lower Palaeolithic to the Neolithic. Much of the contemporary landscape has remained unchanged since that time, and ICOMOS feels that this should be given prominence in the public presentation of the site.

The ICOMOS mission was concerned about the proposed buffer zone. Whilst it is suitably large, attention needs to be given to the extension of its boundaries at several vulnerable points, so as to prevent encroachments, such as that of the so far unauthorized Letarno housing project and that for a casino.

All these comments relate to one specific recommendation. It is imperative that a definitive management and conservation plan for the entire site should be produced with the minimum of delay.

Brief description

The many caves in the Sterkfontein Valley have produced abundant scientific information on the evolution of modern man over the past 3.5 million years, on his way of life, and on the animals with and upon which he lived. The contemporary landscape also preserves many features of that of prehistoric man.

Recommendation

That this property be inscribed on the World Heritage List on the basis of ***criteria iii and vi***:

> The Sterkfontein area contains an exceptionally large and scientifically significant group of sites which throw light on the earliest ancestors of humankind. They constitute a vast reserve of scientific information, the potential of which is enormous.

ICOMOS, September 1999

Sterkfontein (Afrique du Sud)

No 915

Identification

Bien proposé	Sites des hominidés fossiles de Sterkfontein, Swartkrans, Kromdraai et les environs
Lieu	Gauteng, Province du Nord-Ouest
Etat partie	République d'Afrique du Sud
Date	16 juin 1998

Justification émanant de l'Etat partie

Le paysage de la vallée de Sterkfontein recèle des grottes riches en fossiles qui ont une valeur universelle exceptionnelle. Ces grottes renferment des trésors d'informations sur la faune et conservent les traces inestimables et superbement préservées des différents stades de l'évolution de l'humanité depuis plus de 3,5 millions d'années. C'est sans aucun doute l'un des sites au monde les plus importants pour l'étude et la recherche sur l'évolution de l'homme.

Depuis plus de soixante ans, les sites de la région de Sterkfontein (douze principaux et de nombreux autres de moindre importance) ont joué un rôle fondamental dans la reconnaissance du fait que l'Afrique est le berceau de l'humanité. L'état juvénile du crâne de l'enfant Taung et quelques autres facteurs ne permettaient pas aux anthropologues de conclure que les espèces représentées avaient un quelconque lien avec l'origine et l'évolution de l'humanité. Ce n'est qu'après la découverte de spécimens adultes à Sterkfontein, à partir de 1936 et surtout après la Seconde Guerre mondiale, avec la reprise des fouilles par R. Broom et J.T. Robinson, et le lancement d'une nouvelle campagne de fouilles par P.V. Tobias avec A.R. Hughes et R.J. Clarke, que la preuve irréfutable fut présentée au monde de la science. Historiquement, ce sont les crânes, les dents et les os post-crâniens trouvés à Sterkfontein qui confirmèrent les découvertes de Dart (1925) qui déclaraient que ces petites créatures à bipédie au petit cerveau et aux petites canines, étaient des primates à la porte de l'humanité.

Ce sont les spécimens adultes découverts à Sterkfontein qui finirent par persuader les opposants à cette thèse et permirent de conclure qu'*Australopithecus* pouvait légitimement être considéré comme membre à part entière des Hominidés (la famille des humains). De plus, ce sont ces fossiles d'Afrique du Sud, découverts avant ceux d'Afrique de l'Est, qui désignèrent l'Afrique plutôt que l'Asie comme le berceau de l'humanité, conformément à ce qu'avait prédit Charles Darwin dans son ouvrage de 1871, *De la descendance de l'homme*.

Par conséquent, d'un point de vue historique et heuristique, les découvertes de Sterkfontein ont permis des avancées majeures, tant factuelles que conceptuelles, dans la compréhension du temps, de l'espace et du mode d'évolution de la famille humaine. Ce rôle qui fait école se poursuit actuellement avec les fouilles et l'analyse d'autres spécimens, non seulement des crânes, dures-mères fossilisées et dents, mais aussi des vertèbres, ceintures thoraciques et membres supérieurs, ceintures pelviennes et membres inférieurs. L'ensemble des fossiles de Sterkfontein a permis aux paléontologues d'étudier non seulement des spécimens isolés et des individus mais aussi des populations d'hominidés, du point de vue de la démographie, de la diversité, de la croissance, du développement, du fonctionnement et du comportement, de l'écologie, de la taphonomie et de la paléopathologie.

Les sites des grottes de la vallée de Sterkfontein représentent l'œuvre conjuguée de l'homme et de la nature en ce sens qu'ils renferment des traces exceptionnelles, tant physiques que culturelles, des premiers stades de l'évolution des Hominidés et des mammifères. Les gisements renferment des vestiges archéologiques *in situ* vieux de 2 millions d'années et des périodes suivantes, d'une valeur universelle exceptionnelle, en particulier du point de vue anthropologique.

Si le paysage de la vallée de Sterkfontein est considéré comme un bien culturel, aux termes des *Orientations du Patrimoine mondial*, il est suggéré que ces grottes ont aussi une valeur universelle exceptionnelle du point de vue de la science, de l'archéologie et de l'anthropologie. Elles portent un témoignage éminent sur les stades importants de la préhistoire humaine et sur le développement des traditions culturelles. De plus, elles répondent aux critères et aux tests d'authenticité, au titre de l'article 24(a) (iv) des *Orientations du Patrimoine mondial* en tant "qu'exemple éminent de paysage illustrant une ou plusieurs périodes significatives de l'histoire humaine".

En tant que bien culturel, les caractéristiques et les composantes particulières résident dans :

- la concentration de nombreux sites différents dans une zone relativement petite, des sites qui diffèrent par leur datation géologique, leur contenu hominidé et la paléoécologie ;

- la durée des stades d'évolution rencontrés dans cette zone restreinte et même dans une seule grotte (Sterkfontein) ;

- la portée historique des découvertes faites avant et après la Seconde Guerre mondiale (dans le cas de Sterkfontein) et depuis 1948 (dans le cas de

Swartkrans), les preuves fossiles qui ont convaincu les scientifiques que les hominidés archaïques qui vivaient en Afrique ont marqué la première apparition sur terre de la famille des Hominidés ;

- la révélation que certains des premiers hominidés (les australopithèques robustes de Kromdraai et de Swartkrans) avaient développé des caractéristiques spécialisées qui semblaient les avoir mis à l'écart de la lignée des formes ultérieures de l'homme – un concept qui, bien que courant pour les autres mammifères, n'avait pas été appliqué à l'évolution des hominidés, jusqu'à ce que Robert Broom découvre la forme robuste de Kromdraai en 1938 et de Swartkrans à partir de 1948.

Pour ces raisons, les sites de la vallée de Sterkfontein remplissent les critères d'un bien culturel.

[**Remarque** L'Etat partie ne fait aucune proposition quant aux critères au titre desquels il envisage que le bien soit inscrit sur la Liste du patrimoine mondial. Toutefois, les critères **iii** et **vi** sont suggérés dans la justification.]

Catégorie de bien
En termes de catégories de biens culturels, telles qu'elles sont définies à l'article premier de la Convention du Patrimoine mondial de 1972, il s'agit d'un *site.*

Histoire et description

Histoire

Les fossiles des grottes de la vallée de Sterkfontein dépeignent le paysage et la faune de l'Afrique du Sud tels qu'ils étaient il y a 3,5 millions d'années. Quelques-uns des plus importants spécimens d'australopithécidés (*Australopithecus* (*Paranthropus*) *robustus* et *Australopithecus* (*Plesianthropus*) *africanus*), ancêtres collatéraux de l'homme moderne, ont été découverts dans la région. Les couches géologiques de Sterkfontein ont révélé les premières traces d'hominidés dans le sud de l'Afrique (environ 3,5 millions d'années). Historiquement, c'est aussi la découverte du premier australopithèque adulte en 1936, par Robert Broom, de la source la plus riche en fossiles de cette espèce et des plus anciens outils en pierre (2 à 1,5 millions d'années). Des spécimens de l'*Homo habilis* ont également été découverts dans les brèches des grottes de Sterkfontein. Ces éléments clés définissent l'origine et l'évolution de l'humanité. L'appartenance des hominidés à la lignée d'*Homo sapiens sapiens* (l'homme moderne) est prouvée par la capacité de leur boîte crânienne, leur alimentation et leur stature érigée debout, tous éléments qui indiquent une parenté avec l'homme moderne. Des outils en pierre et en os, datés de 2 à 1,5 millions d'années, ont été mis au jour à Sterkfontein, Kromdraai et Swartkrans, et corroborent cette hypothèse.

Des preuves de la domestication du feu ont été mises en évidence dans la grotte de Swartkrans (1,8 à 1 millions d'années), autre trait spécifique du comportement humain. L'ancienneté de ces primates fossiles ayant indiscutablement des traits d'hominidés font de l'Afrique le berceau de l'humanité.

Description

Le site proposé pour inscription est situé à 45km à l'ouest de Johannesburg et 5km au nord du centre urbain le plus proche. Une bande dolomitique et ses brèches traversent la totalité de la zone, créant un terrain accidenté. La zone est couverte d'herbages, la végétation se densifie le long des cours d'eau.

La totalité de la zone proposée pour inscription est d'environ 25000ha (avec une zone tampon d'environ 28000ha). La zone sélectionnée a été définie par la topographie, de manière à inclure à la fois de nouveaux sites de gisements de fossiles et à préserver la qualité visuelle du paysage de toute intrusion incompatible ou indésirable.

Les sites paléontologiques et paléoanthropologiques sont une série de grottes que l'on trouve dans la bande dolomitique et ses brèches associées. Certaines ont été découvertes à la faveur de l'exploitation industrielle de carrières de calcaire, activité qui a cessé depuis.

Sterkfontein se situe sur une colline au sud de la vallée de la Rietspruit, à mi-chemin à vol d'oiseau entre Swartkrans (1,2km à l'ouest sud-ouest) et Kromdraai (1,6 km à l'est nord-est). Les trois grottes principales sont environnées d'une série de grottes comportant des fossiles ; sur les neuf grottes situées dans la zone proposée, seules trois (Drimolen, Coopers B et Gondolin) ont déjà livré des fragments d'hominidés. Les grottes suivantes - Wonder Cave, Gladysvale, Bolt's Farm, Minnaar's Caves, Plover's Lake et Haasgat – n'ont produit que des fossiles faunistiques, mais elles peuvent potentiellement révéler des fragments d'hominidés.

Sterkfontein a produit quelques 500 spécimens répertoriés, la plupart étant des représentants de l'espèce *Australopithecus africanus* (trouvés dans Member 4) et quelques-uns, de gisements plus récents, appartenant aux espèces *Australopithecus robustus* et *Homo habilis*. Les industries de l'Oldowayen (2 millions d'années) et de l'Acheuléen (1,5 millions d'années) ont produit des milliers d'outils en pierre. Des milliers de fragments d'animaux et des centaines de fragments de bois fossilisés attestent l'environnement passé. Très récemment, le premier squelette complet d'Australopithèque jamais trouvé a été mis au jour ; pour le plus grand intérêt du monde scientifique, surtout que les premières analyses suggèrent qu'il pourrait s'agir d'une autre espèce qu'*A. africanus* ou *A. robustus*.

Swartkrans est la première source de *Paranthropus crassidens* (homme-singe robuste). Une deuxième espèce de la famille *Paranthropus* a été trouvée, que l'on peut considérer comme contemporaine et donc

semblable à *Homo erectus*. Elle contient la plus grande collection de fragments de *A. robustus*. Le site comporte aussi un grand nombre d'outils en pierre et en os (près de 900 datant de 1,8 à 1 millions d'années) et des preuves de la domestication du feu suggérée par la découverte d'os brûlés. Des milliers de fragments d'animaux ont été collectés.

Kromdraai est le site du premier spécimen de *A.* (*Paranthropus*) *robustus* trouvé en 1938. Kromdraai A a essentiellement livré des outils et des fossiles d'animaux, tandis que Kromdraai B a révélé d'avantage de spécimens de *A. robustus*.

Près de Kromdraai, les fouilles de 1938 et 1939 dans les brèches des Cooper's Caves ont révélé la présence de fragments d'australopithécidés et de non-hominidés.

Au sud de Swartkrans, le site de Bolt's Farm a jusqu'à présent produit des fragments faunistiques. Sur les quatre sites qui forment le deuxième groupe (Minaars, Plover's Lake, Wonder Cave et Drimolen) au nord du groupe principal (Bolt's Farm, Swartkrans, Sterkfontein, Coopers et Kromdraai), un seul (Drimolen) a livré des fragments d'hominidés. Drimolen est le dernier site fouillé (1992) avec Gondolin. Ont été ramenés à la lumière les deux plus jeunes *A. robustus*, âgés de 8 et 12 mois et datés de 2 millions d'années avant notre ère.

Trois sites se trouvent à l'écart des principaux groupes de sites (dans l'ordre, du sud au nord) : Gladysvale, Haasgat et Gondolin. Gladysvale, connu pour être un site riche en fossiles depuis 1936, a révélé des fragments d'hominidés pour la première fois en 1992 - dents et os de doigts. Haasgat et Gondolin, deux sites trouvés dans la Province du Nord-Ouest ont produit tous les deux des fossiles faunistique. En 1997, le site de Gondolin a livré des fragments d' australopithécidés robustes.

Gestion et protection

Statut juridique

Le statut juridique n'est pas uniforme sur la totalité du site. Un certain nombre de mécanismes juridiques contrôlent l'utilisation des sols, le développement et l'impact environnemental dans la zone. La législation actuelle vise à protéger les sites, non pas à les gérer ou à les développer. Toutefois, la loi actuelle sur les monuments nationaux (No 28, 1969) devrait être incessamment remplacée par une nouvelle loi sur le Patrimoine national, dont l'objectif est de "présenter une structure de patrimoine holistique et intégrée qui coordonne les manifestations du patrimoine vivant commun à tous les citoyens d'Afrique du Sud". Ce statut tiendra compte de la gestion et de la présentation ainsi que de la protection. Le site dépend aussi des dispositions de la loi sur la gestion de l'environnement national (No 107, 1999), qui requiert la formulation de plans de gestion et leur approbation par le Comité gouvernemental de coordination environnementale.

Swartkrans, Sterkfontein, Kromdraai, et le matériel paléoanthropologique qui en provient, sont protégés par la loi sur les monuments nationaux. Toute activité entreprise dans la région, en particulier l'exploitation minière, est soumise à la loi sur les carrières et mines (No 50, 1991) et à la loi sur la conservation de l'environnement (No 73, 1989), qui stipulent que des études d'impact sur l'environnement doivent être préalablement réalisées à tous travaux majeurs de construction.

Les autorités locales provinciales renforcent leur contrôle sur la planification locale et les stratégies de développement - au moyen des « Objectifs de développement » des terres - comme le prévoit la loi sur la facilitation du développement (No 67, 1995) qui complète les lois nationales existantes sur le développement. Ces « objectifs » encouragent les activités liées au tourisme, aux loisirs et à l'agriculture. Ils préservent et protègent le site de l'extension urbaine et de l'utilisation dommageable des sols. Le projet de loi d'urbanisme de Gauteng incorpore les « objectifs de développement » dans le cadre des "plans de développement locaux" (voir ci-dessous).

En plus de ces contrôles d'ordre juridique, de nombreux propriétaires fonciers de la région appliquent leurs propres plans de gestion et de conservation. L'engagement des propriétaires locaux envers la conservation se manifeste par le grand nombre de sites « Patrimoine naturel » enregistrés dans la région. Les propriétaires font une demande d'inscription de leur propriété foncière à la direction du Tourisme et de l'Environnement. Ils s'engagent à ne pas détruire ni détériorer leur bien et à signaler toute infraction aux autorités concernées.

Le projet de loi d'urbanisme de Gauteng vise à doter la Province d'une loi d'urbanisme unique. La zone proposée pour inscription serait traitée en tant que site du Patrimoine mondial et elle aurait une stratégie de gestion définie, une protection globale unique et un organisme administratif responsable de sa promotion, de sa protection et de sa gestion.

Gestion

Près de 98% de la terre est détenue par des propriétaires privés. Sur les 2% restant, l'Etat possède 8ha et le reste, essentiellement la Réserve Naturelle sur laquelle se trouvent les grottes de Sterkfontein et la ferme où se trouve Swartkrans, sont la propriété de l'Université de Witwatersrand.

Tant que l'organisme administratif prévu par le projet de loi d'urbanisme de Gauteng n'est pas établi, ce sont les différentes directions administratives de la Province de Gauteng - agriculture, conservation et environnement, sports, loisirs, arts et culture, affaires économiques et finances – qui sont responsables de la gestion globale et quotidienne du site. Après la promulgation de la loi, la Province de Gauteng continuera de coordonner les activités du Bureau.

Un plan de gestion provisoire a été élaboré et est devenu effectif en décembre 1998, en même temps que le projet de loi. Le plan mettra l'accent sur la protection des sites connus et futurs, s'assurera que l'utilisation actuelle des sols ne menace pas le paysage du site ou sa nature intrinsèque, et s'efforcera de promouvoir l'accès des visiteurs. Un programme de suivi permanent de l'état de conservation du site constituera la composante maîtresse de ce plan de gestion. Il comprendra une équipe du personnel qui doit être mise en place, et des institutions telles que l'Université de Witwatersrand et le musée du Transvaal fourniront des compétences scientifiques.

A l'heure actuelle, il n'y a pas de personnel exclusivement responsable de la maintenance et de la gestion du site. Le projet de loi prévoit d'engager du personnel à cet effet. L'université de Witwatersrand et le musée du Transvaal continueront de gérer les aspects scientifiques.

Le tourisme est un axe essentiel du développement du site. Quelque 75000 personnes visitent Sterkfontein chaque année, à cheval ou sur des chemins pédestres, pour ses mines d'or, les plus anciennes de la région, sa réserve d'animaux et son paysage unique.

L'accès au site, qui n'est pas facile l'heure actuelle, soulève des débats considérables. Il existe quelques routes principales et surtout des chemins de terre. L'amélioration du réseau routier est donc une nécessité pour développer le tourisme et pour faciliter la gestion du site.

L'économie locale est dominée par l'agriculture et les activités liées à la réserve animale, complétée par quelques industries légères et des activités commerciales. Toutes ces activités sont pratiquées à petite échelle et ne menacent pas l'intégrité du parc.

La principale menace qui pèse sur le site provient du développement urbain : Krugersdorp s'étend vers le nord et se rapproche à moins de 5km et Randburg s'étend vers le nord-ouest, à 15km des limites du site. Cette menace est prise très au sérieux par les autorités et des plans de zonage et de réglementation du développement urbain sont en préparation.

Conservation et authenticité

Historique de la conservation

Il est impossible d'examiner ce groupe de sites d'hominidés fossiles en termes classiques de conservation, car leur importance est révélée par les fouilles. Or l'exécution des fouilles signifie que l'on retire le matériel du site au fur et à mesure des découvertes. C'est donc un bref historique de chaque fouille qui sera présenté ici.

A *Sterkfontein* les brèches porteuses de fossiles ont été découvertes à l'occasion de l'extraction de chaux dans les années 1890. Ce n'est qu'à la fin des années 1930 que les fouilles à la recherche de fossiles d'animaux et d'hominidés ont commencé sérieusement. Les recherches s'interrompirent pendant la Seconde Guerre mondiale et reprirent en 1947-1949. Après une première campagne de courte durée en 1956-1958, P.V. Tobias entama en 1966 les recherches qu'il poursuit actuellement.

Il semble que le potentiel du site de *Swartkrans* ait été reconnu en 1936, mais les fouilles n'ont été entreprises qu'à partir de 1948 et jusqu'en 1953. Une seconde phase de fouilles s'est déroulée entre 1965 et 1992, sous la direction de C.K. Brain.

Des fragments ont été collectés dans les brèches de *Kromdaai* et envoyés à Londres pour examen, mais il a fallu plus de soixante ans avant que les os de ce site ne soient " redécouverts " par L.S.B Leakey. Des fouilles ont cependant été conduites par intermittence entre 1938 et les années 1990.

Le premier fossile important a été découvert à *Coopers B* dans les déchets d'extraction de chaux à la fin des années 1930. Toutefois, malgré plusieurs campagnes de fouilles, le deuxième fossile d'hominidé n'a été identifié qu'en 1989. Des campagnes de fouilles sont prévues.

Le site important de *Drimolen*, particulièrement riche en fossiles d'hominidé, n'a été découvert qu'en 1992 par A.W. Keyser qui en dirige les fouilles depuis lors. Les premières découvertes à *Gladysvale* datent de la fin des années 1940. L'étude systématique est en cours depuis 1993, par une équipe d'universitaires de Suisse et d'Afrique du Sud.

Des fouilles sporadiques à *Bolt's Farm* depuis la Seconde Guerre mondiale ont produit une grande quantité de fossiles de mammifères mais aucun d'hominidé jusqu'à présent. Aucune campagne de fouilles systématiques n'a été organisée sur ce site. De même, *Haasgat* et *Plover's Lake*, qui ont été fouillés de manière intensive à la fin des années 1980 et au début des années 1990 n'ont jusqu'à présent révélé aucun fossile d'hominidé.

Gondolin a produit un grand nombre de fragments de fossiles de mammifères pendant des fouilles conduites en 1979, mais ce n'est que depuis 1997 que sont apparus à la lumière les fossiles d'australopithèques.

Authenticité

L'authenticité n'est pas non plus un concept applicable aux sites de fossiles de ce type. Il conviendrait de les évaluer en termes d'intégrité, comme c'est le cas des biens relevant des critères de nature. Les brèches d'où sont extraites ces quantités de fossiles sont intactes. Elles ne sont plus exploitées comme carrières et les troupeaux et les animaux qui y paissent n'ont aucun impact nocif sur les dépôts de fossiles. L'intégrité des sites proposés pour inscription peut dont être considérée comme totale. Le paysage dans sa globalité possède également un haut degré d'authenticité et/ou d'intégrité pour les mêmes raisons : il est certain que la nature nourrit les animaux domestiques de la même manière que les animaux sauvages des temps préhistoriques.

Evaluation

Action de l'ICOMOS

Une mission d'expertise de l'ICOMOS a visité les sites en janvier 1999.

Caractéristiques

Ce groupe de sites est l'un des plus importants du monde pour la compréhension de l'évolution de l'homme moderne (*Homo sapiens sapiens*) à partir de ses ancêtres. Ils ont produit une grande quantité de fossiles d'hominidés, le plus ancien daté de 3,5 millions d'années, ainsi que leurs outils et des fossiles de la faune contemporaine. Les recherches des soixante dernières années ont eu un rôle crucial dans la reconnaissance de l'Afrique comme berceau de l'humanité. Les éventualités de découvertes importantes supplémentaires sont très grandes.

Analyse comparative

L'étude comparative des *Sites potentiels de fossiles d'hominidés pour inscription sur la Liste du Patrimoine mondial* préparée par deux éminents paléontologues pour l'ICOMOS en 1997 établit six critères d'évaluation de ces sites : bonne chronologie ; nombre de fossiles ; datation des découvertes ; potentiel de découvertes ; groupes de sites étroitement liés ; découverte et preuve de l'évolution humaine. L'étude divise l'évolution humaine en quatre périodes, dont la première va de 5 millions à 1 millions d'années avant notre ère.

Les auteurs de l'étude considèrent que la Vallée de Sterkfontein remplit tous les critères et qu'à ce titre elle doit être inscrite sur la Liste du Patrimoine mondial.

Recommandations de l'ICOMOS pour des actions futures

La taille de la zone proposée pour inscription et de sa zone tampon complique la gestion du site. La complexité de la situation est due au grand nombre de parties prenantes – propriétaires fonciers, administrations locales, provinciales et nationales, institutions scientifiques, etc.

L'Etat partie a abordé les principaux problèmes auxquels le site aura à faire face dans l'avenir proche et lointain s'il est inscrit sur la Liste du patrimoine mondial. L'expansion des zones urbaines voisines est une menace majeure pour l'intégrité du site. Dès lors que la plupart des parcelles qui constituent la zone proposée pour inscription et la zone tampon sont des propriétés privées, il est essentiel que l'Etat garde un contrôle strict sur l'utilisation des sols, le zonage, les visiteurs et la gestion. La fragilité des sites qui renferment les fossiles d'hominidés exige le contrôle des accès afin d'éviter toute destruction de données scientifiques importantes que risquerait de causer une trop forte fréquentation des sites.

A cet égard, l'aspect actuel de plusieurs sites de fossiles est préoccupant. Bolt's Farm, Drimolen et Gladysvale sont dans un état lamentable. L'ICOMOS ne va pas jusqu'à recommander de combler ces sites, mais suggère que leur état soit amélioré afin d'éviter l'érosion des brèches.

Le bien proposé pour inscription se réfère spécifiquement aux sites d'hominidés fossiles. Toutefois, l'ICOMOS estime qu'il possède une autre caractéristique importante. Les fouilles archéologiques ont montré que cette zone a été occupée sans interruption par *Homo sapiens sapiens* jusque vers 20000 avant notre ère, c'est-à-dire du Paléolithique inférieur au Néolithique. Une grande partie du paysage actuel est semblable à ce qu'il était à l'époque et l'ICOMOS considère que cela devrait être mis en avant dans la présentation du site au public.

La mission de l'ICOMOS se préoccupe de la zone tampon proposée. Elle semble suffisamment importante par la superficie, mais il conviendrait peut-être de l'étendre en certains points vulnérables de manière à éviter les projets immobiliers trop imposants comme celui de Letarno, pour l'instant interdit, et celui du casino.

Tout ces commentaires aboutissent à une seule recommandation spécifique : qu'un plan de gestion et de conservation définitif et impératif soit produit pour le site entier le plus rapidement possible.

Brève description

Les nombreuses grottes de la vallée de Sterkfontein ont produit d'abondantes informations scientifiques sur l'évolution de l'homme moderne depuis 3,5 millions d'années, sur son mode de vie et sur les animaux avec lesquels il vivait et desquels il se nourrissait. Le paysage actuel conserve également de nombreuses caractéristiques qui étaient identiques du temps ce celles de l'homme préhistorique.

Recommandation

Que ce bien soit inscrit sur la Liste du Patrimoine mondial sur la base des ***critères iii et vi*** :

> La zone de Sterkfontein contient un groupe de grands sites, d'une importance exceptionnelle pour la science, qui sortent de l'ombre les ancêtres les plus anciens de l'humanité. Ces sites constituent une vaste réserve de données scientifiques au potentiel considérable.

ICOMOS, septembre 1999

THE MAKAPAN VALLEY

NOMINATION DOSSIER:

A SERIAL EXTENSION TO

"THE FOSSIL HOMINID SITES OF STERKFONTEIN, SWARTKRANS, KROMDRAAI AND ENVIRONS"

SUBMITTED TO THE
WORLD HERITAGE COMMITTEE
ON BEHALF OF THE
SOUTH AFRICAN HERITAGE RESOURCES AGENCY
LIMPOPO PROVINCE

BY THE
DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND TOURISM
REPUBLIC OF SOUTH AFRICA

JANUARY 2004

THE MAKAPAN VALLEY

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NOMINATION DOSSIER:

A SERIAL EXTENSION TO

"THE FOSSIL HOMINID SITES OF STERKFONTEIN, SWARTKRANS, KROMDRAAI AND ENVIRONS"

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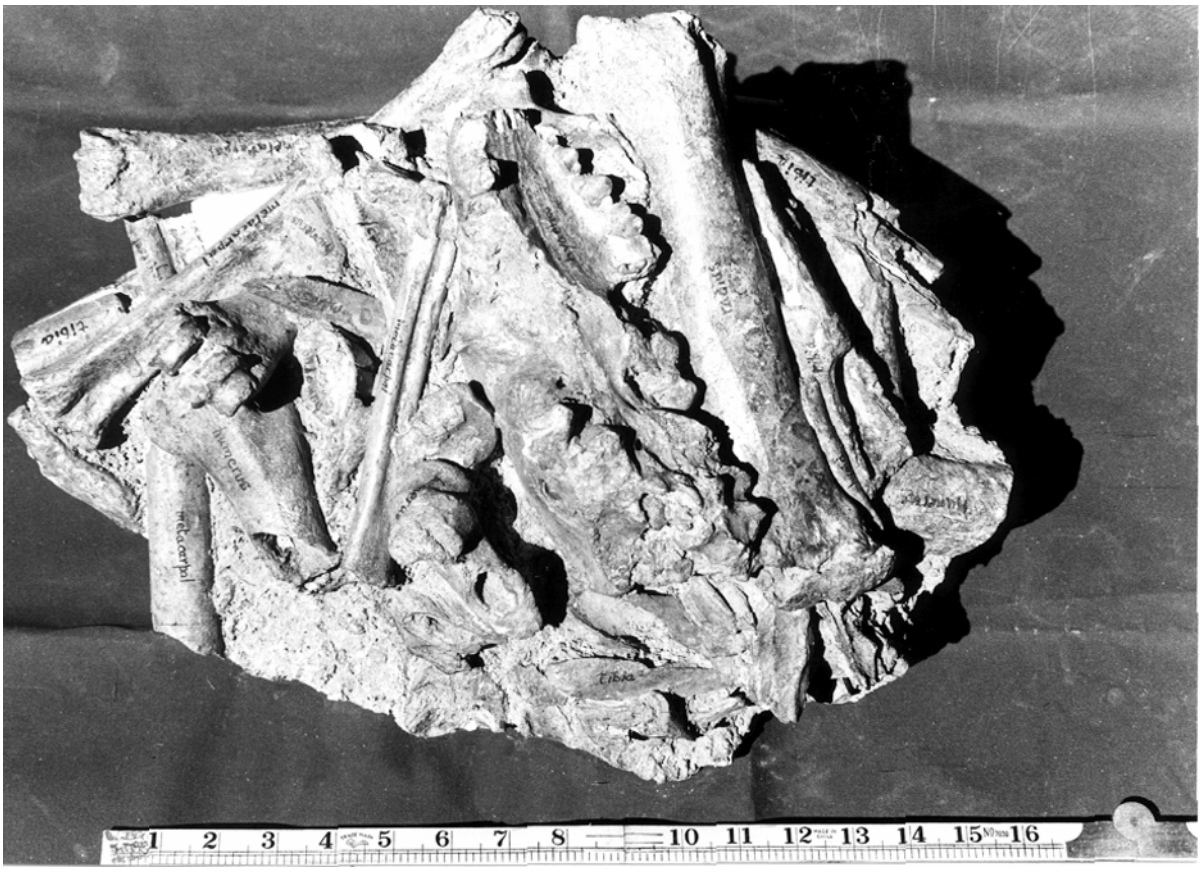

Fronticepiece : **Block of richly fossiliferous breccia from the Makapansgat Limeworks (Photo: J. Maguire)**

THE MAKAPAN VALLEY

NOMINATION DOSSIER:

A SERIAL EXTENSION TO

"THE FOSSIL HOMINID SITES OF STERKFONTEIN, SWARTKRANS, KROMDRAAI AND ENVIRONS"

SECTION 1: IDENTIFICATION OF THE PROPERTY

NOTE:

It is proposed that the Makapan Valley be nominated as a serial extension to "The Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai and Environs" (FHSSSKE).

Please note that the Taung Skull Fossil Site, which is the type locality for both the genus and species of *Australopithecus africanus,* will also be proposed as a serial extension to the FHSSSKE. The Taung Skull Fossil Site is in the Northwest Province of the Republic of South Africa.

The trio of sites constituting the serial cluster will therefore be the FHSSSKE, Makapan Valley and the Taung Skull Fossil Site. A more appropriate and inclusive name is being sought for the cluster.

a. Country (and State Party if different)

Republic of South Africa

b. State, Province or Region

Limpopo Province

c. Name of Property

The Makapan Valley (extension to the "Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai, and Environs")

Name proposed for the extended World Heritage Property:
Fossil Hominid-bearing sites of South Africa (official approval pending)

d. Exact location on map and indication of geographical coordinates to the nearest second

S 24° 9' 31"
E 29° 10' 37" (approximate centre point)

e. Maps and /or plans showing boundary of area proposed for inscription and of any buffer zone

Fig 1a: Orientation Map, showing location of the property within South Africa
Scale: 1:50 000, based on RSA topo map series, Zebediela Sheet, CKA 2003

Fig 1b: Property Map showing heritage boundary and geographical coordinates
Scale: 1: 45 450 as indicated on the map
Source: CKA 2003

Fig 1c: Map of property showing major heritage sites
Scale: 1: 15 900 as indicated on the map
Source: CKA 2003, Master Plan for Makapansgat 2001

Fig 1d: Map showing property with buffer zone conservancy indicated
Scale: 1: 50 000, based on the RSA topo map series, Zebediela Sheet
Source: CKA 2003

Fig 20: Map showing the Makapan Valley in the context of the Conservancy which will function as the Buffer Zone
Scale: 1: 50 000
Source: CKA 2002

All maps have been included in Appendix 1.

f. Area of property proposed for inscription (ha.) and proposed Buffer Zone (ha.) if any

Core Area: 2,220.0495 ha (Makapansgat 39KS)
Buffer Zone: 55,000 ha approx. (Makapans Highlands Conservancy)

SECTION 2: JUSTIFICATION FOR INSCRIPTION

The “Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai and Environs” were inscribed on the World Heritage List in 1999. The World Heritage Committee determined that "the Sterkfontein area contains an exceptionally large and scientifically significant group of sites which throw light on the earliest ancestors of humankind. They constitute a vast reserve of scientific information, the potential of which is enormous". For the reasons stated below, Makapan Valley, which exhibits the same characteristics, should be included in the same World Heritage property as a serial extension to this property.

Taken as a whole, the Makapan Valley sites extend and enrich the information that has been extracted from the Sterkfontein Valley in a way that expands the information available on the process of hominization in the southern part of the African continent.

a. Statement of Significance

The Makapan Valley heritage sites represent a multi-layered palimpsest of palaeontological and archaeological evidence covering the last 3-3.5 million years. Alongside and predating the hominid period of occupation is a sequence of fossil mammals, micro-mammals and invertebrates which provide a window onto faunal evolution, palaeobiology and palaeoecology stretching back into the Pliocene. This record has come to play a crucial role in furthering our understanding of human evolution and the appearance of modern human behaviour.

The three million-year-old Limeworks deposits have yielded remains of the Australopithecine Australopithecus africanus, and a rich and varied associated fossil fauna. At the other end of the timescale is mining history and living heritage in the form of resident Shangaan, Sotho and Ndebele peoples. In between is preserved the transition from “archaic” Homo (Homo heidelbergensis) to modern Homo sapiens, together with the associated transitional stone tool technology, which can be tracked over the last 500 000 years or more. A high resolution stalactite-based record of climatic change extending to 6000 BP is unparalleled in the Southern Hemisphere and provides the key to unlock processes of historical change as seen against a background of climatic stress. The cave of Gwaša, scene of a violent siege, is an early example of anti-settler resistance and of considerable spiritual significance in ancestor worship.

The dense clustering of sites and the rich and extended layering of heritage as well as the well-preserved and detailed nature of the evidence of human evolutionary transitions encapsulated in the valley provide the site with its universal significance.

Furthermore:

- The Makapan Valley is unique in that enclosed within its confines is an almost unbroken record of occupation by ancestral humankind which extends from proto-human Australopithecine times 3.5 million years ago, through the Earlier, Middle and Later Stone Ages and the Iron Ages to the present.

- Alongside and even predating this unprecedented occupation record is a remarkable record of fossil mammals, micro-mammals, invertebrates, fossil pollens and plant material which provide a

window onto faunal evolution, palaeobiology and palaeontology of the last 3.5 million years and more.

- Potentially the most important cave site recognised in recent years is the palaeofill deposits within Katzenjammer Cave, adjacent to the Peppercorn Cave. This deposit represents one of the single longest palaeoenvironmental sequences in the region, with over 15 vertical metres of continuous bone-bearing cave fill. Three discrete bone-bearing filling events have been noted so far.

- The Makapan Valley also records extensive cultural and palaeontological deposits of the Middle Pleistocene. This record of this period has come to play a crucial role in furthering our understanding of later human evolution and the appearance of modern human behaviour. Indeed, The Cave of Hearths is one of only four deeply stratified Stone Age sites in the world (the others being Sterkfontein, Wonderwerk Cave in Northwest Province and Montagu Cave in the Western Cape), which contain stratified Earlier Stone Age lithic artifacts. Furthermore, the Cave of Hearths infill records an almost unbroken sequence of artefacts, from the Earlier Stone Age to the Later Iron Age.

- There is no other valley with a similar fossil record or similar artefact richness anywhere else in the world. Not even the Sterkfontein area World Heritage Site can boast such a long and complete history. It is from this near-continuous record of early and later hominid habitation and evolution that the uniqueness of the Makapan Valley derives. The privileged position that the Makapan Valley occupies in the record of human evolution is rooted the exceptional richness of its natural environment. The Makapan-Strijdpoort Highlands area – the quartzite escarpment and deeply eroded dolomitic uplands – form part of the "Wolkberg Hotspot". This represents one of the world's most important areas of plant species endemism. The rich and varied vegetation covering the Makapan Valley and Highlands Range comprise facies of two distinct floras. One, a tropical flora of essentially a northern origin, the other a more temperate flora of southern origin. The Makapan Valley faunal heritage is equally rich and diverse. It is only one of a few areas in South Africa that acts as host to all local taxa of Primates, as well as numerous other faunal species. An additional attraction to human habitation has been its strategic position along an ancient route of seasonal migration for hundreds of thousands of antelope through the Makapanspoort.

- For much of the twentieth century, Makapan Valley has been located at the frontier of palaeontological and archaeological research. It was here that Raymond Dart developed the first ideas

about the nature of early hominid behaviour. This was articulated in a pioneering study of cave taphonomy, based on 7159 fossil bones from the Makapansgat Limeworks. Taphonomy encompasses the study of the means by which bones become incorporated in cave deposits, and subsequently damaged. From this point Dart's work generated many of the central hypotheses directing and guiding subsequent palaeontological and archaeological research through the work of P.V. Tobias, C.K. Brain, J.W. Kitching, C. Van Riet Lowe and R. Mason. In a sense, the valley and the scientific literature that has grown up around it, occupies a central place in the history of ideas.

- The rich natural endowment of the Makapan Valley has also placed it at the frontier of human interaction within the time frame of what is described as Historical Archaeology. Oral traditions extending back to the mid-17th century plot the origins, migration and fission of dominant lineages (chiefly houses) and record increasing intensity of interaction both among indigenous peoples and with trading centres along the east coast. The area around the Makapan Valley again stood at the frontiers of human interaction, a position amplified by the arrival of the Voortrekkers in the early 1830's.

- The Cave of Gwaša (Historic Cave or Makapan's Cave) was a site of refuge from the conflicts emanating from these linked processes of interaction and conflict, and constitutes a unique record of this opaque period of South African history. Many other archaeological sites are dotted around the entire region but the level of preservation is poor. The Cave of Gwaša stands in stark contrast to this broader pattern. The highly alkaline and dry deposits have allowed for the exceptional preservation of plant, animal and human material, in addition to a wide range of other artefacts, offering unique insights into the socio-economic and political life of this period.

- The Cave of Gwaša is also known as Makapan's Cave (Makapansgat in Afrikaans) after Chief Makapan and several thousand of members of the Kekana chiefdom took refuge in the cave in 1854, following an attack on a party of trekboers which left 26 dead. The subsequent siege of the cave which lasted a month and which ended in the death and surrender of its occupants and their dispersal among Boer farms has been accorded iconic status in Afrikaner public history, and became a central historical prop of the ideology of Apartheid. Ironically, this obscured one of the central and enduring realities of South Africa's past, namely interaction and interdependence, in this case in respect of hunting, trade and the provision of labour.

- Several unexcavated caves contain evidence of having been used in rainmaking ceremonies in the past. Several communities still maintain spiritual links with the Cave of Gwaša, and the stream water flowing below the cave is deemed to have qualities which make its use important in religious and other rituals.

- The Valley contains a variety of other caves one of which, Cold Air Cave, has produced a high-resolution stalagmite based record of climate for the last 3000 years, with the potential for this to be extended to 6600 years before present (BP). Palaeoclimatic data of such precision is unparalleled in southern Hemisphere and presents us with a key to unlock processes of historical change, which is especially valuable for late Holocene and the historical archaeological periods.

b. Comparative analysis

The fossil sites of the Makapan Valley can be compared to a number of World Heritage sites that are of palaeontological and palaeo-anthropological importance. These include the following:

- The Fossil Hominind Sites of Sterkfontein, Swartkrans, Kromdraai and environs, or
- The Sangiran Early Man Site in Java, Indonesia (listed 1996)
- The Peking Man Site at Zhoukoudian, People's Republic if China (1987)
- Australian Fossil Mammal Sites: Riversleigh/Narcoorte (1994)
- The Lower Valley of the Awash, Ethiopia (1980)
- The Lower Valley of the Omo, Ethiopia (1980)
- Olduvai Gorge

Six of the above listed sites have yielded the remains of ancient hominids together with those of other fossil mammals and non-mammal vertebrates (Cradle of Humankind, Sangiran, Zhoukoudian, Olduvai, Awash and Omo). In this respect, they may be likened to the Makapansgat Limeworks, and Cave of Hearths in the Makapan Valley. The Sangiran, Awash and Omo sites are "open" sites, accumulated in the sediments on the shores of lakes or on river banks. In this respect, the sites are most extensive, especially the river valleys of the Awash and Omo. On the other hand, the conditions for the protection and preservation of bones and teeth are not as satisfactory, in general, as those obtaining in cave deposits, such as those of the Makapan Valley. Of the comparative sites listed here, those of the Cradle of Humankind and Zhoukoudian are the most similar to the Makapan Valley sites in that they comprise a series of fissures and caves in a karstic formation. Within the Zhoukoudian cave deposit, the preservation of the remains of *Homo erectus* is excellent and comparable

in quality with those of the South African Australopithecine deposits, although much younger in geological age (0.5 million years and younger) than the Plio-Pleistocene fossil deposits of South Africa.

While the Zhoukoudian caves are the world's richest source of fossil remains of *Homo erectus*, the Sterkfontein Valley sites are the richest sources of two different species of early hominids, namely *Australopithecus africanus* and *Australopithecus (Paranthropus) robustus*. The Makapan Valley not only preserves remains of the hominids *Australopithecus africanus* and *Homo heidelbergensis* but also hundreds of thousands of the fossil bones of some 80 taxa of mammals as well as fossil invertebrates and plant material. (Appendix IV).

It is clear that, if the Cradle of Humankind, Zhoukoudian, Sangiran, Omo, and Awash have been deemed worthy of listing by the World Heritage Centre, then a very strong case exists for the listing of the Makapan Valley and its unique clustering of palaeontological and archaeological sites. Basically, the two sites of the Makapansgat Limeworks and Cave of Hearths are intrinsically as good as the two Ethiopian landscapes in that the former are cave deposits containing extremely well-preserved concentrations of remains. They are especially rich for their time levels, and in respect of certain stages in the human story, as compared with other sites in the world. The Cave of Hearths, with its unprecedented stratified record, forms the basis of the South African archaeological stratigraphic sequence. The property, which includes at least 11 major sites is possessed of more features than obtain in any other hominid sites, among those on the World Heritage List or not yet on the list. These features include a succession of stages in the development of humanity, biological and cultural, Earlier Stone Age tools in a sealed cave deposit and of hominid-controlled fire (lowermost beds of the Cave of Hearths), diversity of palaeo-habitats represented from the well-watered, wooded and partially forested ecology of sub-Tropical southern Africa that prevailed before 2.6 million years ago, to the drier and probably cooler, less wooded, more open savannah conditions that supervened from 2.6-2.5 million years ago onwards, all of these features being encapsulated in a succession of strata in a series of cave formations within a single valley.

As an extension to the Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai, and Environs, the makapan Valley heritage Area complements the original nomination in the following aspects:

i. The Makapan Valley sites differ from those of Sterkfontein and environs in that the clustering of the sites is much denser, evidence of over three million years of use by hominids and other animals being confined within a single property of 2220 ha.

ii. The Makapan Valley sites together provide a more complete and detailed record of certain periods, particularly for the Middle Pleistocene, the stratified sediments of the Cave of Hearths site preserving remains not only of archaic *Homo* but of lithic artefacts associated with this transition. This particular site forms the basis for the regional archaeological lithic sequence

iii. The fossil fauna recovered from the Makapansgat Limeworks hominid locality represents the work of bone-accumulating agents which differed from those at the "Fossil Sites of Sterkfontein, etc", thus a different component of the fossil mammalian fauna of the period was sampled and preserved. It therefore provides a valuable comparative sample and extends the knowledge of the Plio-Pleistocene fauna of the subcontinent

iv. The Middle Stone Age, Later Stone Age and Iron Age record is better represented, more detailed, and preserves more facies than is the case in the Sterkfontein area.

c. Authenticity

As regards **authenticity**, the sites contain within their deposits all of the key interrelated and interdependent elements in their natural palaeontological relationships. Thus, the breccia representing the cave fillings contains the fossilised remains of hominids, a rich diversity of associated animals and lithicultural remains (crude flaked quartzite pieces from about 2.0 million years at the Limeworks), plants and pollen, as well as geochemical and sedimentological evidence of the conditions under which each member of the deposits was laid down, with Cold Air Cave preserving a high-resolution stalactite-bassed record of climatic change over the last 3000 years, with a potential to extend this to 6600BP. In combination, the deposits represent, in a word, a succession of palaeo-ecosystems.

The excavations that have revealed this information have been in progress at various sites in the Makapan Valley for 77 years (intermittently). In these periods a considerable amount of breccia in the cave formations has been removed by controlled excavations. In none of these caves, however, has the entire breccia body been removed, nor is it the intention that it should ever be removed. In the archaeological tradition and ethos, a large proportion of the deposit in any cave is left as a *temoin* or witness section for posterity, for the later application of new techniques of dating an analysis, or as part of the record of our heritage.

The excellence of the cave breccias as depositories for the preservation of ancient bones is also remarkable, to the extent that even fossilized

footprints, dung balls, blow fly pupae, a centipede, pollens and seeds have been fossilized.

Witness sections have been left at those archaeological sites which have been professionally excavated, and limeworking activities have exposed but did not totally destroy fossiliferous deposits. The limeworkers left the site in 1936, since which time the deposits have been left undicturbed. Vast volumes of unexcavated, unexplored, *in situ* breccias remain, in which fossils can still be seen.

From an environmental perspective, much of the property preserves an unspoilt pristine ambience, except for an area of old crop lands close to the abandoned rarmhouse where commercial farming was practised until 1994. The remainder of the valley allows for an authentic African experience, amongst free-ranging baboon troops, bushpigs and other game, including the occasional leopard.

It is thus entirely possible to demonstrate the full cultural heritage significance of the site. This possibility is reinforced by the natural environment in which the sites are located.

d. Criteria under which inscription is proposed

The *Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai and Environs* was inscribed on the World Heritage List in 1999 under cultural criteria (iii) and (vi). In justifying these criteria, the World Heritage Committee noted "the Sterkfontein area contains an exceptionally large and scientifically significant group of sites which throw light on the earliest ancestors of humankind. They constitute a vast reserve of scientific information, the potential of which is enormous." The Makapan Valley is justified under the same criteria:

Cultural criterion (iii): The site should bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared;

The Makapan Valley is unique in that enclosed within its confines is an almost unbroken record of occupation by ancestral humankind which extends from proto-human Australopithecine times 3.5 million years ago, through the Earlier, Middle and Later Stone Ages and the Iron Ages to the present.

Cultural criterion (vi): The site should be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance;

Nearly 80 years of research (1925-2003) has proven the significance of the Makapan Valley. For much of this period, the Makapan Valley has been located at the frontier of palaeontological and archaeological research. It was here that Dart developed the firsr ideas about the nature of early hominid behaviour. From this point, it generated many of the central hypotheses directing and guiding subsequent work in cognate fields, and in this sense, the Valley occupies a central place in the history of palaeoanthropological thought and ideas.

Because the Makapan Valley exhibits all the features which endow "The Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai and Environs" with Universal Significance, as well as the above particular features, it is proposed that the valley be nominated as a serial extension to the above-mentioned World Heritage property.

SECTION 3: DESCRIPTION

a. Description of property

I. *General description of the property and the Buffer Zone*

Location: Regional setting

The Makapan Valley, its caves and other sites of archaeological and palaeontological interest are situated on the farm Makapansgat 39KS (24º12' S, 29º12'E) some 19km E-N-E of Potgietersrus (recently renamed Mokopane) in the Limpopo Province of South Africa (Fig. 1). The Makapan Valley has developed on the western flank of an isolated 19km long north-south spur of the Strydpoort range, separated from the main range by a gap of some 5km at the Gompies or Nkumpi Dam near Zebediela (Fig. 2). The main Strydpoort range trends east/west, and joins the Mpumalanga Drakensberg some 64km to the east, in the vicinity of Woodbush-Haenertsberg. North of the spur lies the Pietersburg Plateau with its false grassland.

The Strydpoort and its spur, together with the adjacent Maribashoek and Buffelshoek mountains, form a slender high lying western extension of the moist-temperate and high-lying Mpumalanga Drakensberg into the warmer, drier and less elevated bushveld of the central Limpopo Province.

Small patches of relict forest in protected kloofs along its length provide a 'stepping stones' type of migration route for forest and 'mesic' species of plants and animals across the hot and dry surrounding territory. As the mountain range is very ancient, this

was probably also true of the past. This topography has allowed for the migration and establishment of facies of two distinct floras, the one of northern tropical origin, and the other of southern temperate origin.

The island of mountainous country, approximately 19 km long and 10 km wide, is sometimes referred to as the "Makapansberg" (e.g. Walton 1984).

The highest point of the Highlands is 2040m (approximately 6700ft), located some 6.5km southeast of the Makapansgat Limeworks at the eastern corner beacon between the farms Spanje and Portugal. The eastern edge of the escarpment drops sharply to the bush-covered plains below, at 1090m, which extends through the Nkumpi Gap onto the vast expanse of the Springbok Flats to the south.

Local setting

The Makapan Valley itself is situated on the western flank of the Highlands Mountains described above. The western slopes are less dramatic than the abrupt escarpment on the east, but because they are highly faulted, dissected and broken, give rise to magnificent scenery. Fig. 3 shows the southernmost of the two upper arms of the Makapan Valley: the Makapan Cave Valley, terminated by a rugged cliff 90m (365ft) high, exposing the resistant Black Reef Quartzite cliffs which form a nickpoint at the head of the valley. The Makapan stream, locally termed the 'Mwaridzi', plunges in a 55m waterfall over the lowest part of the cliff into the valley, ultimately to join the Dorpspruit which is confluent with the Mogalakwena River near Potgietersrus.

Above and beyond the cliffs the *Protea*-covered quartzitic mountain slopes rose to 2040m (6700 ft) 6.5 km (4 miles) to the south-east. The waterfall drops into the dark patch of relict sub-tropical evergreen forest (Fig. 4).

Geology

The rugged topography of the surrounding country is primarily controlled by the tilting and faulting of the Precambrian Malmani Dolomites and Black Reef Quartzites of the Transvaal Supergroup. The Malmani dolomite overlies the Black Reef Quartzite but because of its greater susceptibility to weathering, has entirely eroded away along the escarpment east of the valley, leaving the quartzites to form the rugged crests of the mountains thereabouts (Figs.5,6).

The ancient Limeworks cavern and indeed all the caves of the Makapan Valley have developed within the Malmani Dolomite, or result from dissolution of dolomite from under substantial but relatively insoluble chert bands. The Malmani Dolomite host rock is ca. 2.55 billion years old (Walraven 1990) whereas the cavern infills themselves span the last ± 4 million years.

Caves in the dolomite come about through dissolution by acidic sub-surface water.

General structural and local geology

The primary control on the geomorphology of the Makapan Valley has been structural: the initially horizontally bedded sediments of the Transvaal Supergroup have become tilted and basined by the titanic weight of the intrusive subterranean Bushveld Igneous Complex plutonics. This has given rise to a series of homoclinal ridges around the periphery of the outcrop, which dip (tilt) inwards towards the Bushveld Igneous Complex.

There have been several important effects of this underlying structural control:

An escarpment of erosion-resistant Black Reef Quartzite which rises to 2040 m (6700 ft) at its highest point, providing an altitude difference of over 915 m (3000 ft) from the monotonous plains of the Springbok Flats, which average only 1524 m (3500 ft) above sea level. (Note: the softer, soluble overlying dolomite has weathered back off the escarpment edge leaving the quartzite exposed).

The rise in altitude from the plains is sufficient to generate an orographic effect, producing an enhanced rainfall over the escarpment which today falls within a 'mist belt', with a rain shadow on the western side of the mountains and towards Potgietersrus (Mokopane). During the late summer and autumn the higher crests are often obscured in dense swirls of mist which somewhat reduces the marked seasonality of precipitation available to plants.

The altitudinal difference has given rise to a distinct zonation of vegetation types, with Afro-Alpine Fynbos vegetation along the highest crests including such genera as *Erica*, *Helichrysum* and *Protea*. This grades downwards into open to closed *Protea* woodland and temperate grassland (north-eastern mountain grassland). There are small patches of stunted temperate forest trees at higher altitudes. On the quartzites lower down, patches of

subtropical evergreen Afromontane forest often occur as islands in a sea of Sourish Mixed Bushveld savanna. Outliers of Kalahari-type vegetation occur in the hot drier valley of the Mogalakwena, near Potgietersrus.

Preferential weathering and erosion along the numerous faults and differential weathering of rock strata of varying resistance have produced an extremely broken topography and a variety of soil types.

The factors combine to provide an infinite variety of aspect, shade, altitudinal variation, temperature, wind exposure, complex geology and soils, rainfall and available water and hence a remarkable range of growing conditions, all within a radius of 16 km (10 miles) of the Makapansgat Limeworks. This in turn has been responsible for the growth and preservation of a wealth and diversity of plant species – a reflection of the steep ecological gradients along which many species can be packed.

Vegetation

The pronounced but nevertheless non-catastrophic climatic fluctuations since the Miocene and the persistence of relictual taxa in the many refugia offered by the local terrain are probably further factors contributing to the species-richness of the area: biomes and vegetation types spread and retreat with climatic shifts; each ebb leaving its relicts. In fact, the Strydpoort-Mpumalanga Drakensberg is a centre of exceptional species richness and endemism; it is part of the so-called Wolkberg 'Hotspot' (Cowling and Hilting-Taylor 1997). In the Makapan Cave Valley itself, nearly 800 species of plants are enclosed within an area of little more than one square mile (Maguire, B. 1978, 1980a and N.D.).

The mountain chain connection to the Mpumalanga Drakensberg (and thence, via the major river valleys to the tropical coast or via the mountains to the temperate Cape) and the valley corridor access to the tropical north are additional factors underlying the species richness of the area.

Combined, these factors have led to a wealth of natural resources for early people as well as for the animals they hunted. The regional plant and animal resource richness, all focussed in a relatively confined geographical area, probably accounts for its popularity as an occupational area from australopithecine times to the present. This is evidenced by the large number of Earlier Stone Age, Middle Stone Age, Later Stone Age, Iron Age and historical sites which occur in the region.

Within a 16 km radius of the Makapansgat Limeworks the natural vegetation includes a total of 135 edible plant food species, providing a total of 79 different fruits, 11 leaves, 16 underground parts and 21 gums (Maguire n.d., Peters and Maguire 1981).

At a few of the highest points along the Highlands Mountains in the sub-alpine belt between about 1919 m (6300') and 2042 m (6700') on the steep cool ridges and peaks of quartzite, a Fynbos-like vegetation composed of stunted or low-growing shrubs and shrublets occurs, reminiscent of the Cape Macchia. Below this, at about 1645 m (5400') and above, or on cool south-facing windy slopes lower down – a close to open protea woodland with the evergreen *Protea caffra* and *P. roupelliae* as dominants is found. Warmer slopes are covered with a sparsely-treed sour grassland.

A very rich herbaceous hydrosere, or vlei vegetation, accompanies the stream leading westwards across the plateau top to the cliffs at the head of the Makapan Cave Valley, with tree ferns in the adjacent drainage lines. This vegetation is particularly vulnerable to persistent fires and trampling by livestock in search of water.

Lower down, below the quartzite cliffs and in two deep, permanently-shaded kloofs nearby, a patch of relict evergreen forest and part-deciduous fringing forest occur, these areas being almost completely protected by the enclosing cliffs from fire. Relict forest is all on quartzite.

The less elevated country lying west of the cliffs is usually less broken and is covered with a vegetation belonging to the Sourish Mixed Bushveld. This comprises well-grassed open or closed woodlands, generally very mixed, frequently bushy and variably thorny (many *Acacia* spp) to non-thorny. It represents a mosaic of nutrient-rich and nutrient-poor savanna, with the thorny vegetation established on the nutrient-rich soils.

Land uses

Until 1994, the property was a productive agricultural unit. It was then expropriated by the local municipality in order to secure the water entitlements, with a view to exploiting the substantial groundwater reserves in the local dolomitic aquifer, to supplement serious water shortfalls in the town. Since then, the farm has remained fallow, and little has been done to alleviate the consequent impoverishment of the remaining labour tenants. The restrictions on development of water resources and a limited water quota (usage in excess of which has to be paid for at rates

determined by the Municipality) make is unlikely that farming, or even vegetable gardening, will ever be commercially viable.

II. ***Buffer Zone***

Around the property Makapansgat 39 KS (which is the proposed World Heritage Site), is an extensive 55 000ha area to be known as "The Makapan Highlands Conservancy" A multi-stakeholder public participation programme has been operating for some three years and a Constitution for the Conservancy has been negotiated with the several landowners and authorities who own or manage properties in the area. A Draft Constitution has been drawn up. Special measures aimed at preserving and protecting the heritage values of the Makapan Valley Heritage Area will be put in place, for example a fire protection association and anti-poaching measures, as well as the control of alien invasive species and protection of the natural vegetation.

The boundaries of the conservancy are shown in Fig 1d and 20 (Appendix 1), in relation to Makapansgat 39 KS, which forms the core.. The Conservancy will function as the Buffer Zone to the proposed World Heritage property.

III. ***Detailed descriptions of cave sites***

The Makapansgat Valley is unique in that preserved in its many caves, in the form of sediments, fossils and archaeological remains, is a record of occupation and resource exploitation extending from australopithecine times about 3.32 million years before present (abbreviated myBP) through to the present. This evidence forms the foundation of the South African archaeological sequence.

- Palaeontological sites

  Makapansgat Limeworks

  This is the oldest of the sites, spanning the time range from about 3.32my to about 1.6 myBP (Vrba 1987a). The Makapansgat Limeworks site (Figs. 7,8 and the Frontispiece) has yielded numerous fossil bones, amongst which are the scarce remains of the gracile australopithecine, *Australopithecus africanus*.

Buffalo Cave

This is an abandoned but richly fossiliferous Limeworker's prospect (Fig. 9). A small collection of fossils was taken from the breccias of this remnant cave deposit in 1937 by Dr R Broom. The breccias have yielded the remains of an extinct fossil buffalo, but the cave has been relatively little studied. Recent excavations undertaken by Kuykendall et al. (1993 onwards) have yielded a fauna indicative of Pleistocene rather than Pliocene age.

Peppercorn's Cave and Katzenjammer Cave

This cave is situated close to the once picturesque Makapansgat farmstead, and takes its name from the last tenant of the farm, Mr G R Peppercorn (Figs. 10, 11). The cave contains Iron Age and recent relics, and an underground lake once utilised as a source of water. This once-extensive body of water is known in the literature as "Peppercorn's Spring". The cave is also home to a large colony of migratory long-fingered bats, *Miniopteris schreibersii* whose populations country wide are declining. A hanging remnant of fossiliferous breccia can be seen adhering to the dolomite ceiling of the cave near the entrance.

Katzenjammer Cave, with its vertical entrance, lies a few metres from the mouth of Peppercorn's Cave. Some 15m of promising fossiliferous cave fill await investigation - see justification for inscription.

- Archaeological sites

Cave of Hearths and adjacent "Hyaena Cave'

The Cave of Hearths (abbreviated COH) preserves a record of human occupation from Earlier Stone Age (Acheulean) times in the oldest sediments through the Middle Stone Age, Later Stone Age and Iron Age (Figs. 12 and 13). Nineteenth Century settler relics such as brassware and musket balls were found at surface when excavations started.

In Africa, the Earlier Stone Age spans the period $\pm$2.4 myBP (Before Present) to about 200,000 BP, and the earliest bed at the Cave of Hearths preserves the stone tools and other debris left by early man who first occupied the site at around 400,000 BP. The overlying beds preserve an intermittent but

extremely long record of human occupation from ± 110,000 – 50,000BP and again from 10,000 – 5,000 BP, and from Iron Age times up to the present century. It appears from the evidence available at present that between 200,000 BP and 110,000 BP the COH remained unoccupied.

Fossils from the adjacent 'Hyaena Cave' where the sediment infill is of greater age, suggest affinities with the Limeworks; fossil remains of similar primitive hyaenas occur at both sites.

Rainbow Cave

This is not a cave as such, but a limeworkers' excavation which has broken through a floor travertine to provide a 'window' onto the sediments that accumulated on and against it (Fig 14). It lies immediately below the eastern chamber of the Historic Cave and contains the remains of what was once interpreted as a series of hearths, distinguished as a series of different coloured "ash" and sediment horizons the colourful banded appearance of which gave rise to the name of this little 'cave'. The Rainbow Cave in all probability represents the lower part of the infill of the eastern chamber of the Historic Cave. The exposed sediments have yielded Middle Stone Age artefacts of the Pietersburg culture, in the age range of ± 110,000 – 50,000 BP. It also contains fossils. Research using modern techniques is currently in progress to determine the cause of the multi-coloured layering.

Equus Cave, Python Gully Cutting

These are Limeworkers' prospecting drives, the latter situated on the Python Gully (Fig. 12) side of the Cave of Hearths-Historic complex. Both have yielded Middle Stone Age artefacts. They remain archaeologically unexplored.

The COH and Hyaena Cave, Historic Cave, Equus Cutting, Python Gully Cutting and Rainbow Cave together form part of a single interconnected large cavern complex, different portions of which were open to the surface and available for occupation at different times, and providing an extremely long occupational record spanning at least 400 000 years.

Mwaridzi Terrace

This is an open site on the left bank of the Mwaridzi stream.

Open Sites

There are many dozens of open sites, most of them unexplored – see Appendix I, Fig15 a,b.

Ficus Cave and Ficus Iron Age Site

The Ficus Cave takes its name from the drape of fig-tree roots (*Ficus thonningii)* which attractively curtain its entrance (Fig. 16)). The cave contains Iron Age and 19th Century relics, a large bat colony and an underground lake of fluctuating depth. An Iron Age site in the saddle between the Ficus Cave ridge and a small isolated hillock directly opposite the entrance, preserves occupational debris dating from ± 550 AD (early Iron Age), ± 870 AD, and ± 1560 AD (Moore 1981), as well as relics of Late Iron Age inhabitants who used the site immediately prior to white settler occupation. The slopes adjacent to the saddle are artificially terraced and archaeological finds include potsherds (numbers of them decorated), querns (gringstones), hammerstones, slag, ore, tuyere and furnace fragments and beads.

The southernmost extent of the Iron Age settlement extends at least as far as the stream course and possibly even across to the agricultural lands where ploughing may have disturbed some of the evidence.

- Historical sites

Historic Cave, Makapansgat or Cave of Gwaša

The Historic Cave lies immediately adjacent to the COH and preserves Iron Age and Mfecane relics, but is historically most famous as the scene of a clash between a Boer Commando and Ndebele people (Fig 17)). Chief Makapan (Mokopane), together with a large number of his tribes-people and their livestock, were besieged in the cave for nearly a month between 25 October and 18 November 1854, during which time many died of hunger and thirst or were shot by the Boers – see History, below.

The location of these caves and localities within the Makapan Valley is shown in Figure 15, Appendix 1. Such is the interest and significance of this valley and its sites that many members of the international archaeological and palaeontological academic community have at one time or

another beaten a trail up the valley.The Visitors' Book formerly kept by Mr Peppercorn makes interesting reading.

b. History and development

- ***A brief history of discoveries and research in the Makapan Valley***

  In 1925, a local teacher of mathematics from Pietersburg High School, Mr Wilfred I. Eitzman, stimulated by the press publicity surrounding Raymond Dart's controversial claims for the Taung ape-man (the Johannesburg *'Star'* used to run a letters-to-the-Editor column entitled *'Hammer and Taungs'*), crated up and sent to Prof. Dart a selection of fossiliferous breccia blocks which he had collected from the hillside near the Makapansgat Limeworks lime-kilns. These contained many fossil antelope bones and some blocks revealed numerous blackened bones. Eitzman's enthusiasm and action served to precipitate scientific interest in the valley. Dart, suspecting that the blackened bones might have been burnt prior to fossilization, sent specimens for chemical analysis. This test returned a 'free carbon positive' result, suggesting that the bones had indeed been burnt. This information, together with the kitchen-midden like quantities and variety of broken fossil bones, and given the geological context of the fossil deposit (an ancient cavern) prompted Dart (1925b) to describe the Makapansgat Limeworks as 'A site of early human occupation', even though at the time no human remains or even stone tools had been found at the site. The notion or preconception that the Limeworks and Makapan Valley represents the hub or focus of australopithecine habitation and activity dates from this initial 1925 paper.

  Scientific interest in the valley next shifted to the Cave of Hearths, situated immediately adjacent to the historically famous Makapansgat or Historic Cave about 1½ km from the Limeworks. Mining records indicate that the existence of travertine deposits at the Cave of Hearths was known but that the deposits were still untouched in 1917. Some time thereafter, the travertines were exploited, reserves being exhausted by 1935. In 1936, the Historical Monuments Commission was asked to consider declaring Makapan's Cave a National Monument, and Prof. C. van Riet Lowe, secretary member of the Commission and Director of the Archaeological Survey of the Union of South Africa, visited the site in January 1937. He inspected the hillside site and, immediately adjacent to the Historic Cave found an abandoned limeworker's adit which cut through calcified cave infill to intersect with the sought-after floor travertines. In the fossiliferous and

artefact-bearing infill which had been thus exposed, van Riet Lowe noticed stone tools and what he took to be ash horizons representing the remains of ancient hearths. After initially referring to the site as the 'Makapan Cave' he later renamed the stone tools site and its remnant deposits 'The Cave of Hearths' (van Riet Lowe, 1938, 1943).

Further visits were made during June and October of 1937, and it was during the latter visit that the Rainbow Cave was discovered. In 1938, van Riet Lowe published the first scientific account of the site and Prof Dart and Robert Broom visited the valley. The were accompanied by H.B.S. Cooke, then of the geology department at Wits, who conducted a pioneering geological survey of the area (1941), followed later by that of L.C. King (1951).

The outbreak of World War II in the following year effectively put an end to plans for systematic excavations.

After the war, a student expedition of July 1945 led by Phillip Tobias, himself then a student, once again focused interest on the valley. The students were able to establish that the sites from which Eitzman had originally collected the breccia blocks containing the blackened bone mentioned earlier and the site investigated by van Riet Lowe (the COH), were entirely separate. During this expedition, the students also 'discovered' and for the first time recorded the 'Hyaena Cave' (which they originally called the 'Right Cave'), adjacent to van Riet Lowe's site. Further down the valley, from a cave adjacent to the Limeworks, they collected a large fossil horse's mandible, from which the 'Horse Mandible Cave' was later to derive its name. Members of the expedition also found and collected primitive fossil baboon skulls strongly reminiscent of those previously discovered at the Taung and Sterkfontein ape-man sites.

These events and discoveries in the Makapan valley led to a research grant being made available by Dr Bernard Price and reawakened Dart's enthusiasm for Palaeoanthropology. Systematic excavations commenced at the Cave of Hearths in 1947, field work there being carried out by Guy Gardner, James Kitching and his two brothers Ben and Scheepers, one of whom (Ben) soon found a hominid (*Homo heidelbergensis)* mandible in the breccia they were excavating (from Bed 3). In 1953, Dr R.J. Mason joined the excavating team and was placed in charge of the field operations. The most significant part of the excavation was accomplished during 1953/1954, by which time the stratigraphic sequence has been determined (Mason 1962, 1988). Mason's excavation was the first fully excavated and published South

African site preserving Early Stone Age, Middle Stone Age, Later Stone Age and Iron Age sediments, faunal remains and artefacts.

Meanwhile, James Kitching and his brothers, while fossicking about on the fossiliferous dumps at the Limeworks during an off-duty weekend during September 1947, discovered the hindmost portion of a braincase of an ape-man lying on a dump of discarded breccia. The specimen was made the holotype of a new species, *Australopithecus Prometheus*, by Dart (1925). All australopithecine material recovered from the Limeworks was later referred to as *A. africanus*, it being considered synonymous with the earlier-discovered 'gracile' or lightly-built australopithecine from Taung (Dart 1924/25) and Sterkfontein (Broom 1936).

After this significant find, Dart organised for the Limeworker's dumps to be hand-sorted in order to recover as much fossil-bearing material as possible. There followed an intensive campaign of field work led by staff and students of the Anatomy Department – (notably Alun Hughes) and the Bernard Price Institute for Palaeontological Research. Today, there are between 250 000 and 300 000 fossil bones from the site.

After the passage of some years, the dumps have been largely cleared, a stratigraphic sequence for the Limeworks deposit established and a broad chronological sequence reconstructed. Most of the identifiable fragments have been identified, and an extensive list of fossil fauna – macro and micro – compiled.

B. Maguire (1965, 1968, 1980) collected foreign lithic materials introduced into the cave deposits, some of which were found embedded *in situ* in the uppermost breccia layers. These he interpreted to represent rudimentary stone tool-making activities evidenced during at least the terminal phases of breccial accumulation i.e. at around 2.3-1.6 myBP.

Many thousands of fossil faunal bone fragments have so far been recovered from the Limeworks breccias. On the basis of an analysis of 7,159 of these, Dart (1957) concluded that *Australopithecus prometheus*, in an era before stone tools were used, had manufactured and used implements made from bone, tooth and horn, naming it the 'Osteodontokeratic Culture'. In all, he published over 60 articles dealing with the lifestyle and culture of the australopithecines.

Controversy is of course the fuel of all scientific investigation, and Dart's imaginative claims about the hunter-killer-bone-tool-using-ape-man received worldwide attention through popularisation in

Robert Ardrey's books 'African Genesis' (1961) and 'The Hunting Hypothesis' (1976). Dart's claims were directly or indirectly responsible for prompting a wide range of innovative research in fields as diverse as taphonomy, ethology, archaeology, primate research, carnivore behaviour and cave sedimentology, indirectly providing research careers for large numbers of graduates.

Resulting from these studies, new ideas and concepts have developed, and the problems surrounding the context of the Makapansgat Limeworks bone accumulation and its origin can now be more precisely articulated than was possible 50 years ago when first researchers were initiated. Work is ongoing at the Makapansgat Limeworks, Buffalo Cave, Cave of Hearths, Historic Cave and at selected open sites.

- ***History and Development of the Makapan Valley Heritage Site***

The first historically documented event in the Makapan Valley itself was the siege of Makapansgat, and the events leading up to it. At this time (1854), there was a small settler village on the present site of Potgietersrus (soon to be officially renamed Mokopane) known as Vredenburg ("Peace Town"), named thus to commemorate the peace accord which had been reached between two factions of squabbling Boers and their leaders. It was subsequently renamed in honour of Piet Potgieter, who was killed during the siege at the Historic Cave or Cave of Gwaša, and buried at the town. The Makapansgat punitive expedition contributed toward a further souring of settler-black relations and the town was sacked in January 1868, the surviving settlers fleeing to the nearby settlement of Marabastad. Returning settlers were once more evacuated in 1870 due to malaria. Only in 1890 did whites return to settle in the town; the intervening 20 years are a blank.

A little earlier, on 31st August 1871, gold had been discovered by a prospector named Edward Button at Eersteling ("Button's Kop" adjacent to Makapan Valley) and was being actively worked, the primitive gold-crushing equipment being recorded in the artwork of Thomas Baines who visited the site in 1871.

The area was visited in the early 1880's by the itinerant photographer H R Gros, who photographed Makapan's Kraal at Twenty-Four Rivers. There are three contemporary photographs of the Makapan Valley: two of the Historic Cave and one of the Makapan Cave Valley, photographed in 1883.

The massively destructive rinderpest outbreaks of the 1890's had decimated the livestock of the indigenous peoples as well as a huge percentage of wild bovids. Stock and game numbers were reduced by about 95%.

The epidemic peaked in 1896 and as a consequence of this, impoverished Shangaan and Tsonga people moved into the area from the Mpumalanga Lowveld, to produce a complex juxtaposition of Pedi, Ndebele (themselves earlier immigrants), Tsonga and Shangaan. The currently resident Maluleke clan is Shangaan.

In about 1905, the local Ndebele chief, Johannes Kekane, occupied the lower, western part of the Makapan Valley, having moved in from Zebetiela (Zebediela). The tribal identity of the people who occupied the valley in the 19th century is uncertain.

In about 1911, geologists Kynaston, Mellor and Hall mapped the Makapan Valley, noting the kraals of Chief Kekane's descendants who still populated the valley and parts of the adjacent De Hoop farm.

The farm Makapansgat 39KS was prospected and then systematically exploited for its limestone or travertine deposits by the White Limes Ltd., from shortly after the cessation of hostilities created by the Anglo Boer War in the early years of this century.

The limestone deposits that were mined represented the thick travertine floors, wall deposits and roof decorations of a series of ancient caverns found along the flanks of the Makapan Valley which had formed in the Malmani Dolomite host rock underlying most of the farm. This lime-mining industry continued until about 1936, when the price of lime fell due to the worldwide economic recession of the 1930's and the fact that richer and more readily accessible sources of lime elsewhere had come into production. By that time, in any case, most of the economically payable deposits in the Makapan Valley had been worked out and the Limeworkers abandoned their operations, leaving behind spoil heaps which included numerous fossils. A series of large dumps of processed lime also remains. It was the efficient prospecting and active mining operations of the limeworkers that exposed the palaeontological and archaeological riches of the valley, and enabled the recognition of the scientific potential of the area. (See section 3b(i)).

In the early years of the 20th century, somewhere between 1907 and 1914, white commercial farming began in the valley, the railhead having reached Potgietersrus in 1895. In the early 1930's

Mr G. Cole-Kemsley having relinquished his share, the farm became the sole property of a Mr John Hamilton, who legally entailed the property on one of his daughters, Mrs Mary Bonamour. The entailment in effect imposed a moratorium on the sale of the property for three generations, which was due to expire early in the second millennium (ca 2007). Mrs Bonamour herself was never resident on the property; it was leased to Mr Gordon Peppercorn who farmed there successfully from 1946 onwards.

The entailment period was in fact never reached. Prior to this date the farm was expropriated in the National Interest, i.e. it was bought out by the Potgietersrus Municipality (now Mogalakwena Municipality) and Mr Peppercorn was given notice to vacate the farm. The reason for the purchase was that the Municipality wished to acquire legally the water rights to the farm on account of a significant water shortfall in the town. This shortfall is to be supplemented in future by groundwater pumping from a number of dolomitic farms within the Makapansgat-Weenen Water Compartment. Several other farms were also purchased in order to secure their water entitlements. A new well-field for the abstraction of groundwater has already been established on Ettrick (portion of Weenen, adjacent to Makapan Valley) and the area (including Makapan Valley) has been declared a Groundwater Management Area with a system of water permits. Extensive groundwater abstraction is a threat to the site.

Mr Peppercorn auctioned his moveable assets in March 1994, vacating the property in June of that year. A list of “legal” residents (all labour tenants) living on the farm was compiled by his daughter, Mrs Audrey Morris, at this time. Many families had vacated their homes prior to this date as they were no longer formally employed by Mr Peppercorn. Most relocated to Mahwelereng. Many families have since returned, as well as numerous other informal settlers.

The severance of the water rights having been effected, the seven “water farms” were put up for public auction on 24 November 1995, each with a modest water allocation. Any would-be farmer or purchaser utilising water over and above the allocation would have to pay the Mogalakwena Municipality (formerly The Transitional Local Council of Greater Potgietersrus) for it at their stipulated rate. Bidding on all the farms was slack, for Makapansgat particularly so. The climate and erratic rainfall dictates that Makapansgat, along with the six other “water farms” with severed water rights, are groundwater-dependant for their viability. The apparent value at the time of the auction was R660 000, the amount that the top bid for Makapansgat would have

realised. The current purchase price is unknown. The water allocation is now 5 370 kl per annum (source: C. Groenewald, Town Engineer, 1999), but the current Municipality wishes to further reduce this to 660 kl per annum. The farm was not auctioned and remains the property of the Potgietersrus TLC. (The water allocation on the Public Auction Notice, dated 1995, gives a quota of 6 955 kl per annum). The land given to Wits was excluded from the area on offer at the auction.

The decision to acquire the farms at considerable expense specifically for the water rights and with the intention of pumping the groundwater for water-stressed Potgietersrus is likely to be a central issue in any decisions taken regarding the long-term future of Makapansgat. However, even if the prime consideration is the groundwater, its usage will have to be balanced against the knowledge that dewatering will destabilize the cavitous substrate and cause ground subsidence and sinkholes, as well as lower the water table, perhaps permanently.

Since Mr Peppercorn left in 1994, the farm has been increasingly the target for informal settlement, although there were a few "legal" families when Mr Peppercorn vacated the property. The plunder and vandalization of the farmhouse and its gardens, outbuildings and kraals has further diminished its value as a farming proposition. There is no other dwelling house on the property, the manager's thatch-roofed house having burnt down in 1991. All items such as doors, light fittings, the Aga stove, sinks, shelves, etc. have been removed from the farmhouse rendering it non-habitable in its present state. Indiscriminate firewood collection for commercial gain (Fig. 18 and 19) and tree chopping for fuelwood remain an ongoing threat. Operating boreholes have been decommissioned in order to discourage water "theft".

The lack of sanitation poses a health threat to the Makapan Valley residents, and will ultimately pose the risk of groundwater pollution.

c. Form and date of most recent records of property

The Makapan Valley Master Plan – submitted and approved by the South African Heritage Resources Agency, Limpopo Province, January 2000. Also submitted to the World Heritage Committee, February 2003.

The Provisional Management Plan, entitled "Summary Document" – submitted and approved as above. Submitted to the World Heritage Committee February 2003.

The Business Plan – Edition 5, February 2003. Submitted to the World Heritage Committee January 2003.

All three of the above documents were submitted together with the original Nomination Dossier submission in February 2003, to the World Heritage Committee.

- Research publications

  See bibliography, Section 6b. Repository is the Library of the University of the Witwatersrand

- Theses

  See bibliography, Section 6b. Repository is the Library of the University of the Witwatersrand

- Master Plan and Management Plan

  See documents 1 (Master Plan) and 2 (Provisional Management Plan) appended as annexes to the original submission to the WHC, February 2003.

  Document 1: Makapansgat: Makapansgat Valley Heritage Site Master Plan Development (Includes Management Plan).

  Document 2: Executive Summary (of above document).
  Repository: Secretariat of the Makapan Management Committee. For contact details see section 6d (I).

- Catalogue of Palaeontological specimens

  Housed in the Bernard Price Institute for Palaeontological Research, University of the Witwatersrand, Johannesburg
  Contact person: Dr M.A. Raath (for contact details see section 6d(i))

- Catalogue of archaeological specimens

  Housed in the School of Geography, Archaeology and Environmental Sciences, University of the Witwatersrand, Johannesburg.
  Contact person: Professor L. Wadley (for contact details see section 6d(i)).

- Catalogue of recent mammals

  Housed in the Bernard Price Institute for Palaeontological Research, University of the Witwatersrand, Johannesburg.
  Contact person: Dr M.A. Raath (for contact details see section 6d(i).

d. Present State of Conservation

The Master Plan mentioned above describes in detail the present state of conservation of the various heritage assets of the Makapan Valley. All of the hominid sites are situated in abandoned lime quarries which are inherently unstable.Site instability is the product of both natural and ongoing weathering processes as well as instability caused by lime-mining or archaeological excavation. The latter has usually been stabilised as far as is possible. Wherever possible, unstable areas have been professionally propped in order to prevent collapse of unstable sediments. Witness sections have been left where portions of deposit have been excavated, in order to preserve site significance and in order that independent verification of research results can be oibtained. Natural weathering is a risk, as well as the natural tendency of the local dolomitic rock to part along its bedding planes. Visitors have been excluded from dangerous overhangs, unsupported roofs and friable deposits.These are demarcated as "no-go" areas.

All artefacts and fossils recovered from the site are curated and stored in the collections at the University of the Witwatersrand, which are under the care of a full-time professional Collections Manager.

- ***Conservation of Heritage Resources***

  - Five of the site complexes within the valley had former former National Monument status
  - The entire property was given National Heritage Site status in December 2001, bringing it under the control of the South African Heritage Resources Agency (SAHRA) at the National Level
  - The Management of Research: Excavation or disturbance of any aspect of the site or collection of fossils may be undertaken only after SAHRA has approved the programme and issued a permit. The Makapansgat Research Advisory Committee scrutinises, approves (or otherwise) and monitors research proposals, fieldwork and progress.
  - SAHRA and the Department of Environmental affairs monitor sampling procedures at heritage sites and research involving the natural environment respectively.

- SAHRA approves the repository of fossil and archaeological finds
- SAHRA places restrictions on the export of fossils. The sale of indigenous fossils is prohibited in South Africa.
- Archaeologically and palaeontologically sensitive areas are behind physical or psychological barriers. All tourists are accompanied by trained site guides.

- ***Conservation of Natural Resources***

  The entire property, being a National Heritage Site, is under the control of SAHRA, which, using the National Heritage Act (No 25 of 1999) legislation as a tool, provides good site protection. The present state of preservation of natural Resources is documented in the Master Plan. The risks are fires, poaching, collection of medicinal plants, theft of firewood, alien invasive plants and "subsistence plunder" by resident communities. Management strategies for most or all of these risks to the natural environment have been put in place and these have been described in the Master Plan. Local business has provided two security cum game guards, and SAHRA has organised access control by providing an access control point with a boom. Eight heritage site monitors assist with the patrolling and management of the site. A National Programme called "Working for Water" provides funding for the eradication of invasive aliens, and the various members and landowners of the conservancy have formed a fire management association to co-operatively control fires.

  The local Municipality has promised assistance with formal housing for the local residents and possibly basic services.

  An application to government for funding to control invasive alien vegetation has been submitted. Work parties will be organised by Provincial Department of Environmental Affairs, which governing body has a representative on the Makapansgat Management Committee.

e. Policies and programmes related to the presentation and promotion of the property

- Business plan

  The most recent business plan is Appended as a separate document – Document 3. (This has already been submitted with the original documentation sent in February 2003)

- Proposed developments

  Development priorities

  The South African National lottery has recently (in July 2003) awarded R16,6 million towards the development of the property. Development projects have been fully or partially funded by the National Lottery award, and work has already started: The following items are priorities for attention.

  - The Visitor Interpretative Centre

    The Peppercorn Farmhouse area will serve as a focal point for the planned construction of a series of interpretative displays, a museum, an auditorium, a fossil preparation area and display, an outdoor exhibition area as well as a restaurant, picnic area, ablution facilities and caretaker's cottage. What is envisaged is a world-class Visitor Centre, which will attract both local and overseas tourists to the Makapan Valley. It is planned that the building itself will form part of the narrative.

    Siting the centre at the Peppercorn Farmhouse has several advantages:

    - Infrastructure such as electricity, water supply and telecommunications already exist
    - A number of existing buildings can become integrated into the overall development plans
    - It will ensure that the remainder of the valley remains as protected and unspoilt as possible, allowing the context of the heritage sites to be preserved. It is in an area already much altered by development
    - It is easy of access
    - The Peppercorn Site provides a magnificent outlook across the ridged dolomitic landscape typical of the area. Steps should be taken to ensure that the visual aesthetics of this vista remain unspoilt
    - The strategic location of the site will ensure easy access not only to tourists but also to the resident community and facilitate the development of community-based tourism products.

  - Guide Training programme and Heritage Site Monitor training programme

A programme to train site guides drawn from the local resident community is already underway. Sponsorships for students have been provided by a local Mining Company and training expertise by a local Tourist Guide training academy - Drumbeat Academy. The stipend paid to the tourist guides and heritage site monitors is sponsored by the Mining Company - African Minerals/Southern Era Mining Company.

- The Gateway

  The Gateway will serve the dual function of announcing and introducing the Valley as well as proving a much-needed control on entrance and egress to the sites. The gateway will be sited to give maximum control on access without hindering the movements of local landowners.

- Tourist infrastructure at the Makapansgat Limeworks

  This will include an extendable car-and bus-park, walkways and viewing platforms, shelters for interpretative displays, an outdoor boma where groups can be addressed and ablution facilities. All infrastructure will be constructed in such a way to ensure that no potentially productive areas or areas required for future access to parts of the deposit are permanently compromised.

- Tourist infrastructure at the Historic Cave and Cave of Hearths area

  - The original visitor car-park will be upgraded to accommodate mini-buses
  - A pathway, boardwalks, viewing platforms and signage will be installed
  - Safety installations, such as handrails, steps and ramps sill be provided.
  - Erosion and rain wash control measures will be undertaken to protect the highly erodable steep slopes.
  - The roads linking the Visitor Centre, the Makapansgat Limeworks and the Historic Cave will be upgraded.

- Social Impact Study

  A further development priority requirement for a Social impact Assessment. The presence of impoverished residents, former labour tenants whose livelihood was destroyed when the once productive agricultural land was expropriated by the local Municipality for its water, remain a potential threat to the

environment. Subsistence activities in the form of unauthorised woodcutting, grazing and muti-plant exploitation as well as poaching and snaring pose ongoing environmental threats. Outsiders are also involved in these activities (notably grazing of cattle), emphasising the need for access control. The lack of adequate sanitation creates the potential for groundwater pollution.

Funds to undertake this crucial study have been allocated but not yet released.

Capacity-building measures will be built into all development programmes, including training in bricklaying, paving, tiling, plastering and landscape gardening.

- Social and other benefits of the Makapan Valley Project
  - Social benefits and community development
    - Capacity building and training of selected members of the local community to become trained as Heritage Officers and Monitors.This process has already been successfully implemented by SAHRA
    - Selection, training and employment of local residents as tourist guides (process already initiated); initially as site – specific guides, later for special interest trails and tours (e.g. muti plants, food plants)
    - Inclusion of local community into hospitality industry (bed and breakfast accommodation), using on-site local villages as the venue
    - The incorporation of local community into an exploration of “Living Heritage” by showcasing vernacular architecture and surviving traditional cultural practices
    - Incorporation of local community into the tourism industry as providers of inter-site transport
    - Training the employment of local community in the building programmes associated with the proposed developments (Phase 1), as pavers, tillers, plasterers and various other building-related activities. A capacity-building requirement is built into the Terms of Reference document for the developers
    - The training and employment of local people as field assistants in various ongoing research programmes (process already initiated and in use)
    - Training and employment of local community as excavators and field assistants in fossil and

archaeological recovery projects (process initiated and in use). The requirement to train and use local people is built into the management of research programmes
- The increased tourism expected once the sites are fully opened will provide an improved market for local crafts and products
- Training the capacity building within the community with regard to monitoring, regulating and the participatory management of plant resources
- The envisaged establishment of nurseries in order to grow suitable species of medicinal plants for commercial purposes. This could provide a viable income for local inhabitants
- The training of knowledgeable local residents as rangers and environmental monitors. This training is already in progress: the S.A. National Parks accredited SAQA-NQF standards are being applied in the training of 5 new site monitors
- Increased tourism will create jobs in several categories. It is one of the guiding principles of the Project management to uplift the local community in as many ways possible, and to spread the benefits as widely as possible
- The new development will provide a recreational facility for local and surrounding communities
- The museum and associated educational programmes will enhance educational opportunities for the thousands of schoolchildren in the surrounding areas. Syllabus-related worksheets and displays are planned, as well as the use of the valley as an "outdoor classroom"
- Local people will be trained as educational officers who are capable of teaching in local vernacular languages
- Project will be a showcase for local people's remarkable skills
- Improved sanitation will have to be introduced
- Improved water reticulation
- Implementation of poverty relief programmes, e.g. the eradication of invasive aliens, working for water, firebreak cutting, etc.

- Engineering and technical benefits

  - Plans for improved sanitation
  - Plans for improved water accessibility
  - "Best practise" waste management and pollution control
  - Improved access, roads, culverts, drainage, etc.

- Ecological and environmental benefits

  - Plan for catchment management (when the buffer zone conservancy is fully operational)
  - Development of an integrated environmental management plan
  - Control of invasive alien vegetation, with skills transfer to allow ongoing environmental monitoring
  - Improved sanitation and waste management
  - Control and monitoring of illegal poaching, snaring
  - Plant resource management, skills transfer in this area
  - Preservation, monitoring and showcasing biodiversity
  - Erosion control measures.

- Business benefits

  - Increased tourist numbers and cash flow in local area
  - Markets for local traders and craftspeople
  - Hospitality industry can expect to improve
  - A diverse tourist product not readily available elsewhere: - a combination of natural beauty which is largely unspoilt, a “game” experience and African Heritage from over three million years ago to the present, all in the same area.

  This tourist icon will be a stimulus to local business.

- Heritage benefits

  - The preservation, presentation, interpretation, monitoring and management of heritage resources
  - Presence of the museum and educational facilities will stimulate and encourage heritage awareness in the area.

SECTION 4: MANAGEMENT

As a serial nomination, it is realised that this section should be common to all components of the serial site cluster. However, the three component sites which it is hoped, will eventually form the ensemble, are situated in three widely separated provinces in South Africa, each with a different combination of structures dealing with heritage. Management issues at the three sites differ widely. There is as yet no common management regime for all parts of the serial nomination, but it is something of which the provinces are aware, and working towards. It is envisaged that each Province and Site Management Authority will nominate members for the joint World Heritage Property Management Committee. The structure and terms of

reference of such a committee have not yet been decided, but it is envisaged that its function would be to streamline inter-site managemnt, to discuss common management problems and to function as a communications forum for the three widely separated sites. The equitable sharing of the benefits of increased tourism is another issue that will requirediscussion with care being taken that no one Province acts as the tourist sump, depriving the other two. Joint funding proposals is another issue requiring discussion, as is the sharing of heritage-based skills, which are very thin on the ground..

As the envisaged joint management structure does not yet exist, the following Management comments therefore refer specifically to the Makapan Valley Site.

a. Ownership

The issue of ownership of the property may be summarised as follows:

- On 25 July 1994 the then Town Council of Potgietersrus resolved to donate two portions of land with the connecting road between the two portions of the farm Makapansgat 39KS as indicated on the map attached [to the resolution] to the University of the Witwatersrand, Johannesburg in terms of the provisions of section 79 (16) of the Local Government Ordinance, 1939 (Ordinance 17 of 1939) for research purposes.

- The University of the Witwatersrand, Johannesburg accepted the donation creating a contractual right to the two portions of the remaining portion of the farm Makapansgat 39KS indicated.

- Transfer of the entire farm into the Town Council's name was only effected on 15 August 1997, thus delaying the transfer into the name of the University of the Witwatersrand, Johannesburg.

- Before transfer of the two portions of the remaining portion of the farm Makapansgat 39KS into the name of the University of the Witwatersrand, Johannesburg could be effected, the Town Council resolved on 19 July 1999 that the donation of two portions of the remaining portion of the farm Makapansgat 39KS to the University of the Witwatersrand, Johannesburg be held in abeyance until the Master Plan for the development of the area as a tourist destination compiled by Wits and the Tourism Board of the Northern Province has been completed.

- The Town Council resolved on 22 May 2000 that the Remainder Portion of the farm Makapansgat 39KS in principle be donated to the Department of Finance, Economic Affairs and Tourism, Northern Province for the establishment of a Cultural History

Reserve and a further report for the approval of a donation agreement be submitted to the council in due course.

- The Department of Finance, Economic Affairs and Tourism, Northern Province declined the donation.

- It was proposed that the Department of Finance, Economic Affairs and Tourism, Northern Province and the University of the Witwatersrand, Johannesburg explore a project to jointly develop the farm and that they approach the Town Council (now the Mogalakwena Municipality) with a proposal and agreement for consideration.

- The Department of Finance, Economic Affairs and Tourism, Northern Province (now the Limpopo Tourism and Parks Board) and the University of the Witwatersrand, Johannesburg have proposed a joint venture agreement and formed a section 21 company called the Makapans Valley Project whose Memorandum of Association describes its main business as “research, teaching, training and development of trade and tourism in its widest form”.

- Summary: The University of the Witwatersrand, Johannesburg has a contractual right to two portions of the remaining portion of the farm Makapansgat 39KS measuring some 77 hectare.

The remainder of the farm Makapansgat 39KS (measuring some 2143.0495 hectares) is still registered in the name of the Town Council (now the Mogalakwena Municipality). However, the ownership is encumbered by the University’s contractual right to the two portions of the remainder of the farm Makapansgat 39KS.

There is an expectation that the remainder of the farm Makapansgat 39KS (measuring some 2143.0495 hectares) will be donated by the Mogalakwena Municipality to the section 21 company Makapans Valley Project for the development of research and tourism in the near future.

b. Legal status and
c. Protective measures

The Makapan Valley is presently subject to a number of different legislative mechanisms that control land use, land development and environmental impacts.

Protective measures are the same as legal protection afforded the property under the National Heritage Resources Act, and other pieces of relevant legislation. Implementation of these protective measures are contained in the CMP (Conservation Management Plan) that would be

managed by the designated Management Authority and overseen by SAHRA. At present, the management of the site is through the Makapan Management Committee, which has been in operation since early 2001.

This legislation is primarily reactive and aimed at the protection of the area and the existing Palaeo-anthropological and archaeological sites, not the management or development of the area. The form this will take is discussed below.

- ***Legal status of Property: World Heritage Convention Act***

  The World Heritage Convention Act (Act No. 49 of 1999) provides for the enforcement and implementation of the World Heritage Convention in South Africa. It allows, *inter alia*, for the establishment of Authorities to safeguard the integrity of World Heritage Sites and for integrated management plans and other controls.

  The Minister of Environmental Affairs and Tourism is responsible for implementing the Act, but must consult with the Minister of Arts, Culture, Science and Technology and with interested parties [such as Limpopo Tourism and Parks Board and SAHRA] when establishing an Authority. An Authority is a juristic person with a Board that may be appointed by the Minister to manage a world heritage site if the Minister deems it necessary. An existing organ of state that is already managing the site may be declared an Authority (for example, the Makapansgat management Committee, which will shortly be under the proposed Section 21 Company's aegis - see section 4a.. The Heritage Act specifies the powers and duties that may be given to such an Authority and its executive staff component.

  Every Authority must prepare and implement an integrated management plan for the world heritage site under its control (Section 21). The plan must be submitted to the Minister for approval within six months of the establishment of an Authority. Approval of the plan must also be sought from the Minister of Arts, Culture, Science and Technology and the Council of SAHRA. The plan must be reviewed and amended as and when necessary. Provision is made for the Minister to prepare model integrated management plans and norms and standards in consultation with the Minister of Arts, Culture, Science and Technology.

  An Authority is required to submit an annual report to the Minister that includes an assessment of the implementation of the management plan and information about the extent to which the Authority succeeded or failed to meet its obligations in terms of the

World Heritage Convention, the Operational Guidelines and the World Heritage Convention Act.

- ***Legal status of property: National Heritage Resources Act***

  In 1936, the Cave of Hearths was declared a National Monument in terms of the old National Monuments Act. This was followed by National Monuments status for the cave known variously as Makapan's Cave (Makapansgat in Afrikaans), the Historic Cave or the Cave of Gwaša, Rainbow Cave and Makapansgat Limeworks in 1937.

  Subsequently, the Ficus Cave, Ficus Iron Age Precinct and Peppercorn's Cave received National Monument status (1999).

  When the National Monuments Act was superseded by the National Heritage Resources Act (Act No. 25 of 1999) on 1 April 2000, all national monuments became provincial heritage sites. These sites remain protected and may not be disturbed or altered without a permit from the South African Heritage Resources Agency (SAHRA), which is the statutory body responsible for implementing the National Heritage Resources Act. At the time of writing, the heritage resources authority responsible for the monitoring and management of provincial heritage sites is the provincial heritage resources authority of the Northern Province. This provincial authority has not yet been formally established and the work in the province is being done by the SAHRA Provincial Manager. In future, the PHRA or Provincial Heritage Resources Agency will oversee heritage protection.

  In view of the significance of the Valley and its Heritage Sites, it was recommended to the SAHRA Council in November 2001 that the entire Makapan Valley Heritage Site, in other words, the entire farm Makapansgat 39KS, be declared a *National* Heritage Site. At a Council Meeting on 28-29 November 2001 Makapan Valley and another site in the Northern Province, Mapungubwe, were the first sites in South Africa to be approved in principle for National Heritage Site status under the new legislation. Makapansgat is now formally Gazetted as a National Heritage Site, see Govt. Gazette no.23932 for 28 June 2002 - copy in Documents Appendix VI. As a national heritage site, the national office of SAHRA will be responsible for its protection - not the Provincial..

  In terms of the National Heritage Resources Act, there are several implications for places that are declared National Heritage Sites.

- Section 27 of the National Heritage Resources Act specifies that:

  (4) a written motivation for the declaration must be prepared and kept on record by SAHRA;
  (5) SAHRA is responsible for the protection of national heritage sites;
  (18) No person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any national heritage site without a permit issued by SAHRA;
  (6) SAHRA may make regulations, with the consent of the owner, to safeguard the site, to specify conditions of use and development, and to regulate the admission of the public, including fees.
  (7) Any branch of the State or supported body which is the owner of a heritage site [in the case of Makapan Valley this would be the Section 21 Company] must maintain it according to a minimum standard and according to a procedure prescribed by SAHRA after consultation with the relevant Department of Works.
  (8) SAHRA may, by agreement with the owner, conserve or improve any national heritage site, construct fences, walls or gates around it, acquire or construct and maintain an access road to a national heritage site, and erect signs on or near it.
  (9) No person other than the owner of a national heritage site may make reproductions in two or three dimensions of the site for profit without a permit issued by SAHRA and the agreement of the owner. SAHRA may prescribe the fees payable for these reproduction rights and must deposit such fees in a trust fund dedicated to the conservation of the site or of heritage resources in general.

- Section 35 Prohibits the export or sale of fossils and artefacts

- Section 38 of the National Heritage Resources Act allows SAHRA to call for a heritage impact assessment report if certain activities, such as road or bridge building, subdivision or consolidation of erven, or re-zoning are likely to impact on heritage resources. This is done only if an impact assessment is not required under any other law, such as the Environment Conservation Act (No. 73 of 1989) or the National Environmental Management Act (Act No. 107 of 1998).

- Section 44(2) of the National Heritage Resources Act states that when any person plans to present a national heritage site to the public, or erect a plaque or other permanent display or structure associated with the presentation, the contents of the interpretive material or programmes must be submitted to SAHRA at least 60 days in advance so that SAHRA may comment as part of the consultative process.

- In terms of Section 47(2), SAHRA is responsible for adopting a plan for the management of each national heritage site in accordance with the best principles that can be applied. In addition, sub-section (3) states that a conservation management plan may at the discretion of SAHRA and for a period not exceeding 10 years, be operated solely by SAHRA or in conjunction with an environmental or tourism authority on such terms as SAHRA may determine. In terms of Section 42, the responsibility for implementing such a management plan can be delegated to the owner of the property, or to another authority or conservation body, if a formal heritage agreement is drawn up between SAHRA and that body with the agreement of the owner.

- ***Legal status in terms of the Environment Conservation Act and the National Environmental Management Act***

  Environmental Conservation Act 73 of 1989 (:the ECA"), and the National Environmental Management Act No. of ("the NEMA"). Regulations promulgated by the Minister of Environment and Tourism in terms of section 21 and 22 of the ECA and the NEMA provide a process whereby an environmental impact assessment must be undertaken before a number of identified activities can be undertaken.

  The activities identified by the Minister include activities such as the construction or upgrading of facilities for commercial electricity generation and supply, transport routes, building of roads, public and private resorts and buildings and structures for industrial manufacturing.

  This therefore limits the undertaking of the identified activities in the nominated area where they threaten the integrity of the World Heritage Site.

  The Environment Conservation Act (Act No. 73 of 1989) enables the Minister of Environmental Affairs and Tourism to call for an environmental impact assessment if a development will have a significant impact on the natural and cultural environment. The

Regulations and Guidelines for this legislation have had a significant impact and have increased public awareness of the need for environmental management. The legislation also has weaknesses, particularly with regard to monitoring of cumulative impacts. The National Environmental Management Act (Act No. 107 of 1998), which came into force when the Regulations for integrated environmental management were published in 2002, overcomes most of the problems and makes environmental impact assessments mandatory. Any development on, or rezoning of, the Makapan Valley Heritage Site will therefore require an independent integrated environmental assessment before the development can take place. This will include an assessment of cultural heritage sites that may be affected.

- ***Minerals Act***

  Minerals Act 50 of 1991 (“the Minerals Act”)

  Mining and prospecting in the area is limited by the Minerals Act. Mining may only be undertaken by Permit Holders.

  A prerequisite for the commencement of mining by a permit holder is the approval of an Environmental Management Programme. The Director-General may also require that an Environmental Impact Assessment be carried out in respect of intended prospecting or mining operations.

  At present, there are no options to prospect or to mine on the property in question.

- ***Access control***

  Unauthorised access to the sites, potentially a strong threat to the security of Heritage Sites, is controlled by the community themselves, after an awareness and co-operation campaign fielded by SAHRA. SAHRA- trained site monitors, equipped with bicycles and cell-phones form a quick-response corps. SAHRA has erected a boom control point which now controls access to and egress from the Valley.

- ***Buffer Zone***

  The negotiation and declaration of a buffer zone around the Makapan Valley heritage site (which buffer zone conforms to a proposed 55 000 ha Conservancy, see Fig 1d and Fig. 20. Appendix I) will provide provisional protection, initially for 2 years. The Conservancy, with the Makapan Valley property as its "Crown

Jewel", has been many years in the making. In the mean time, SAHRA, under Section 29 of the Act, has provisionally protected the buffer zone (which conforms to the boundaries of the Conservancy). The landowners have been informed, and many have signed letters of consent - see Appendix VI, Documentation

d. Agency / Agencies with Management Authority

Although, as outlined above, there are some existing protective measures in place a new mechanism is envisaged to consolidate existing measures and ensure the proper management and protection of the area.

An overall management authority in terms of the World Heritage Act has not yet been appointed, and will not be until WHS status has been formalised.

- ***SAHRA: The South African Heritage Resources Agency***

  The SAHRA exercises management over the site in terms of its protective legislation described in 4b(ii) above.

- ***Limpopo Tourism and Parks Board (LTPB)***

  The Limpopo Tourism and Parks Board exercises authority in terms of its part ownership (still to be registered) of the property, as equal partners with the University of the Witwatersrand in the Section 21 Company.

- ***University of the Witwatersrand***

  The University of the Witwatersrand exercises equivalent authority in terms of the Section 21 Company referred to above. In addition, it sponsors and regulates most of the scientific research that has been done in the valley since the 1930's and has therefore the longest record of management involvement by far, as well as the biggest financial investment. Without the long-term and painstaking research that has been financed over the years by this University, there would be no story to tell. The University also maintains the repository of artefacts and fossils which represent a major portion of the transferred site significance. A full-time professional collections manager is maintained. The University is also the only one in South Africa which offers courses that train students in all the major aspects of palaeontological and archaeological research and heritage resource management.

- ***Makapan Valley Project Management (Action) Committee / Section 21 Company***

  The Management Committee is a multi-stakeholder structure which has equal representation of the Limpopo Tourism and Parks Board and Wits University, as the future co-landowners. SAHRA has a watching brief, and there are several co-opted members with special skills. The local Mogalakwena Municipality is also represented, as are all provincial and local government structures which have an interest in the property. The local resident community has official representation as has the Tribal Authority which has historical links with the site. This is where the day to day decisions and much of the on-the-ground management takes place. Its functions will be replaced by the Management Structure appointed in terms of the Section 21 Company, once this is formally constituted and the property registered in its name.

- ***Mogalakwena Municipality***

  As the current (encumbered) landowners, the Municipality has various responsibilities. In terms of municipal and Department of Water Affairs and Forestry regulations, the municipality exercises management over particular aspects of the Valley, notably water abstraction and water pollution. They also have a responsibility towards the resident community, the control of invasive alien vegetation and the control of veld fires.

- ***Nature Conservation Department***

  This provincial body exercises control over certain aspects of the subterranean environment and the permitting for the collection, sampling, and study of any aspect of the natural environment.

- ***DWAF - Department of Water Affairs and Forestry***

  This National organization exercises control over all matters pertaining to surface and groundwater. The property is within a Water Licence area, over which the Mogalakwena Municipality has been granted control at present.

e. Level at which management is exercised

Being a declared National Heritage Site, management is ultimately exercised at the National level. SAHRA is the organ of State responsible for implementing the terms of the National Heritage Act.

Level at which management is exercised and responsible person - The Manager: SAHRA Limpopo Provincial Office, Box 1371, Pietersburg (Polokwane) 0700, Tel+27 (0)15 291 1819, e-mail sahranp2@mweb.co.za

f. Agreed plans related to the property

Document 1: Makapansgat: The Makapansgat Heritage Site Master Plan (submitted February 2003)
Document 2: Executive summary (of above document, submitted February 2003)
Document 3: Approved Business Plan (submitted February 2003)
Document 4: Power Point Presentation to potential donors (CD - available on request)
Document 5: Architectural Graphics (plans) for proposed Visitor Centre (CD - available on request)
Document 6: Provisional discussion document for the Museum Display themes (electronic version available on request)

Documents 1-3 were appended or submitted together with the Nomination Dossier.

g. Sources and levels of finance

- Limpopo Tourism and Parks Board (paid for Master Plan, pays for professional time of a Project Manager, provided funds for Social Impact Study and Ethnobotanical Study)
- Limpopo Economic Development Enterprise (LimDev) (provides secretariat and Economic Services, contributed the Business Plan)
- SAHRA (provides a salaried Heritage Manager)
- University of the Witwatersrand (finances most research and salaries of researchers). Finances salary fulltime on-site caretaker
- Local and Provincial Government Department (Public Works Department has provided funds to tar portion of the access road to the sites, and for part of an entrance Gateway)
- Private Donors (local business and Mining Companies finance various aspects of the project as mentioned elsewhere)
- The State National Lottery (Lotto) has recently awarded R16 600 000.00 for heritage related developments at the site.

A comprehensive Business Plan has been developed in order to establish the amounts and types of funding required for the development of the necessary infrastructure for the area. This might include, but not be limited to, funding for the following:

- upgrading of certain dirt roads by surfacing
- development of the Orientation and Interpretation Centre
- development of a museum

- upgrading of general infrastructure at the various cave sites to cater for greater numbers
- improving the scientific facilities
- upgrading of access to other caves for limited access visits and additional fuding for scientific investigations
- upgrading of emergency services to cater for additional visitor numbers
- coordination of promotion of the area
- improvement of educational facilities
- assistance to private enterprise to develop other facilities in the area such as overnight accommodation, restaurants, trails, horse riding and other extensive outdoor recreation activities to create choice in the area
- possible development of a conference center

The Business Plan will be monitored on an annual basis and updated and the results fed back to the Makapan Valley Project Management Committee

The Limpopo Tourism and Parks Board has provided the funding to undertake a Social Impact Assessment which will get underway as soon as funds allocated are released. The same body has provided funding for a Traditional Medicine Plant Study which will assess the sustainability or otherwise of medicinal plant collection from the Makapan Valley.

h. Sources of expertise and training

- University of the Witwatersrand
- University of the North
- The SAHRA
- Face Afrika Tours and Drumbeat Academy – Tourist guide training
- Local Business: Hotel and Mining Industry (First Aid, communication skills)

Inherent in the Management Plan is the need for staff training and skills enhancement. Sources of expertise already exist or are being proposed within the University of the Witwatersrand, SAHRA, Tourist Guide Training Facilities, Field Schools and other local institutions, and through international and local contacts, to enable training programmes to be established to provide the personnel that will be required for the monitoring and management programmes for the World Heritage Site and Buffer Zones, guides as assistance within the interpretation centre, etc.

Three tourist guides capable of mother-tongue and English tour guiding have recently been accredited, and in all, there are 8 trained site monitors.

i. Visitor facilities and statistics

Visitor facilities are very basic at present but include contoured pathways which take cognisance of the effects of erosion, stairs with handrails in steep places, the designation of no-go sensitive areas and the securing of these, viewing platform at the eastern entrance to the Historic Cave (Makapan's Cave) and strategically sited chemical toilets.

The Development Plan - outlined in the Business Plan and Master Plan - envisages the establishment of facilities to an international standard, without compromising scientific or heritage integrity.

The site is visited by several hundred visitors per annum and this number has dramatically increased since the training of the site guides. The recording of visitors has been rather unstructured until recently, with several institutions authorised to take visitors. A systemetic recording procedure is shortly to be implemented.

Since the training of tourist guides, visitor numbers have dramatically increased. Maximun numbers are still in the hundreds rather than in the thousand per month, but the site has not been advertised or marketed hitherto.

j. Property Management Plan

See Documents 1 and 2, appended. (Submitted with the original dossier, in February 2003). The main management issues, management strategies, responsible parties and monitoring criteria for site management are also summarised and tabulated in Appendix 5 of this dossier.

k. Staffing levels

1x Site Manager: Site is currently managed mainly by the SAHRA Limpopo Manager and University of the Witwatersrand
1x Site Caretaker, salary paid for by Wits University
2x Team leaders for site monitors and tourist guides
3x trained tourist guides from the community
5x cultural and environmental site monitors
2x security guards cum game guards

All the site monitors, guides and security guards are financed by local business - notably African Minerals Mining company.

SECTION 5: FACTORS AFFECTING THE PROPERTY

a. Development pressures

The most pressing issues are population numbers and water availability.

- ***Water availability***

  Since the early 1960's the municipal authorities in the local town of Potgietersrus (Mokopane) have become increasingly aware of a critically diminishing water supply for the town and its people. Regional and local water shortfalls are inhibiting the economic growth of the town and region. For reasons connected with the water shortfall the property Makapansgat 39KS was expropriated in the National Interest by the local municipality in order to acquire its water entitlement. The property was bought specifically for its underground water and with the use of this resource as a supplementary supply for the town specifically in minds, including drinking water.

  The farm Makapansgat is in a Water License area and with an area of some 2220ha, has a groundwater allocation of 5370kl per annum.A recent communication from the local municipality suggests that this quota may be drastically reduced to only 660 kl per annum.

  Water used in excess of this will have to be purchased from the Municipality. This constraint rules the farm out as a viable commercial farming enterprise.

  The settlement of over 246 informal settlers (squatters) on the property complicates the issue as they too have a water requirement and aspirations to keep vegetable gardens.

  The envisaged development programme likewise has a water requirement, as does the ongoing research programme.

  There are several problems connected with water availability:

  - Arbitrary adjustments in the water quota by the municipal authority.
  - Being held to ransom by having to pay for usage over and above the quota.
  - The ever-growing informal settlement have an ever-growing water requirement. (natural increase, not immigration)
  - The proposed tourism developments will require water.

- ***Groundwater abstraction***

  Groundwater abstraction in the region has proceeded at well over the recharge rate for twenty years or more. Lowering of the water table has reduced stream flow drastically. Three well-fields have been overpumped and two of these have been abandoned. Drastic lowering of the water table enhances the risk of subsidences and sinkhole formation in dolomitic areas such as Makapan Valley. Lowering of the water table impacts on vegetation. The tiny patch of relict forest is at risk.

- ***Water pollution, water quality***

  The human population resident on Makapan Valley, estimated at around 346 persons, is dependent on a surface water supply which sometimes fails at the end of the dry season. There are not water purification or filtration installations. Water flows through a gravity pipeline from a pool source high up in the Makapan Valley. There are a number of take-off points. This water source is at risk from pollution by both humans and animals.

- ***Groundwater pollution***

  With 246 residents, the fact there is no formal sanitation poses the risk of groundwater pollution. Water borne contaminants, once in the groundwater, travel rapidly. The naturally high water table (given no groundwater abstraction) seasonally as shallow as 9m, and the highly fractured nature of the dolomite render the groundwater susceptible to surface-derived pollutants. One potential source of contamination is untreated sewerage from the informal settlement, if basic sanitation goes unaddressed.

  On-site sanitation in the form of pit toilets is not permissible, particularly in view of the fact that the dolomite aquifer is envisaged as an emergency water supply for the local town.

  Pending legislation promulgated in an attempt to protect vulnerable groundwater in dolomitic areas from pollution, will preclude on-site sanitation. Once polluted, the groundwater is difficult and expensive to purify. Pollutants are rapidly transferred.

- ***Informal settlement: residents***

  Initial informal settlement added to the numbers of residual labour tenants, resulting in a current population of 246. SAHRA has been at pains to protect the site against further ingress of settlers from other areas, by making the community aware of the provisions of

the Security of Land Tenure Act, which states that it is the responsibility of the local residents to ensure that no further settlement takes place. The local SAHRA Manager ensures that the community lives up to this.

Because their means of livelihood as farm workers was taken away from them on the expropriation of the property by the local Municipality, the residual labour tenants are unemployed and live in poverty. This has given rise to the attendant problems of lack of sanitation, water shortages, fires, wood collection (Figs. 18 and 19), tree chopping, over-grazing, poaching, medicine plant over-collection as well as impacting on the visual aesthetics of this world-famous valley. Subsistence plunder could ultimately degrade the valley and its heritage site contextual environment to the point that it would be of little interest to tourists.

Despite the plight of the residents and their associated subsistence activities constituting the single most significant potential threat to site significance, the community encapsulates numerous authentic indigenous knowledge systems, oral traditions, and aspects of living heritage. Many of these traditional skills and crafts could be showcased with increased tourism.

The above are potential threats and will remain so as long as SAHRA is able to maintain effectiive control and management.

b. Environmental pressures

- Runaway veld fires
- Soil erosion
- Invasive alien species
- Weed growth in excavations
- Theft of firewood on a commercial scale
- Poaching
- Traditional Medicinal Plant Collection
- Loss of stream flow due to excessive water abstraction from the dolomitic acquifer
- The development of a "plough pan" on the old agricultural lands
- Livestock impact
- Erosion of roads and pathways
- Visitor impacts on the subterranean environment - loss of bat colonies

With the development and fostering of better relationships with neighbouring landowners, many of these environmental threats and

pressures are slowly being addressed and brought under control, especially control of fires over the last winter.

The management strategies for the above management issues are discussed in the Summary Document already submitted and in Appendix 5.

c. Natural disasters and preparedness

The worst natural disaster imaginable is the unpredictable development of sinkholes due to dewatering of subterranean caverns by excessive groundwater abstraction. Runaway veld fires are destructive but part of the natural ecologic processes of the area. The high incidence of lightning strikes on the high-lying ground frequently initiates natural fires..

d. Visitor tourism pressures

Visitor numbers are low at present and this is not an issue.

e. Inhabitants within the Property and the Buffer Zone

The last census tallied 246 permanent inhabitants on the property and some 37 others in the buffer zone, mostly persons who are working for landowners within the buffer.The Manager, SAHRA, Limpopo Province has been responsible for ensuring compliance on the part of the residents with the provisions of the Security of Land Tenure Act, and monitoring to ensure no further settlement.

SECTION 6: MONITORING

a. Key indications for measuring state of conservation

The monitoring of the state of conservation of the property is conducted in terms of monitoring requirements and criteria stipulated in the Makapan Valley Heritage Site Management Plan (Appended). The site sensitivities, threats, risks, management requirements and monitoring criteria are summarized in table 2 (Appendix 5). This table also suggests authorities and parties responsible for the different aspects of management and monitoring.

The site is monitored at various levels:

I. Research at the Heritage Sites themselves, and all activities carried out on our near them.

- University of the Witwatersrand: Makapansgat Research Management Committee

  The Makapansgat Research Management Committee screens all research proposals which pertain to any aspect of research within heritage sites or in the valley and its surrounds.

  The criteria on which research proposals are assessed are summarized below:

  – bona fides and professional status of the individual, or if it is a team proposal, a consideration of the bona fides of the Principal Researcher and all co-researchers on the team.
  – Experience in project-related areas: does experience support the project and predict success
  – Skills, either individual or collective
  – The nature of the key questions being asked
  – The methods proposed to answer them
  – Capacity of team members and preparators to support the research programme
  – The committed time available to accomplish the task
  – The funding available: is it adequate to cover all aspects of the work programme? It is important to remember that research funding is hard to come by and extremely limited. The budget for items peripheral to research naturally cuts into the budget available for productive research. This very easily reaches the point where digs become unsustainable, at least for local researchers. This has the potential to undermine scientific development. Research funding is an integral part of ensuring continued and sustainable site significance.
  – The structuring of the research proposal to build capacity and transfer skills by including:
    * Local team members
    * Local students
    * Local communities
    * Disabled persons, as far as possible, e.g. as fossil preparators
  – The quality of the environmental plan, including rehabilitation of the site, and firebreaks

- A statement of the impact that the research programme will have on the integrity of the site
- The plans to provide for a witness section and/or a demonstration stratigraphic profile with motivations for choice. This may well require modification as work proceeds
- A statement as to the use of ex-situ as opposed to in-situ breccias
- Post-excavation stabilization of work area
- Plans to deal with residues: dig and dump no longer permitted
- A discussion of the sampling to be undertaken, and sampling techniques.
- A nomination of the investigating laboratory, together with a letter of acceptance for responsibility
- A nomination of the repository of the tested samples, bearing in mind that some processes are destructive
- A nomination of the repository for the "witness sample" - all good scientific research must be independently verifiable. SAHRA retains the right to approve the nominated repository or otherwise.
- A proposal regarding the excavated fossils and artefacts, etc. Once again, SAHRA retains the right to designate the repository
- The submission of a time-frame to complete the investigation and reportage on the excavated material (the problem is "sitting" on fossils for decades. This has the potential to hamper the progress of research)
- An application for the necessary permits: from SAHRA and the Limpopo Provincial Department of the Environment, within the Dept. of Financial and Economic Development (DFED), where appropriate
- Letter of acknowledgement from the landowner, concerning the notification of excavation plans
- The researcher-landowner "Memorandum of Agreement"
- Successful proposals are forwarded to SAHRA – the South African Heritage Resources Agency – for permitting.
- Meetings are held annually to assess research progress and to review work plans of permitted researchers for the forthcoming field season.
- This is done on the basis of two documents, a) the annual progress report and b) the proposed work plans document as well as site scans of excavations and other fieldwork.

- Field inspections of excavations are carried out by the Limpopo Province SAHRA official as well as by relevant members of the Makapansgat Research Committee, depending on where the focus of research lies.
- Monitoring is done according to the criteria noted in the Table of Management Issues (Appendix V).
- All agendas, minutes, progress reports and work proposal documents pertaining to the work of the committee are on record in the archive of the Bernard Price Institute - for contact person and address, see section 8.

II. Infrastructure

All research-related infrastructure – water pipeline to 'research house', the research house and environs access road, pathways, gates and fences have hitherto been managed and monitored by the University of the Witwatersrand. The full-time caretaker as well as Research Committee members perform the monitoring.

III. Environment

The environment is monitored by the local SAHRA representative (the entire farm, Makapansgat 39KS, is a declared National Heritage Site). Major environmental monitorings include gathering of firewood (local inhabitants are allowed controlled access to firewood), uncontrolled collection of medicinal plants, theft of plants and stromatolitic rock, poaching, fires and fire management, erosion and the control of alien invasive plants.

Various parties are responsible for the different environmental monitorings referred to above – see table, Appendix V.

IV. Impacts of site safety and stability

The sites are subject to professional inspections from time to time, particularly where instability is a threat to researchers or the general public. Unstable areas are designated as no-go areas. The University of the Witwatersrand as one of the landowners is responsible for this task – see Table, Appendix V.

V. The impacts of tourism on the environment

General tourism is only a feature of the last four or five years since 1999. Prior to that, visitation to the sites had to be by arrangement via the University of the Witwatersrand. Access was granted under supervision of professionally trained researchers or

approved guides. The reason for this was the lack of management infrastructure to manage the impacts of tourists on largely unprotected, active scientific excavations. With this procedure in place, impacts were minimal.

The administration of greater numbers since then has necessitated new management requirements, such as trained tourist guides and toilets.

b. Administrative arrangements for monitoring the property

The Wits University, its staff and its students have since 1925 been responsible for and have financed the research which has elucidated the scientific contents of the various sites. The Wits University has been responsible for on the ground site management and monitoring and has also paid for and erected the fencing around the Limeworks site and Historic Cave and Cave of Hearths. Hitherto it had paid for the infra-structure necessary to preserve and maintain the sites. One full-time Wits University-paid caretaker who resides in the valley looks after the sites on its behalf. Wits University has funded the long-term and ongoing research and the research staff who conduct it. It finances the curatorship and houses the collections of fossils and artefacts which research in the valley has generated, an ongoing responsibility which will ensure their long term safety and availability for future generations of South Africans and international and local students. Wits University has also created displays and museums where fossils and artifacts from the valley are on public display at Wits University. The Bernard Price Institute and Dr. J.M. Maguire also provided the background information and replicas of fossils for the Arend Dieperink Museum in Mokopane. Whatever story there is to tell, has been the work of the University of the Witwatersrand.

In recognition for its long-term involvement and investment in the valley, and its continued research interest and commitment, the Transitional Local Council of Potgietersrus decided to donate two small areas to the University of the Witwatersrand one, centered around the Makapansgat Limeworks, the Historic Cave, Cave of Hearths and Research House measures 58,5 ha; the other, centered around Ficus Cave, Ficus Iron Age Site and Peppercorn's Cave measures 18.5 ha: a combined total of 77 ha. This donation has been accepted by Wits University and final transfer and registration is imminent.

c. Results of previous reporting exercises

Reporting on Makapan Valley – related management and monitoring issues are on record in the following archives and repositories.

- ***Legal issues***

  A full legal file containing details of registered servitudes, rights of way and other restrictions and privileges is on file at the University of the Witwatersrand Legal Office.

  Contact person: Ms Dawn Taylor
  Legal Office
  University of the Witwatersrand
  Private Bag 3
  WITS 2050
  Tel) + 27 (11) 717-1242
  Fax) + 27 (11) 339-5809
  e-mail 160dawn@atlas.wits.ac.za

- ***General Management, monitoring and development***

  A full set of records is held in the Bernard Price Institute for Palaeontologial Research, University of the Witwatersrand in terms of Director's Reports (from c. 1947 onwards).

  Contact person: Ms J Thobois
  University of the Witwatersrand
  Private Bag 3
  WITS 2050
  Tel) +27 (11) 717-6682
  Fax) +27 (11) 403-1423
  e-mail bpi@geosciences.wits.ac.za

- ***Research***

  A record of all research proposals, progress reports and work plans and the transactions of the makapansgat Research Advisory Committee is available at the above address.

- ***Reports of permitted researchers***

  The SAHRA archives preserve a record of research proposals, progress reports and final reports. SAHRA also keeps all records of excavation permits issued

- ***Makapan Valley Management Committee: from March 2000 onwards***

  Secretariat: Minutes of all Management Committee Meetings and all sub-Committee Meetings are available from:

Ms Sandra Smit Limpopo Economic Enterprise
P.O. Box 760
Lebowakgomo
0737
Tel) +27 (15) 633-5660
Fax) +27 (15) 633-5213
e-mail smit@leent.co.za

SECTION 7: DOCUMENTATION

a. Maps, photographs and slides

The following photographs and maps have been included as Appendix 1:

- ***Maps***

  All maps have been provided in electronic format on CD.

  Note: The entire property Makapansgat 39 KS already has National Heritage Status

  Fig 1a: Orientation Map

  Fig 1b: Heritage Site Boundary

  Fig 1c: Map of property showing major heritage sites

  Fig 1d: Map of property in relation to proposed buffer zone conservancy

  Fig. 2: Sketch map showing major geographical features of the region around Makapansgat

  Fig 15: Makapan Valley Heritage area - archaeological and palaeontological site

  Fig. 20: Makapan Valley (property marked with a * in the context of the conservancy area)

- ***Photographs - as Figs 3-19, Appendix 2***

  An attempt has been made to include general views of the landscape of the Makapan Valley Heritage Area as well as at least one illustration of each major archaeological and palaeontological site, and some interesting fossil finds.

This set of photographs has been included in Appendix 2, Figures 3-19, each with full description in the form of captions and sub-captions. The original images have been scanned and cut to the CD's provided.

All the photographs represented by Figures 3-19 are by J.M. or B. Maguire (deceased). The authorship of each has been noted.

In addition to these, many thousands of photographs exist in the archives of the University of the Witwatersrand Archaeology and Palaeontology Departments and in the extensive private collection of the compiler.

The full list of photographs included with this dossier, and to which the Authorisation applies, is as follows:

Fig 3: A wintertime view from the eastern mouth of the Historic Cave

Fig 4: A small patch of relict sub-tropical evergreen forest at the base of the quartzite cliff

Fig 5: The escarpment on the east of the Highlands Mountains

Fig 6: A view of the high-lying quartzite country south-east of the cliffs at Makapan Valley

Fig 7: A wintertime view looking northwards across the Makapansgat Limeworks

Fig 8: View of the interior of the Makapansgat Limeworks 'Cave'

Fig 9: The setting of Buffalo Cave

Fig 10: The entrance to Peppercorn's Cave

Fig 11: The dangerous vertical shaft entrance to the Katzenjammer Cave

Fig 12: The Cave of Hearths hillside as seen from the opposite slopes of the valley

Fig 13: View of the pillar-supported remnant of the breccial infill of the Cave of Hearths

Fig 14: Entrance to Rainbow Cave

Fig 16: The entrance to Ficus Cave

Fig 17: Inside the Historic Cave or Makapansgat

Fig 18: Removal of firewood for commercial purposes

Fig 19: Tree chopping for domestic and construction use

- ***Slides***

Two sets of slides covering a similar range of topics as the photographs have been submitted: one in September 2003 and one herewith:

- Layers and mats in dolomitic rock near Rainbow Cave
- Dense accumulation of fragmentary fossil bones from Limeworks
- Head of Makapan Valley: View looking west from cliff tops
- View of lower Makapan Valley showing white dumps at Makapansgat Limeworks
- Cookie-shaped fossil stromatolites from Makapan Valley
- Wintertime view over the Makapansgat Limeworks showing dumps
- Cliffs at the head of the Makapan Cave
- Head of Makapan Valley: View looking west from cliff tops
- Annotations painted on back wall of Cave of Hearths
- "Classic section" Limeworks interior showing remnant limestone, red muds and fossil rich grey breccia
- View of interior of Main Quarry, Makapansgat
- Entrance to underground workings, Makapansgat Limeworks. Ancient stalactites cling to roof
- Limeworks underground workings and part of cone
- Rainbow Cave, Makapan Valley which has yielded Middle Stone Age artefacts and fauna
- Fossil centipede from Member 3 grey breccia, Makapansgat Limeworks
- Cave of Heaths / Gwaša, Makapan Valley
- *Theropithecus darti* fossil gelada from Limeworks
- Fossil primate from Limeworks
- Fossil dung ball and adjacent blow fly pupa (fossil) (dung beetle and blow fly)
- *Aloe wickensii* on Limestone dumps
- Member 4 Rodent corner
- View into the Main Quarry, Makapansgat Limeworks
- Cave of Hearths Hillside, as seen from opposite flank of valley
- Cave of Hearths Hillside from opposite side of valley

- Pillar-supported remanant of the Cave of Hearths deposit, Makapan Valley
- Stromatolitic and öolitic horizons in the Makapan Valley
- Preserved remains of hearth, Cave of Hearths, showing burnt bone
- *Euphorbia ingens* at eastermouth of Historic Cave, Gwaša Cave
- Quartzite cliffs at head of Makapan Valley

Each slide has been individually labelled on the slide mount. All slides are by J.M. or B.M. Maguire (deceased) with the exception of four marked DEDERIND. The slide images are likewise cut to the CD's provided.

In addition to these, the University of the Witwatersrand archives house many hundreds more. All the slides submitted are covered by the Authorisation.

b. Copies of property management plans

- Makapan Valley Valley Heritage Site Management Plan: Appended as Document 1.(submitted with original documentation in February 2003)

- Executive summary: Appended as document 2. (submitted with original documentation in February 2003)

- Table: Threats, Risks, Management and Strategies and Monitoring Criteria: Appended as Table, Appendix V

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d. Address where inventory, records and archives are held

- ***Scientific records***

Contact persons: Professor B.S. Rubidge
Bernard Price Institute for Palaeontological Research
University of the Witwatersrand
Private Bag 3
WITS, 2050

Dr M.A. Raath
Collections Manager
Bernard Price Institute for Palaeontological Research
University of the Witwatersrand
Private Bag 3
WITS, 2050

The SAHRA holds records of permit holders for excavations and progress reports.

e. Consent Forms from Landowners - in Documents Appendix - no VI

- University of the Witwatersrand
- Mogalakwena Municipality

SECTION 8: CONTACT INFORMATION

a. Compiler

Name:	Dr Judy M. Maguire
Title:	Project Manager Makapan Valley Project
Address:	P.O. Box 100 Prince Albert 6930
City / Province	Prince Albert, Western Cape
Country	South Africa
Tel:	+ 27 (23) 5411 713
Fax:	+ 27 (23) 5411 713
e-mail	questar@icon.co.za

b. Makapan Valley Project: Management Committee Secretariat and Sub-Committee

- ***Secretary***

  Secretary: Mrs Sandra Smit
  Limpopo Economic Enterprise
  P.O. Box 760
  Lebowakgomo
  0737

- ***Chairperson: Development and Finance Sub-Committee***

  Chairperson: Mr D.-T Malan
  Limpopo Economic Enterprise
  P.O. Box 760
  Lebowakgomo
  0737

- ***Chairperson: Environment and Conservation Sub-Committee***

  Chairperson: Johan Botha
  Dept Finance, Economic Affairs, Tourism and Environment
  Private Bag 217
  Polokwane
  0737

- ***Chairperson: Makapansgat Research Management Sub-Committee***

  Chairperson: Professor B.S. Rubidge
  Bernard Price Institute for Palaeontological Research
  University of the Witwatersrand
  Private Bag 3
  WITS, 2050

- ***Chairperson: Education Sub-Committee***

  Chairperson: Ms A.B. Esterhuysen
  School of Geography, Archaeology & Environmental Sciences
  University of the Witwatersrand
  Private Bag 3
  WITS, 2050

- ***Chairperson: Public Participation and Security Committee***

Chairperson: Mr R. Viney
SAHRA
P.O. Box 1371
Polokwane
0700

c. Official Local Institutions / Agencies

- ***South African Heritage Resources Agency***

Mr Ron Viney, Manager Limpopo
SAHRA
P.O. Box 1371
Polokwane
0700
(Administration and Implementation)

Mr Krish Ranchod, Council Member
SAHRA
Private Bag X9492
Polokwane
0700
(Policy formulation)

- ***Limpopo Province Tourism and Parks Board***

CEO: Mr Edgar Mushwana
Comm Env Dev: Finance and Economic Development
P.O. Box 2814
Polokwane
0700

- ***University of the Witwatersrand***

Professor B.S. Rubidge
Bernard Price Institute for Palaeontological Research
University of the Witwatersrand
Private Bag 3
WITS, 2050

- ***Mogalakwena Municipality***

Dikgape Makobe
Municipal Manager
Mogalakwena Municipality
P.O. Box 34
Mokopane
0600
Tel) + 27 (15) 491-9604
Fax) + 27 (15) 491-9638
e-mail makobedh@mweb.co.za

SECTION 9: SIGNATURE ON BEHALF OF STATE PARTY

See also original FHSSSKE Nomination Dossier and Appendix VI for letters of support.

SECTION 10: AUTHORISATION

Note: The authoristaion document covers all maps, photo images and slides submitted as part of the dossier.

- All Maps should be acknowledged to CKA
- All Figures - photographs - (with the exception of maps) should be acknowledged to J M Maguire.
- All slides with the exception of the following should be acknowledged to J M Maguire:
- View of the entrance to the inderground workings at the Makapansgat Limeworks (acknowledge Reinwald Dedekind)
- View of the upper Makapan Valley from above the cliffs (acknowledge Reinwald Dedekind)
- Stromatolitic layers in dolomitic rock (acknowledge Reinwald Dedekind)
- The latter three exceptions have been noted on the slides themselves, which are marked "Dedekind"

PHOTOGRAPH AUTHORIZATION

1. I, **Judy M. Maguire**, the undersigned, hereby grant free of charge to UNESCO the non-exclusive right for the legal term of copyright to reproduce and use in accordance with the terms of paragraph 2 of the present authorization throughout the world the photograph(s) and/or slide(s) described in paragraph 4.

2. I understand that the photograph(s) and/or slide(s) described in paragraph 4 of the present authorization will be used by Unesco to disseminate information on the sites protected under the World Heritage Convention in the following ways:

   a) Unesco publications;
   b) co-editions with private publishing houses for World Heritage publications: a percentage of the profits will be given to the World Heritage Fund;
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6. I hereby declare and certify that I am duly authorized to grant the rights mentioned in paragraph 1 of the present authorization.

7. I hereby undertake to indemnify Unesco, and to hold it harmless of any responsibility, for any damages resulting from any violation of the certification mentioned under paragraph 6 of the present authorization.

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Pretoria	4 December 2003	JMMaguire
Place	Date	Signature, title or function of the person duly authorized

APPENDICES

Appendix 1: Maps showing various aspects of the Makapan Valley Heritage Site

Appendix 2: Text Figures: Makapan Valley Heritage Sites

Appendix 3: Catalogue of archaeological and fossil sites and localities in the Makapan Valley area

Appendix 4: Fossil mammal and other fossil taxonomic list for the Makapansgat Limeworks

Appendix 5: Management and monitoring of threats and risks to site significance

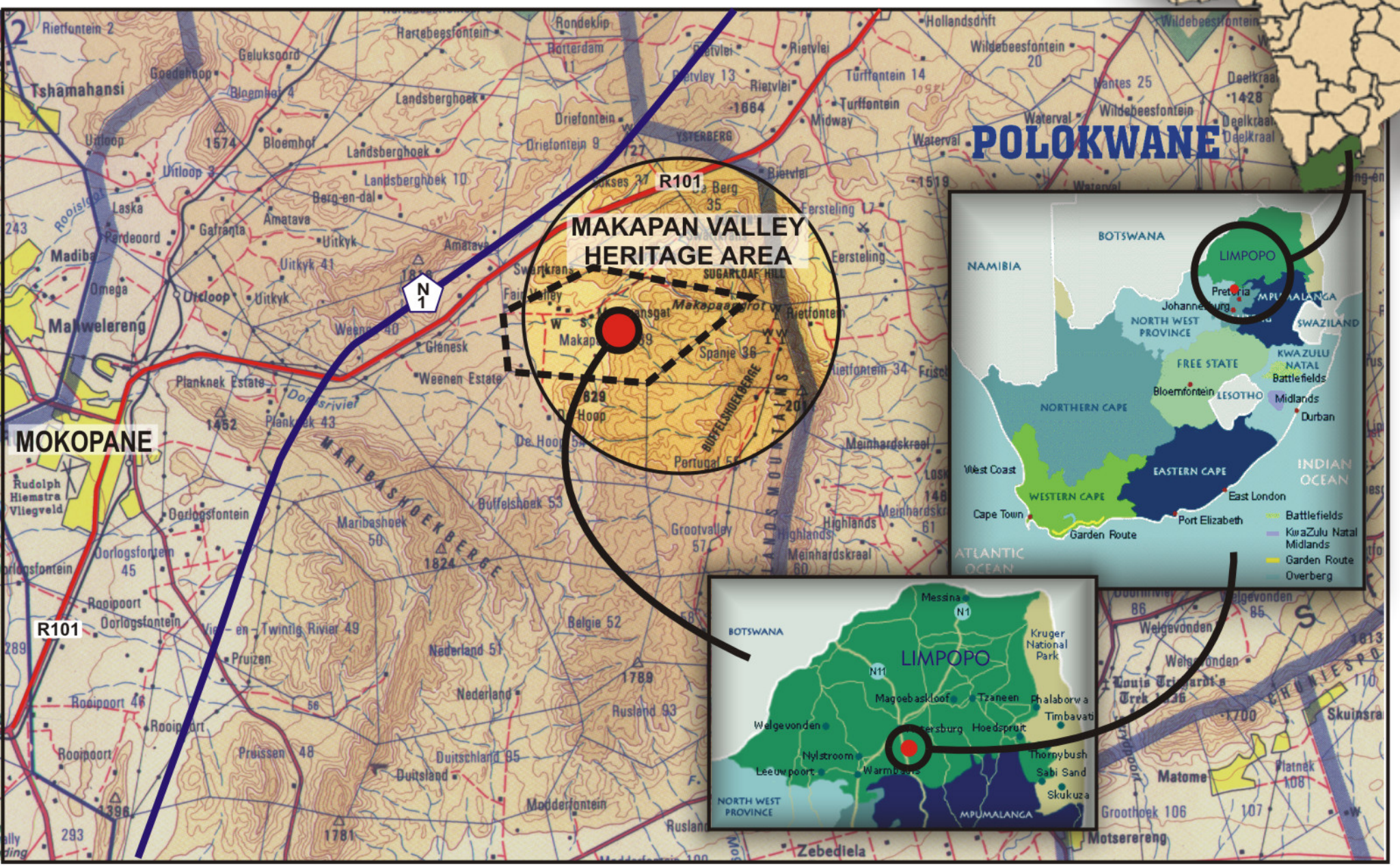
Appendix 6: Documents in support of Nomination

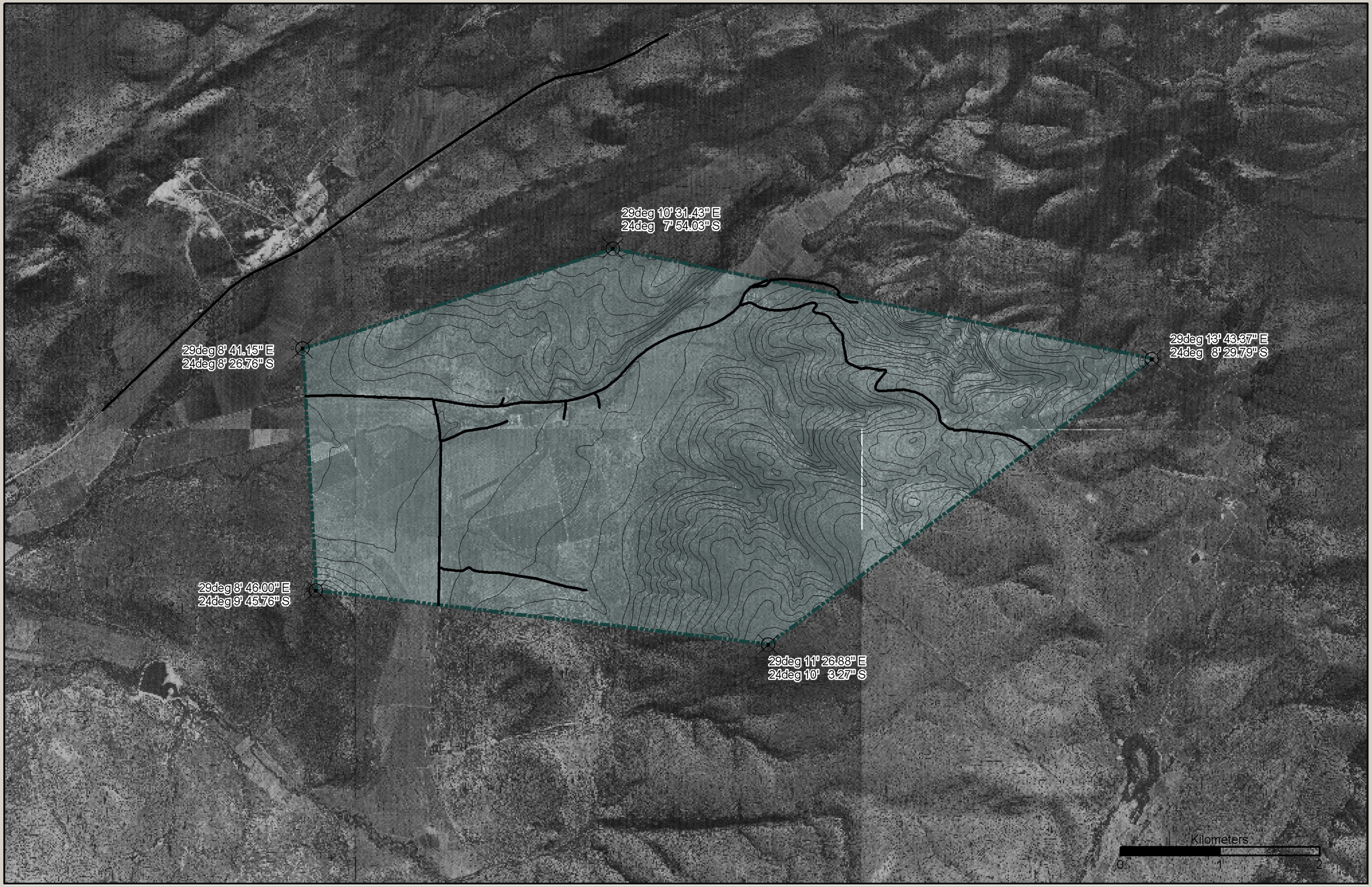
Appendix 7: Zonation and Conservancy Document

APPENDIX 1

MAPS SHOWING VARIOUS ASPECS OF THE MAKAPAN VALLEY HERITAGE SITE

Fig 1a: Orientation Map





Legend

- Heritage boundary coordinates
- Roads
- Site

MAKAPAN VALLEY HERITAGE SITE
Heritage Site Boundary
Figure 1b

Figure 1b
Scale:
1:50,000

NORTH

cka
Cave Klapwijk & Associates
Landscape Architects & Environmental Planners
Tel: 012 - 362 4084
Fax: 012 - 362 0394
ck.a@mweb.co.za

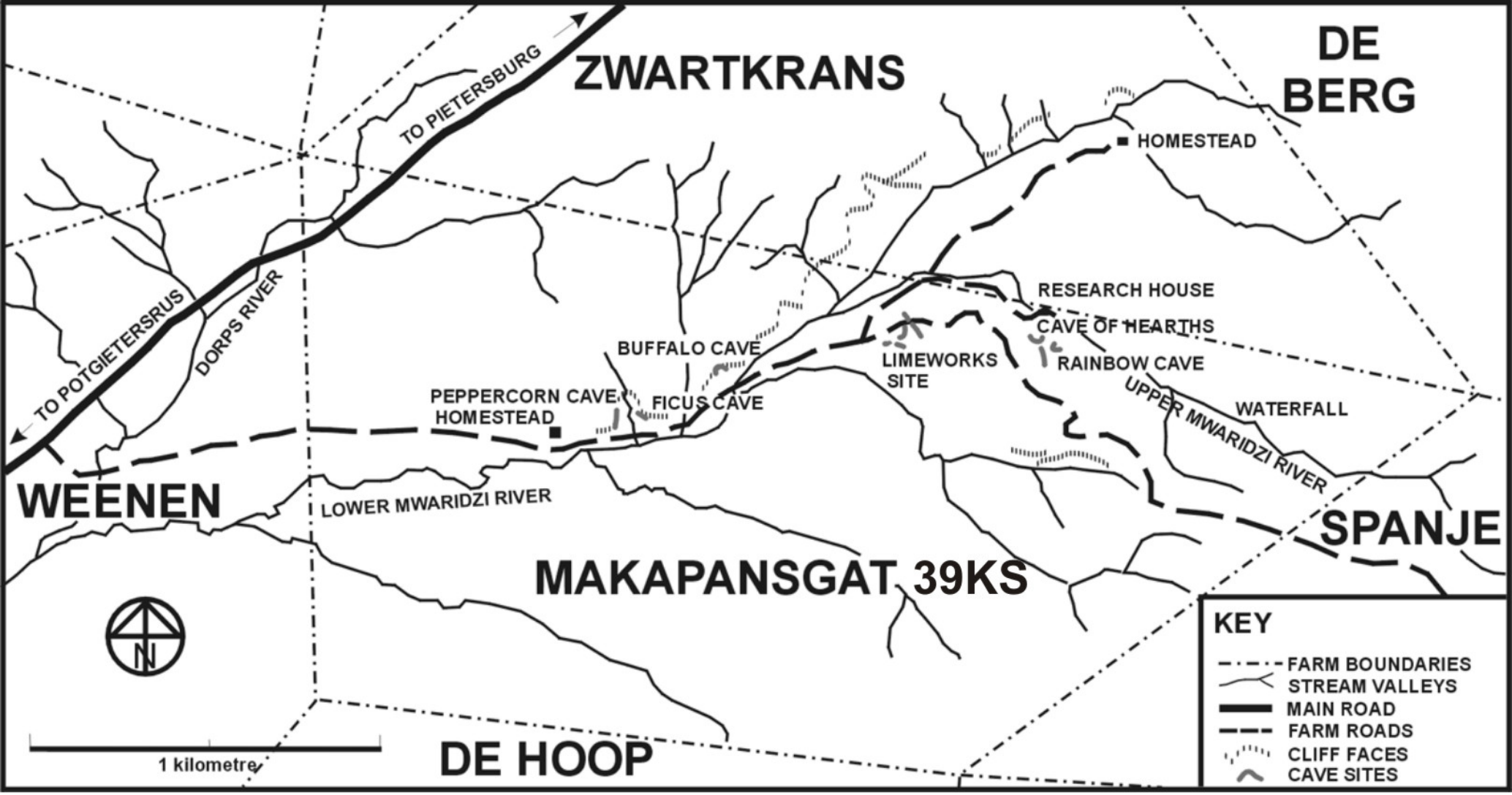


Fig 1c: Map of property showing major heritage sites

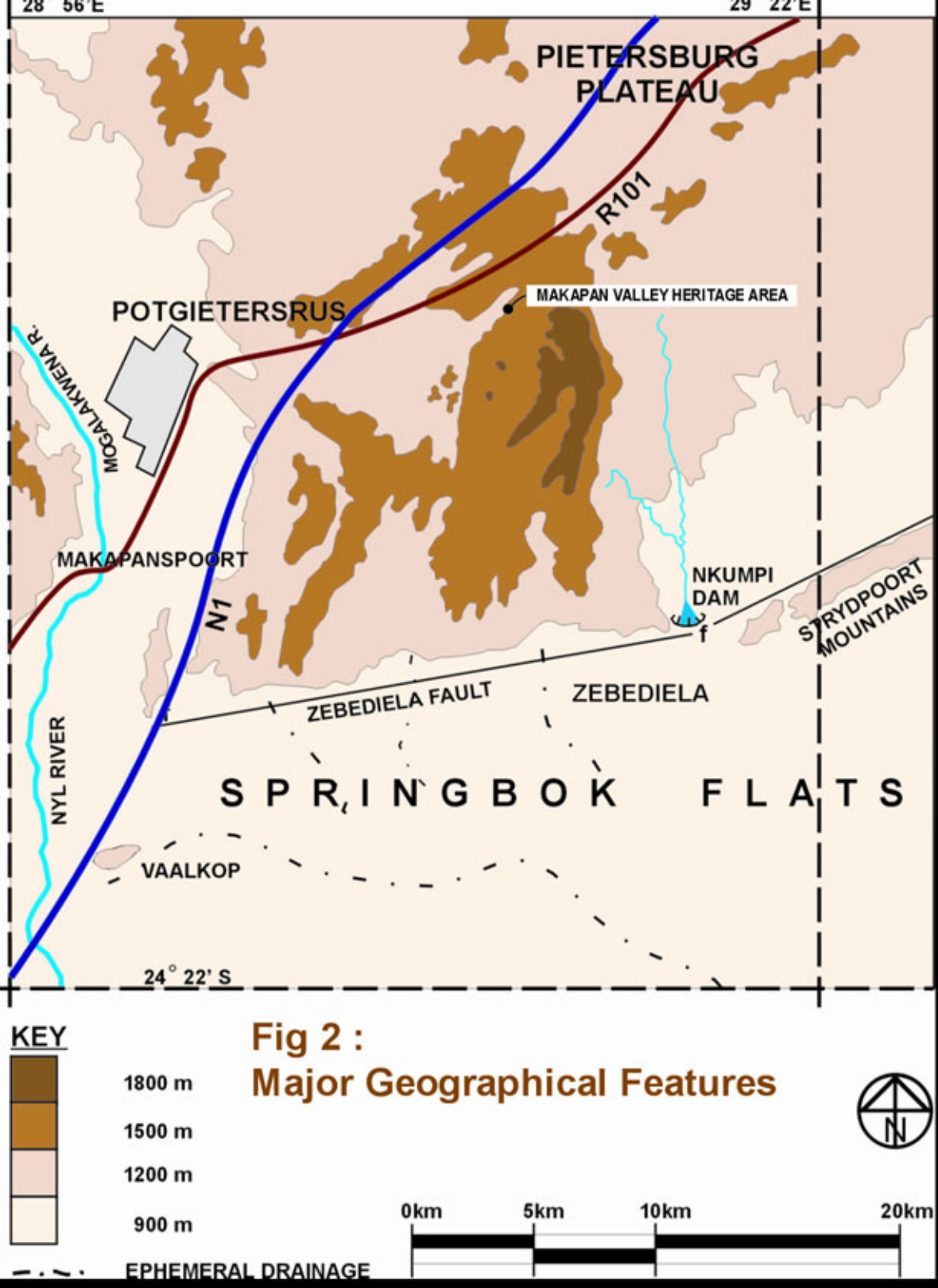


Fig 2 :
Major Geographical Features

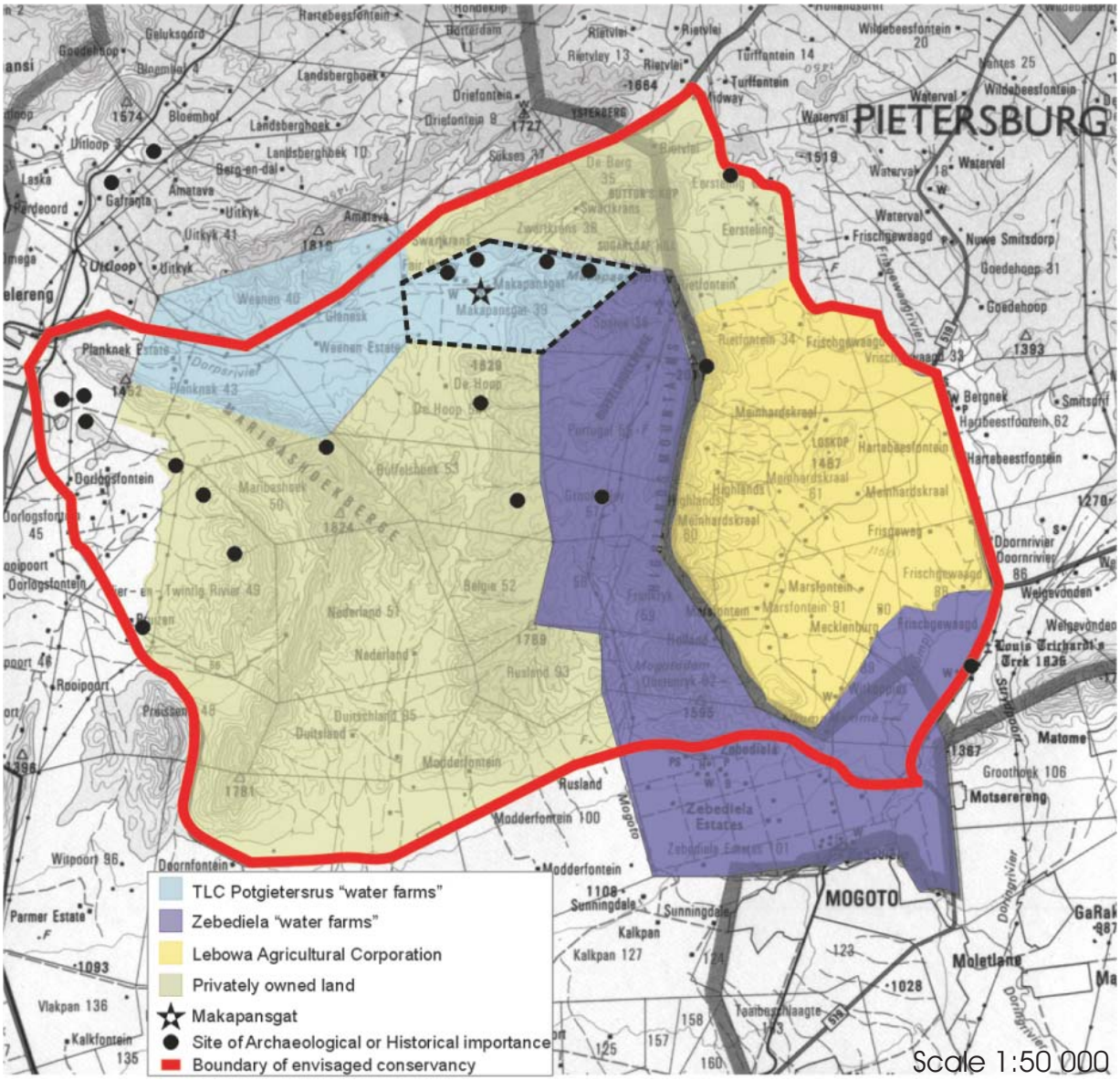


Figure 20: Makapan Valley (property marked with a star) in the context of the envisaged Makapansgat Highlands Strydpoortberg Conservancy Area - outlined in red.

Blue properties = Municipal "Water Farms"
Purple properties = Zebediela Water Farms
Yellow properties = Department of Agriculture properties
Green properties = Privately owned properties

The conservancy will function as an additional buffer zone over and above the "protected area" proclaimed by the South African Heritage Resources Agency over the farms immediately surrounding the property Makapansgat 39KS - the property for which World Heritage Site status is being sought.

APPENDIX 2

TEXT FIGURES: MAKAPAN VALLEY HERITAGE SITES

Figure 3: **A wintertime view from the eastern mouth of the Historic Cave, looking eastwards towards the Black Reef Quartzite cliffs forming the head of the Makapan Valley (Photo J.M. Maguire)**

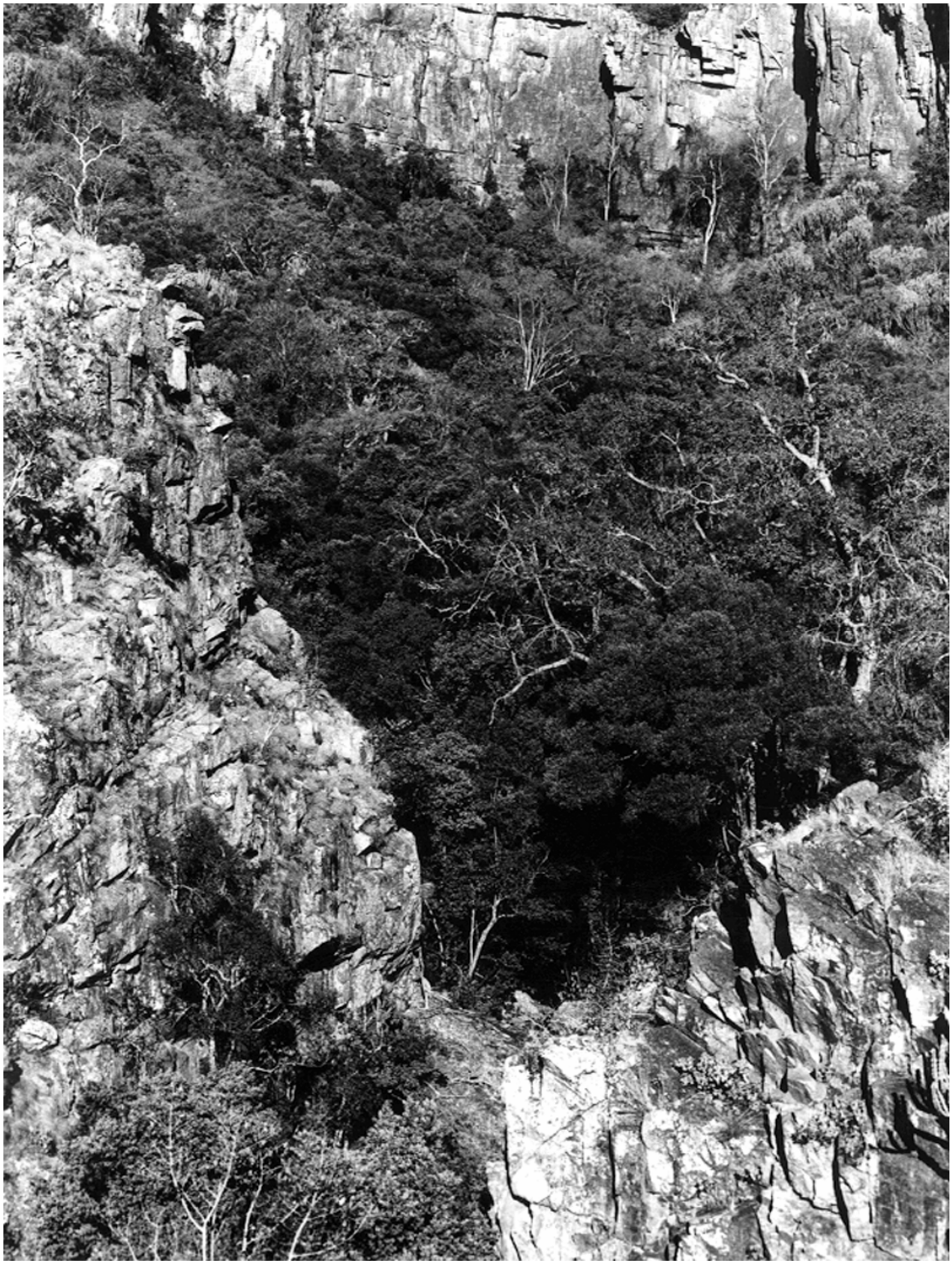


Figure 4: **The small patch of relict subtropical evergreen forest at the base of the quartzite cliffs. In the Makapan Valley area, all the forest patches occur on a quartzite substrate (Photo B. Maguire)**

Figure 5: **The escarpment on the east of the Highlands Mountains. The telecommunications aerial is close to 2040m a.s.l. Black Reef Quartzite cliffs forming the prominent escarpment east of the Makapan Valley (Photo J.M. Maguire)**

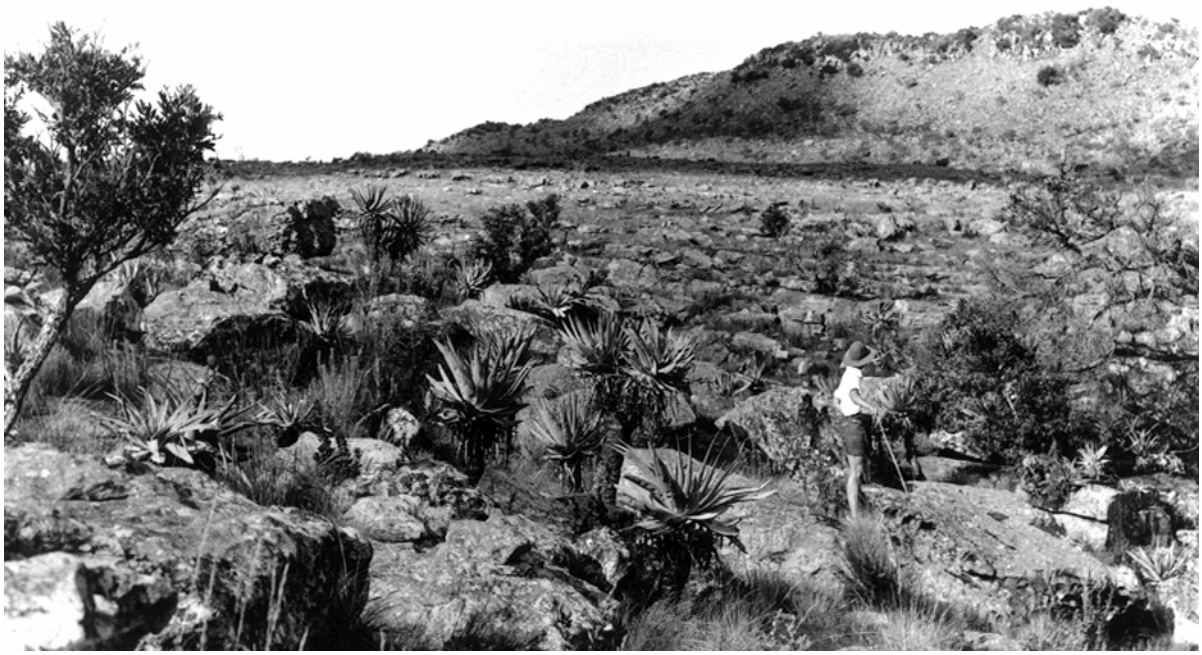


Figure 6: **A view of the high-lying quartzite country south-east of the cliffs at Makapan Valley, near the Spain-Portugal farm boundary (Photo B. Maguire)**

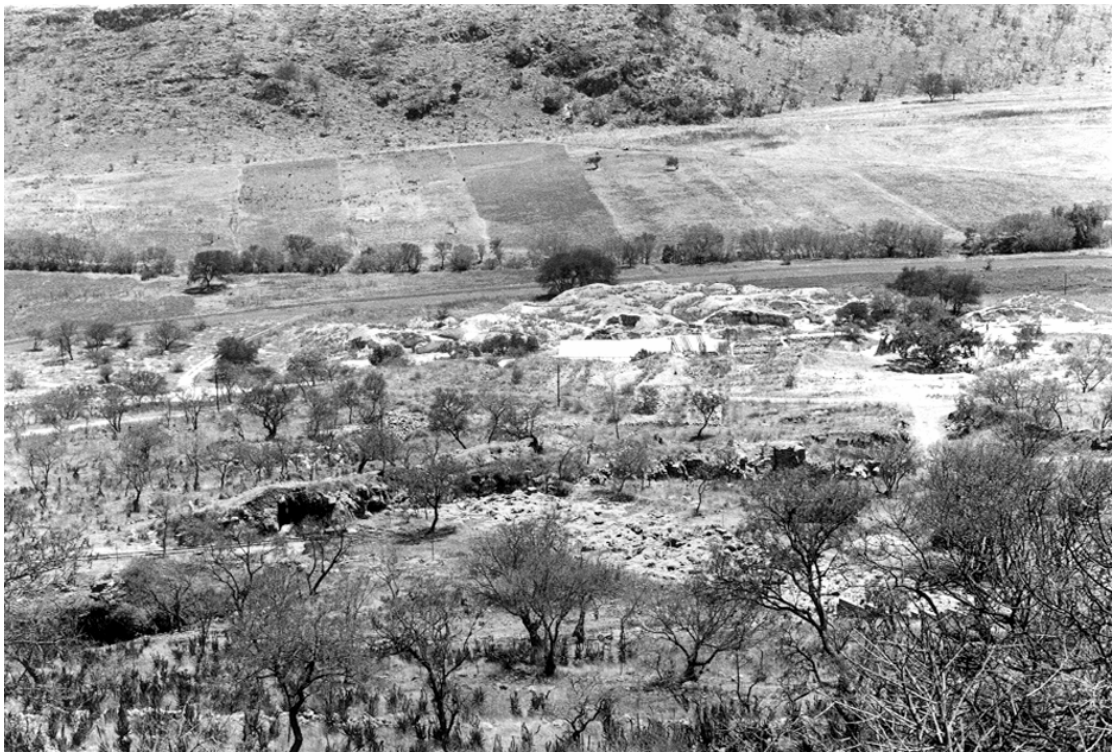


Figure 7: A wintertime view looking northwards across the Makapansgat Limeworks site from the hillside above (Photo B. Maguire)

Note the numerous specimens of *Aloe dolomitica* covering the dolomite hillside in the foreground. Part of the collapsed cone mouth is seen on the extreme left, and leading down to the main quarry is the excavation grid which has been stripped of vegetation and decalcified overburden exposing the Pink Breccia (Member 4) and the abundant solution cavities ("Makondos") pocking its surface. Beyond the shed and breccia camp, at the foot of the hillside, are the extensive lime dumps left by the limeworkers. The line of trees on the valley floor marks the course of the Mwaridzi Stream.

Figure 8: **View of the interior of the Makapansgat Limeworks 'cave'. Note the collapsed rubble (right) and the huge fallen roof block. The perimeter of the cone is highly unstable and unsafe (Photo: J. Maguire)**

Figure 9: **The setting of Buffalo Cave, situated in the tree-choked cleft in the dolomite ridge (Photo J.M. Maguire)**

Figure 10: **The entrance to Peppercorn's Cave. Note the pipeline used to pump water at the rate of 56,6 l/s (27,000 gals per hour) from the "Peppercorn's Spring". The cave sump was bone dry in September 1999 (Photo J.M. Maguire)**

Figure 11: **The precipitous and dangerous vertical shaft entrance to the Katzenjammer Cave (Photo: J.M. Maguire)**

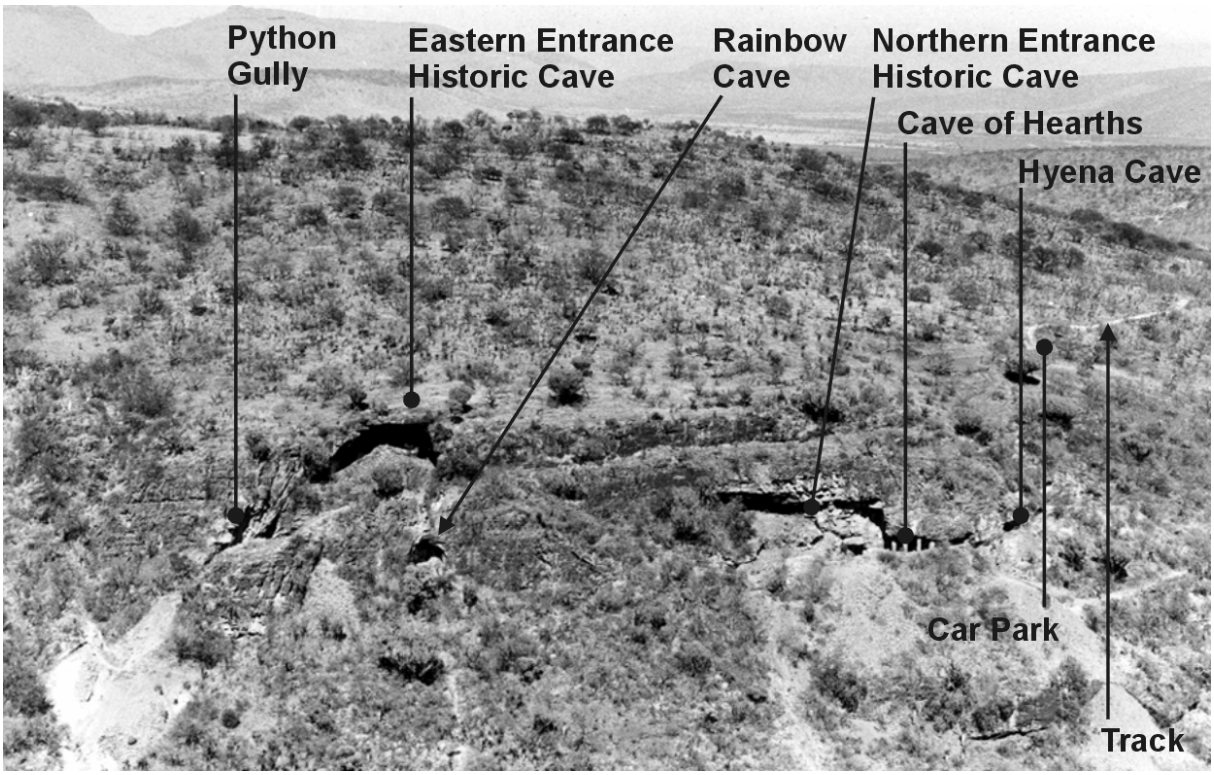


Figure 12: **The Cave of Hearths hillside as seen from the opposite slopes of the valley and looking south-westwards (June, 1969)(Photo: B. Maguire)**

The elongate slit-like shadow marks the northern entrance to the Historic or Makapan Cave and the large curved shadowed area (left of centre) the eastern entrance, below which is a smaller shadow showing the location of the Rainbow Cave. The four pillars support an unexcavated remnant of the Cave of Hearth infill, immediately right of which the northernmost entrance to Hyaena Cave can be seen. The hillside is hollow, and it is possible to walk through the hill from the northern to the eastern entrance, Above the caves (right) the lime surfaced carpark and the track leading to it can be seen. Lime-rich dumps scar the hillslide, relics of limeworking activities. The dump of pale-coloured rubble (extreme left) shows the position of Python Gully at its apex

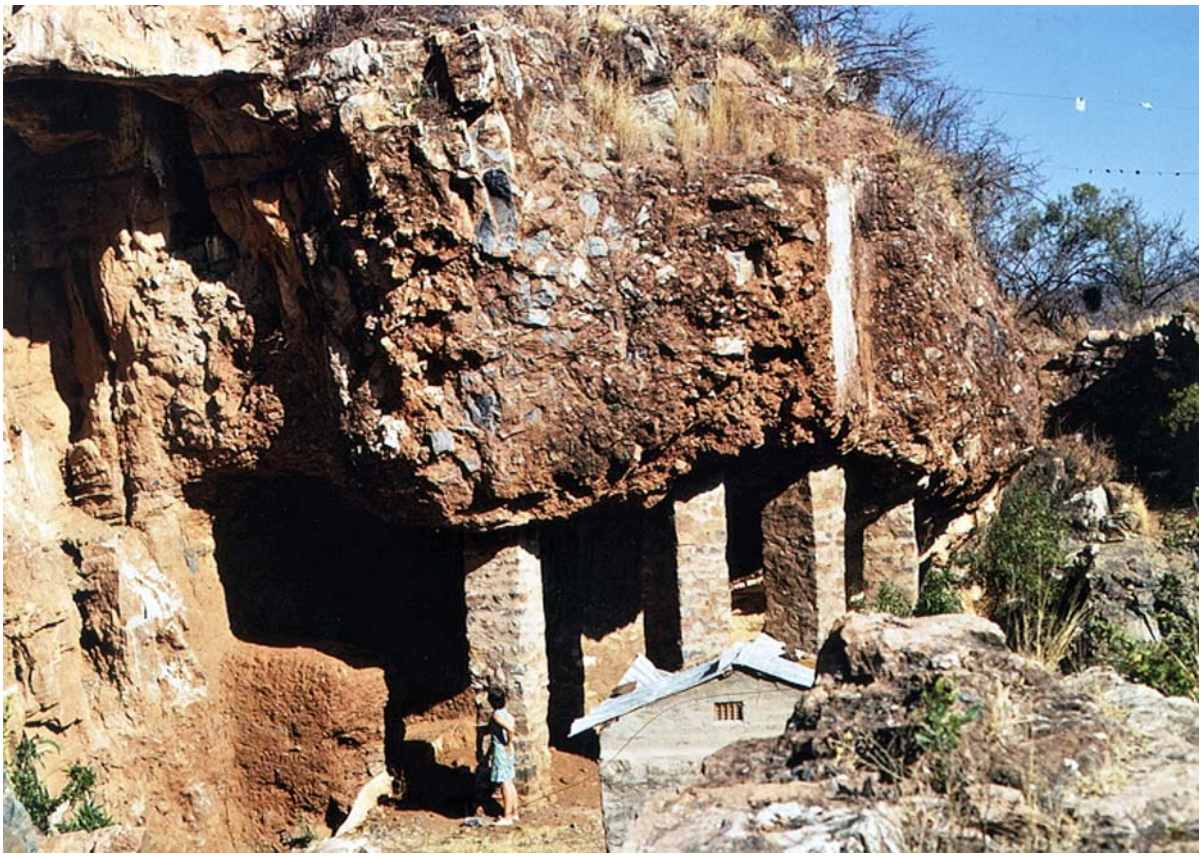


Figure 13: **View of the pillar-supported remnant of the breccial infill of the Cave of Hearths (July 1970)(Photo: B. Maguire)**

The breccia, except where covered with sparse vegetation, outcrops at the surface. The dolomite back wall of the cave is seen on the extreme left. The white streak crossing the entire depth of remaining breccia above the pillar, second from right, is the impression left by an ancient stalactite. In front of the standing figure lies the fractured remnant of the travertine floor, part of which subsided some 4,6m (15ft) giving rise to the sinkhole partially visible in the left foreground. The stable floor travertine adjacent to the sinkhole supports Mason's 1,5m (5ft) witness section of unexcavated breccia (partially shadowed).

Figure 14: **Entrance to Rainbow Cave, a section of the Historic Cave - Cave of Hearths sedimentary sequence (Photo: J.M. Maguire)**

Figure 16: **The entrance to Ficus Cave, an Iron Age site, draped with water-seeking hanging roots of *Ficus* (Photo J.M. Maguire)**

Figure 17: **Inside the Historic Cave or Makapansgat. Note the cleavage plane on the hanging roof block. The children are standing on a fallen roof segment. Rock falls from the roof are a constant danger (Photo: J.M. Maguire)**

Figure 18: **Removal of firewood for commercial purposes (Photo J.M. Maguire)**

Figure 19: **Tree chopping for domestic and construction use has already destroyed the woody vegetation in the vicinity of settlements. Commercial stripping of firewood is also taking place (Photo J.M. Maguire)**

APPENDIX 3

CATALOGUE OF ARCHAEOLOGICAL AND FOSSIL SITES AND LOCALITIES IN THE MAKAPAN VALLEY AREA

Appendix III

Catalogue of archaeological and fossil sites and localities in the Makapansgat Valley area (from Quinney and Sinclair 2001)

Catalogue #	Locality #	Site name(s)	Status	Coordinates	Period and context
2429AA-1a	MKL017	Cave of Hearths†			Multiperiod cave deposit spanning ESA to terminal Iron Age
2429AA-1b		Historic Cave†			Late Iron Age
2429AA-2		Limeworks Cave†			Plio-Pleistocene cave site
2429AA-3		Ficus Cave†			LSA/Iron Age
2429AA-4		Ficus Open Site†			Late Iron Age
2429AA-5		Peppercorn Cave†			Late Iron Age
2429AA-6		Lapeni's Donga†			MSA
2429AA-7		Rosesmith Donga†			MSA/LSA/Iron Age
2429AA-8		Old Workings Hill†			Iron Age
2429AA-9		Maribas Hoek I†			Iron Age
2429AA-10		Planknek I†			Iron Age
2429AA-11	MKL016	Rainbow Cave†			Adit exposures - MSA fill linked to Historic Cave underlying sediments and Python Gully complex
2429AA-12		Maribas Hoek II†			Late Iron Age
2429AA-13		Zwartkrans 1†			Iron Age
2429AA-14		Zwartkrans 2†			Iron Age
2429AA-15		Zwartkrans 3†			Iron Age
2429AA-16		Makapansgat 1†			Iron Age
2429AA-17		Makapansgat 2†			Iron Age
2429AA-18		Makapansgat 3†			Iron Age
2429AA-19		Makapansgat 4†			Iron Age
2429AA-20		Makapansgat 5†			Iron Age
2429AA-21		Weenen 1†			Iron Age
2429AA-22		Weenen 2†			Iron Age
2429AA-23		Weenen 3†			Iron Age
2429AA-24		Ndebele Cheifs Kraal†			Late Iron Age
2429AA-25		De Hoop 1, 1st Cave†			
2429AA-26		De Hoop 2, 2nd Cave†			Iron Age
2429AA-27		De Hoop 3, Schulz 1†			
2429AA-28		De Hoop 4, Schulz 2†			
2429AA-29		Makapan Farm 1†			Iron Age
2429AA-30		Makapan Farm 2†			Iron Age
2429AA-31		Makapans Stad†			Terminal Iron Age
2429AA-32		Twenty Four Rivers†			Late Iron Age
2429AA-33		Weenen 4 (open)†			Terminal Iron Age
2429AA-34		De Hoop 5†			Terminal Iron Age
2429AA-35		De Hoop 6 (open)†			Terminal Iron Age
2429AA-36		MIA†			Iron Age
2429AA-37		Weenen Steen Groef†			Iron Age
2429AA-38		Zwartrans 4†			Terminal Iron Age
2429AA-39		Zaba's Shangaan Site†			Terminal Iron Age
2429AA-40		Weenen 5†			Iron Age
2429AA-41		Shangaan II†			Terminal Iron Age
2429AA-42		Refuge II†			Late Iron Age

Catalogue #	Locality #	Site name(s)	Status	Coordinates	Period and context
2429AA-43		The Hyaena Hales†			19th Century
2429AA-44		Appelkoo's Stadt†			19th Century
2429AA-45		SAC Kopjes Site†			
2429AA-46		Brian's Site†		E	Late Iron Age
2429AA-47		Judy's Site†			Late Iron Age
2429AA-48		Maguire's Donga†			ESA/LSA
2429AA-49		Portugal Open†		E	Iron Age
2429AA-50		Peppercorn†		E	Iron Age
2429AA-51		Driefontein 1044†			MSA
2429AA-52		Buffelsdoorns 964†			Stone Age
2429AA-53		Uitloop 1†		E	MSA open site
2429AA-54		Uitloop 2†		E	MSA open site
2429AA-55		Weenen Bridge†		E	ESA open site
2429AA-56		Uitloop 3†		E	
2429AA-57		Mwulu's Cave†		E	MSA cave site
2429AA-58		Simon and Robbie's Cave†			
2429AA-59		Planknek II†		E	Late Iron Age
2429AA-60		Planknek North†			Iron Age
2429AA-61		Planknek South†			Iron Age
2429AA-62	**MKL001**	**McNabb's Gate**	Site		MSA river terrace site overlooking ancient Mwaridzi river channel
2429AA-63	**MKL002**	**Pump Station Site**	Site		ESA colluvated deposits located on opposite bank from MKL001
2429AA-64	ZKL003	Zwartkrans Road Cutting	Site		MSA deposits
2429AA-65	ZKL005	Zwartkrans Pump Site	Site		ESA open site
2429AA-66	**ZKL001**	**Grand Canyon Rockshelter**	Site		Statified LSA/Iron Age rockshelter deposit
2429AA-67	**ZKL002**	**Grand Canyon Breccias**	Locality		Fossil breccias adhering to dolomite wall overhanging ZKL001
2429AA-68	**ZKL004**	**Grand Canyon Flats**	Locality		ESA/MSA/LSA multiperiod alluvial fan below ZKL001
2429AA-69	ZKL006	Zwartkrans Upper Trackway	Micro-locality		MSA open colluvial site
2429AA-70	**ZKL007**	**Harvey Cave**	Site		Fossil deposits exposed by mining adit
2429AA-71	ZKL008	Alfott's Cutting	Site		Dense macromammal fossil deposits (including primates) in fault-controlled fissures exposed by mining, and attendant dumps
2429AA-72	**ZKL009**	**McCraith Cave**	Locality		Fossil breccias exposed in mining adit
2429AA-73	**ZKL010**	**Gough's Cave**	Locality		Breccia and flowstone deposits (undisturbed)
2429AA-74	**MKL004**	**Baboon Grubbing 1**	Micro-locality		ESA open site
2429AA-75	**MKL005**	**Herries' Hole, Katzenjammer Cave**	Site		Deeply stratified palaeofills with breccified caves, part of an extensive underground system intermediate between Peppercorn and Ficus caves
2429AA-76	**MKL006**	**Rufus Cave**	Site		MSA rockshelter
2429AA-77	**MKL007**	**Latham's Lair**	Site		Sinkhole breccia and flowstone deposits exposed within and by mining adit
2429AA-78	**MKL008**	**Python Gully Cutting**	Locality		Massive stratified breccified and unconsolidated infills exposed by deep mining adit
2429AA-79	**MKL009**	**Equus Cutting (Joel's Passage)**	Locality		Rich ESA and faunal deposit overlying and abutting base of COH/Historic Cave infill sequence

Catalogue #	Locality #	Site name(s)	Status	Period and context
2429AA-80	MKL010	Locality 3	Micro-locality	LSA open site
2429AA-81	MKL011	Pythou Main Cave	Site	Stratified breccias and faunal deposits overlying MKL009
2429AA-82	MKL012	COH Dumps	Dump locality	ESA/MSA faunal dump material from Gardner, Kitching and Mason excavations 1939-1953
2429AA-83	MKL013	Python Gully Dumps	Dump locality	Massive dumps derived from MKL008 and MKL011
2429AA-84	MKL014	Magazine Cave	Site	Rockshelter with exposed tuffaceous debris flows containing ESA material
2429AA-85	TFL001	Sand River Dongas	Locality	Series of ESA/MSA/LSA multiperiod sites occuring on and within dongas of alluvial sands and calcretes
2429AA-86	MKL015	Johannes' Site	Micro-locality	MSA/LSA open site overlooking MKL001
2429AA-87	*ZKL011*	*Upper Gold Mine*	Locality	MSA open site
2429AA-88	*ZKL012*	*Lower Gold Mine*	Locality	LSA open site
2429AA-89	ZKL013	Fournier's Folly	Micro-locality	MSA open site
2429AA-90	ZKL014	Jason's Jump	Locality	ESA open site
2429AA-91	MKL-	Makapansgat findspots		Single or small scatter findspots and microsites
2429AA-92	ZKL-	Zwartkrans findspots		Single or small scatter findspots and microsites
2429AA-93	DBL-	De Berg findspots		Single or small scatter findspots and microsites
2429AA-94	SPL-	Spanje findspots		Single or small scatter findspots and microsites
2429AA-95	DHL-	De Hoop findspots		Single or small scatter findspots and microsites
2429AA-96	BFL-	Buffelshoek findspots		Single or small scatter findspots and microsites
2429AA-97	PGL-	Portugal findspots		Single or small scatter findspots and microsites
2429AA-98	SSL-	Sukses findspots		Single or small scatter findspots and microsites
2429AA-99	DBL001	Emma's Site	Locality	ESA/MSA open site
2429AA-100	ZKL015	Tennis Court Wall Site	Locality	ESA/MSA open site
2429AA-101	ZKL016	Tennis Court Open Site	Micro-locality	ESA/MSA open site
2429AA-102	MKL020	Rainbow Cave Dumps	Dump locality	MSA and faunal dump material
2429AA-103	ZKL017	Zwartkrans Farmhouse Rear Fan	Locality	ESA open site
2429AA-104	SPL001	Spanje Plantation	Locality	ESA open site
2429AA-105	MKL018	Historic Cave Upper Ledge	Micro-locality	ESA/MSA surface accumulations upslope of MKL017
2429AA-106	ZKL018	Sugarloaf Plain	Locality	ESA/MSA open site
2429AA-107	MKL019	Bagwell Cave	Locality	Dense macromammal fossil and sub-fossil assemblage with Iron Age intrusions
2429AA-108	RTL-	Rietvlei findspots		Single or small scatter findspots and microsites
2429AA-109	ESL-	Eersteling findspots		Single or small scatter findspots and microsites
2429AA-110	ZKL019	Williams' Cave	Locality	Breccias and fossil deposits exposed by miners adit
2429AA-111	ZKL020	Rye's Rumble	Micro-locality	MSA open site
2429AA-112	SSL001	Fabian's ESA Site	Delete pending check	ESA open site
2429AA-113	ZKL021	Brown's Breccias	Micro-locality	Faunal breccia outcrops
2429AA-114	RTL001	Chris's MSA Site	Locality	MSA open site
2429AA-115	ZKL022	Rye's Rumble II	Micro-locality	ESA/MSA open site
2429AA-116	DHL001	De Hoop Plain	Micro-locality	Dispersed ESA/MSA surface accumulations
2429AA-117	WEL001	Weenan Stone Age I	Micro-locality	ESA/MSA open site
2429AA-118	SSL002	Fabian's ESA Site II	Delete pending check	ESA open site
2429AA-119	ZKL023	Murzl Cave	Site	Deep fault-controlled cave with fossil-bearing debris flows

Catalogue #	Locality #	Site name(s)	Status	Coordinates	Period and context
2429AA-120	MKL021	Hyaena Cave	Site		Early Pleistocene faunal breccias and flowstones
2429AA-121	ZKL023	O'Connor's Orifice	Site		Open sinkhole with Iron Age intrusive faunal material and human remains
2429AA-122	ZKL024	Upper Canyon	Locality		ESA/MSA open site
2429AA-123	MKL022	Mwaridzi Quartzite	Micro-locality		Large primary quartzite flakes, possibly handaxe blanks
2429AA-124	MKL023	Upper Diabase	Locality		Large flake blanks at diabase source
2429AA-125	MKL024	Lower Diabase	Locality		Large flake blanks at diabase source/ESA open site
2429AA-126	MKL025	Above Limeworks	Micro-locality		ESA/MSA open site
2429AA-127	MKL026	Upper Pool Quartzites	Locality (site?)		ESA open site
2429AA-128	ZKL025	Zwartkrans Front Road Terrace	Locality		ESA/MSA terrace lag deposits

Appendix 1. Catalogue of archaeological and fossil sites and localities in the Makapansgat Valley area based on the results of 1997-2000 survey seasons and previously noted sites as recorded in the site archive, Department of Archaeology, University of the Witwatersrand. Stone Age and fossil sites in this catalogue are identified by two unique alpha numerical codes - the Wits site code (SAOS map sheet 2429AA) and the project locality code based on the farm name where the site is located. Thus, for example the full site code for the Cave of Hearths is given as 2429AA001a/MKL017, denoting locality 17 on the farm Makapansgat.

†Denotes previously recognised site as recorded in the Wits site archive before the commencement of the field survey programme.

APPENDIX 4

FOSSIL MAMMAL AND OTHER FOSSIL TAXONOMIC LIST FOR THE MAKAPANSGAT LIMEWORKS

THE MAKAPANSGAT LIMEWORKS FOSSIL FAUNA

ORDER, Family, Species Name, Common Name		Members 2	3	4	5
LARGER MAMMALS					
ARTIODACTYLA (even-toed ungulates)					
Suidae (Pigs, warthogs)					
Notochoerus capensis	warthog		•	•	
Potamochoeroides shawi	bushpig	•	•	•	
Hippopotamidae (Hippopotamuses)					
Hippopotamus amphibius	hippopotamus		•		•
Giraffidae (Giraffes)					
Giraffa cf. G. jumae	giraffe		•	•	
Sivatherium maurusium	sivathere		•		
Bovidae (Hollow-horned ruminants, antelopes, gazelles etc.)					
Tribe Tragelaphini (bushbuck)					
Tragelaphus ? strepsiceros grandis	kudu-like buck				•
Tragelaphus sp. cf. *angasi*	nyala-like buck		•	•	
Tragelaphus pricei	bushbuck-like		•	•	
Tragelaphus sp.	eland-sized buck		•	•	
Tribe Bovini (buffalo & cattle-like bovids)					
Simatherium cf. *kohllarseni*	large bovid		•	•	
Syncerus acoelotus	buffalo-like bovid				•
Tribe Reduncini (reedbucks and waterbucks)					
Redunca darti	reedbuck	?•	•	•	
Kobus sp.					•
Tribe Hippotragini (roan, sable & oryx antelopes)					
Hippotragus cookei	sable-like antelope		•		•
Hippotragini gen et sp. nov	sable-like antelope		•		•
Tribe Alcelaphini (hartebeests)					
Wellsiana torticornuta	extinct antelope		•		
Megalotragus sp.	large hartebeest				•
Parmularius braini	hartebeest		•		
Parmularius sp. nov. cf. *damalops* sp.	small hartebeest		•		
Damaliscus gentryi	blesbuck				•
Tribe Ovibovini (musk oxen)					
Makapania broomi	extinct musk ox		•	•	•
Tribe Cephalophini (duikers)					
Cephalophus sp. cf. *monticola*	blue duiker		•		
Tribe Neotragini (dwarf antelopes)					
Neotragini sp.	dwarf antelope	•	•	•	•
Oreotragus oreotragus	klipspringer		•		•
Tribe Antilopini (Gazelles, impalas)					
Gazella vanhoepeni	Van Hoepen's extinct gazelle	•	•	•	
Gazella gracilior	small extinct gazelle		•	•	
Tribe Peleini					
Pelea cf. *capreolus*	Vaal rhebuck				•

ORDER, Family, Species Name, Common Name		Members 2	3	4	5
PRIMATES (monkeys, apes and man)					
Cercopithecidae (monkeys and baboons)					
Cercocebus sp.	monkey	•	•	•	
Ceropithecoides williamsi	colobus-type monkey		•	•	
Parapapio broomi	baboon		•	•	
Parapapio whitei	baboon		•	•	
Parapapio jonesi	baboon	•	•	•	
Parapapio sp.			•	•	
Theropithecus darti	gelada-type baboon	•	•	•	
Colobinae sp. indet.			•		
Hominidae					
Australopithecus africanus					
			•	•	
SMALLER MAMMALS					
RODENTIA (rodents: rats & mice etc)					
Hystricidae (porcupines)					
Xenohystrix crassidens	giant porcupine				
Hystrix makapanensis	large porcupine		•		
Hystrix africaeaustralis	porcupine		•	•	•
			•	•	
Bathyergidae (rodent moles)					
Cryptomys cf. hottentottus	smallish common mole	?•			
Cryptomys robertsi	mole rat	?		•	
Gypsorhychus makapani	giant rodent mole		?	?	
			•	•	
Gliridae (dormice)					
Graphiurus (Claviglis) cf. monardi	dormouse	?•			
				•	
Cricetidae (rats and mice)					
Mystromys cf. hausleitneri	white-tailed rat	?•			
Mystromys antiquus	rat	?		•	
Mystromys sp. (dwarf)	small rat		?	?	
Proodontomys cookei	extinct rat	?•		•	
				•	
Dendromurinae					
Dendromys sp.	pygmy mouse	?•			
Steatomys sp.	fat mouse	?•		•	
Malacothrix sp.	mouse	?•		•	
				•	
Petromyscinae					
Stenodontomys darti	extinct rodent				
				•	
Gerbillinae (gerbils)					
Taterillus sp.	gerbil	?•			
				•	
Muridae					
Otomys cf. gracilis	marsh mouse	?•			
O. (Myotomys) cf. slogetti	vlei rat	?•		•	
Dasymys sp.	water rat	?•		•	
Rhabdomys sp.	striped field mouse	?•		•	
Aethomys cf. namaquensis	rock mouse	?•		•	
A. cf. chrysophilus	veld rat	?•		•	
Praomys sp.	multimammate-type mouse	?•		•	
Acomys sp. spiny-type mouse		•		•	
Mus sp.	mouse	•		•	
				•	

APPENDIX 5

MANAGEMENT AND MONITORING OF THREATS AND RISKS TO SITE SIGNIFICANCE

1. MANAGEMENT AND MONITORING OF THREATS AND RISKS TO SITE SIGNIFICANCE

ENVIRONMENTAL SENSITIVITIES, THREATS AND RISKS	MANAGEMENT MEASURES	RESPONS-IBILITY	MONITORING CRITERIA
Inappropriate land use on adjacent properties: • Compromise of visual aesthetics • Loss of rural ambience • Loss of "sense of place"	• Control with reference to existing legislation • CHR Survey database to be circulated to authorities who authorize development plans • Sensitive sites to be placed on "closed file' • Existence of database to be publicized amongst developers • Take action against those who ignore legislation •	MANAGEMENT AUTHORITY, by liasing with plan approving authorities	• WHS monitors to monitor for inappropriate developments and report immediately •
Theft of stromatolites: • Loss of Heritage material and site significance • Loss of micro-habitats • Contravention of existing legislation	• Alert landowners to the problem • Instigate a system of " WHS Rangers" to monitor vulnerable areas • Set uo photographic points to serve as reference baseline • Control major accesses with booms • Incorporate stromatolites and oolites into tourism routes • Educational pamphlets on significance of stromatolites • Penalize offenders	Management Authority/SAHRA, Rangers to monitor, SAHRA Inspectors - stromatolites are fossils and protected under SAHRA's legislation. Landowners to manage and monitor own properties	• Check with landowners if there is a problem • Check areas adjacent to access roads for signs of extraction, presence of portable stromatolitic blocks • Monitor against photographic baseline

ENVIRONMENTAL SENSITIVITIES, THREATS AND RISKS	MANAGEMENT MEASURES	RESPONS-IBILITY	MONITORING CRITERIA
Alien Invasives • Invasion of avens, sinkholes, excavations and heritage sites • Loss of biodiversity • Unattractive landscape • Existing legislation requires management and control	• Identify which invasives are present, map • Set up a photographic baseline • Initiate control measures, liase with WFW programme • Liase with landowner to control source areas • Research optimum control season for the different species • Research key dispersal agents • Research key establishment enabling factors • Maintain eradication programme and surveillance	MANAGEMENT AUTHORITY to initiate research, landowners and researchers to control their respective areas. Responsibility rests with the landowner Working for Water Programme can assist	• Check favoured establishment sites for each species for the regrowth of new plants • Monitor against photographic baseline • Check whether control measures (biological, mechanical, chemical) are appropriate
Weeds and shrub growth in excavation and heritage sites Roots destabilise breccias Plants reduce visibility of noteworthy sections	• Careful removal by hand taking care not to disturb friable breccias	MANAGEMENT AUTHORITY - Duty of Care to protect heritage sites Researchers at working sites	• Monitor for encroaching vegetation around paths, excavations
Threats to designated Red Data Species	• Nature Conservation Department to suggest strategy	MANAGEMENT AUTHORITY	• Management Authority to suggest monitoring strategy
Uncontrolled, unmonitored collection of medicinal, food plant and other target species Loss through theft and collection of target species. Many important species are not on Red Data List	• Identify, locate and map ethnobotanically important species • Research the problem to determine extent and target species, areas of activity, level of collection • Create photographic baseline record • Create sample plots and counts • Initiate a WHS Patrol to monitor vulnerable areas and species	MANAGEMENT AUTHORITY, landowner	• Check for presence of species against baseline records

ENVIRONMENTAL SENSITIVITIES, THREATS AND RISKS	MANAGEMENT MEASURES	RESPONS-IBILITY	MONITORING CRITERIA
Fire • Too frequent fires impact on vegetation • Blackened areas unsightly • Threat to infrastructure	• Attempt a rationalized fire management programme • Burn fire breaks in blocks throughout the WHS • Burn fire breaks around each heritage Site (according to E. Seamark's specifications) • Burn firebreaks around each piece of infrastructure in wind prone sites and in wind corridors • Ensure burns complete before windy, dry season	Landowners, input from MANAGEMENT AUTHORITY Researchers to protect working sites	• Check for appropriate firebreaks • Record all fires • Note effectiveness of firebreaks
Erosion • Loss of topsoil • Creates deterioration of pathways and access roads	• Create appropriate drainage and humps on vulnerable compacted surfaces like roads and paths • Keep drains open • Ensure correct dispersal of runoff over the landscape • Ensure correct design and contouring of paths, roads and trails • Ensure drainage is away from excavations	MANAGEMENT AUTHORITY within heritage sites, Researcher in working sites, landowner	• Check for erosion channels created by runoff
Seep areas, drainage ways • Seasonally inundated or moist soils • Unsuitable for building • Damming a problem where roads and paths cross seeps and drainage ways	• Do not plan developments in seep areas • Create proper culverts across seeps and drainage ways where road crosses • Do not fill to create convenient access	Environmental best practice - ALL	• Check for correct culvert crossings at seeps and drainage ways
Loss of topsoil • Loss of topsoil makes revegetation and landscaping difficult	• Stockpile and re-use topsoil wherever surface is disturbed • Do not reuse topsoil contaminated with seed of invasive species	Standard best practice	• Check for stockpile • Check for appropriate re-use
Water pollution	• Check pollution - DWAF and WFW programmes	MANAGEMENT AUTHORITY	• Ensure that checks have been done
Littering	• Provide and empty litter bins regularly • Ensure that containers are wind-proof and animal proof • Provide adequate coverage of site	Researcher, for working sites. Tourism beneficiary for tourist sites	• Monitor for correct placement, wind-proofing and regular emptying of litter bins • Check site for signs of litter • Establish outside sources of litter

ENVIRONMENTAL SENSITIVITIES, THREATS AND RISKS	MANAGEMENT MEASURES	RESPONS-IBILITY	MONITORING CRITERIA
Soiling of the site environs	• Provide well-screened toilets - not pit type or septic tanks • Post signs intimating correct visitor behaviour	Researchers, for working sites. Tourism beneficiary and others	• Monitor for correct toilet type • Check for toilet use • Ensure adequate screening and privacy present
Aesthetics - visual	• Attempt to ensure that unsightly structures within the viewshed are screened, or removed and rehabilitated • Attempt to use existing legislation to discourage innapropriate structures being erected within viewshed • Build with visual aesthetics in mind - see Appendix 4	All. Tourism concessionaire - difficult to persuade anyone to undertake this - multiple beneficiaries	• Check viewshed for unsightly buildings • Monitor screening attempts • Check rehabilitation of demolition sites
Aesthetics -the built environment (see APPENDIX 4)	• Use appropriate building materials that blend with the environment in terms of colours, textures • Do not allow structures to compromise the skyline • Ensure appropriate form and positioning on the landscape	SAHRA to approve building plans SAHRA to authorise	• Check building sites for compliance with plans submitted and approved
Aesthetics: - signage (see APPENDIX 4)	• Ensure uniformity of appearance, simplicity, use of symbols as far as possible, use of standard typeface • Ensure sensitive placement of signs - see Appendix 4	SAHRA to approve texts and signage design SAHRA to authorise signage	• Check for compliance with approved texts and design
Damage to sites	• Ensure permits and EIA in place prior to developments	MANAGEMENT AUTHORITY, Local Authorities, Building Inspectors, SAHRA	• Monitor for developments in sensitive areas • Check compliance with EIA and other restrictive legislation
THE SUBTERRANEAN ENVIRONMENT			

ENVIRONMENTAL SENSITIVITIES, THREATS AND RISKS	MANAGEMENT MEASURES	RESPONS-IBILITY	MONITORING CRITERIA
Undue non-regulated commercial exploitation	• MANAGEMENT AUTHORITY to address entire problem of the exploitation and management of the subterranean environment	MANAGEMENT AUTHORITY - see Management of Karst and Caves report - available from DACEL, SA	•
Theft and damage to cave speleothems	• MANAGEMENT AUTHORITY to address	SAHRA, Environment Affairs	• Monitor for speleothem theft - fresh breaks and broken stalactites and stalagmites easily apparent
Vandalism and graffiti	• CONSERVATORS, SITE MONITORS to patrol • Initiate clean-up at key sites	MANAGEMENT AUTHORITY, landowners, SAHRA	• Check environs for graffiti
Compaction of cave substrate	• CONSERVATORS, SITE MONITORS • Limit commercial exploitation • Designate different caves for use or preservation - see Karst plan	MANAGEMENT AUTHORITY, landowners	• Check level of designated cave usage - protected caves have limited visitation
Pollution of cave environments	• CONSERVATORS, SITE MONITORS	Landowners	• Check compaction of floor and access routes
Disturbance of air flow	• As above • Caving fraternity to conform to responsible environmental standards. Co-operation and controls needed • Substrates should be gently loosened	Landowners: Problem: it is not the landowner who is causing the problem	• Check for compaction • Check for alteration of air flow
Uncontrolled abseiling	• Regulate by means of a permitting system by Conservation officers, or by a recognised Club/ organisation who follow an ethical management plan	MANAGEMENT AUTHORITY	• Check that users have the necessary licences and permits
Exposure to personal danger	• Designate no-go areas • Provide appropriate safety interventions • Post warning signage	Tourism beneficiary or other user	• Professional inspections if public use
Exposure to histoplasmosis	• Post warning signage, particularly drawing attention to the extra risk to immune-compromised individuals	Tourism beneficiary or other user	• Monitor for signage • Monitor for tourist guide verbal warning to tourists

ENVIRONMENTAL SENSITIVITIES, THREATS AND RISKS	MANAGEMENT MEASURES	RESPONS-IBILITY	MONITORING CRITERIA
Bat disturbance and loss	• Initiate research into which caves are used a s roosts or breeding sites • restrict access to these places	MANAGEMENT AUTHORITY	• Monitor seasonal use of caves by different species • Monitor for disturbance at these sites
Disturbance of other troglodytes	• Create a register of caves in the cradle identifying those that are homes to various animals. • Restrict access to vulnerable caves	MANAGEMENT AUTHORITY	• Monitor for continued use of identified caves • Check for disturbance at these sites
UNCONTROLLED ACCESS			
Scavenging of artefacts	• Erect security fence where feasible • Remove valuable fossil pieces to the laboratory • Store valuable heritage objects in locked facility • Do not allow free-range tourism • Provide adequate guiding and surveillance of visitors • Provide a caretaker	SAHRA (fences) Researcher (if present) for fossil removal MANAGEMENT AUTHORITY - duty of care to protect heritage sites	• WHS rangers
Theft of equipment	• As above	Researchers	• Equipment is researchers responsibility
Interference with experiments and equipment	• As above	Researchers	• Equipment is researchers responsibility
Vandalism of site	• As above, post signs intimating appropriate visitor behaviour	MANAGEMENT AUTHORITY/SAHRA	• Duty of care towards National Estate
Graffiti	• As above • Instigate clean-ups at key sites	MANAGEMENT AUTHORITY/SAHRA	• AS above
Undue trampling and uncontrolled movement around site	• Pathways help, and raised boardwalks • Do not allow trampling of fossiliferous substrates • Provide viewing platforms • Manage as above	Researcher to protect at working sites Tourism beneficiary at others MANAGEMENT AUTHORITY/SAHRA at vulnerable unoccupied sites	• Monitor for trampled surfaces • Monitor for correct placement of access paths • Check for exposed vulnerable fossils

ENVIRONMENTAL SENSITIVITIES, THREATS AND RISKS	MANAGEMENT MEASURES	RESPONS-IBILITY	MONITORING CRITERIA
Theft of firewood	• Surveillance by Ranger and site monitors • Establish source of wood being removed	Landowners, SAHRA, Environment Affairs	• Landowners to monitor their own properties
Runaway fires	• Burn firebreaks as intimated in environmental section above	See environmental section	• See environmental section
Damage to excavations	• Provide safety/security fence around excavation • Ensure that paths do not encroach too closely to excavation edge • Protect delicate or vulnerable excavation edges and substrates as much as possible • Post appropriate educational and behavioural signage • Provide appropriate walking surface and viewing platforms to control visitor movement around site	Tourism beneficiary Researchers to protect working environment, SAHRA	• Check to see that excavation edge id intact
Picking flowers and removing plants	• Post warning notices • Patrols by Rangers • Intimate fines payable for offence • Punish offenders	Landowner. MANAGEMENT AUTHORITY, SAHRA	•
poaching	• Landowner to patrol, apprehend, prosecute • Address in landowner-researcher agreement for co-operation	Landowner	• Landowner to monitor problem
Theft of Pelindaba stone, stromatolites and geological specimens	• See environmental threats above	See above	•
Vandalism of archaeological, palaeontological and historical sites	• Ranger to maintain surveillance over noteworthy heritage sites • Manage as for uncontrolled access above • Prosecute offenders	MANAGEMENT AUTHORITY	• Check for evidence of vandalism against site description, photographic record

ENVIRONMENTAL SENSITIVITIES, THREATS AND RISKS	MANAGEMENT MEASURES	RESPONS-IBILITY	MONITORING CRITERIA
Exposure to personal danger - see Site safety Report	• Install appropriate safety interventions • Consult professional before doing so • Annual professional inspection required • Take out public liability insurance • Designate as a no-go area • Barricade off with physical or psychological barrier • Post warning notices • Ensure guide draws attention to nature of danger	Researcher, for work areas Tourism beneficiary at other places	• Check for adequacy and appropriateness of safety installations • Ensure annual professional site safety audit at places open to the public
Exposure to histoplasmosis	• Post warning signs at entrance to cave • Post warning signage concerning people at risk (AIDS) • Ensure guide informs tourists	Tourism beneficiary	• Monitor for appropriate signage • Check if verbal warnings also given • Check for appropriate placement of sign
SITE SAFETY AND STABILITY	•		
Old mines are impossible to stabilise, except temporarily	• The costs of stabilization are prohibitive • User pays or beneficiary pays principle cannot always apply (no present landowners) • Heritage is irreplaceable and part of National Estate • State has a Duty of Care towards Heritage • Sites will gradually collapse due to a natural restoration of the equilibrium • Need to assist with the support of key areas at risk	MANAGEMENT AUTHORITY, researcher, where research activities cause instability. Most damage due to mining activities and natural causes	• Check each site for vulnerable areas, in consultation with researchers • Target top priority areas and areas most at risk • Report imminent collapses
IMPACTS OF RESEARCHERS AND RESEARCH ACTIVITIES			
Compliance with SAHRA permit conditions	• SAHRA heritage inspector to inspect • Ensure inspections while work is still in progress	SAHRA, Research Committee Inspector	• Check for compliance with terms of SAHRA permit
Compliance with terms of Memorandum of agreement	• Research Management Committee inspectors to inspect, SAHRA inspectors to report	SAHRA Inspector, Research management Committee	• Check for compliance with terms of Landowner-researcher Memorandum of Agreement

ENVIRONMENTAL SENSITIVITIES, THREATS AND RISKS	MANAGEMENT MEASURES	RESPONS-IBILITY	MONITORING CRITERIA
Excavation techniques, breccia storage, waste management etc,	• As above • Breccia with vulnerable fossils to be kept locked • Valuable specimens to be removed to safe-keeping off-site	AS above	• Check for compliance with terms of permit, M.O.A.
IMPACTS OF REPOSITORIES ON HERITAGE OBJECTS			
Repositories: Activities which impact on condition of heritage objects - preparation techniques, cataloguing, storage, loan policy etc	• SAHRA to inspect repositories	SAHRA	• Repository to conform to minimum standards defined by SAHRA
IMPACT OF TOURISM			
Wear and tear of pathways and routes	• Restrict numbers of tourists • Repair pathway surface regularly	Tourism beneficiary	• Monitor environment, paths and roads for undue wear and tear against pre-start photographic baseline
Touching	• Post signs intimating appropriate behaviour • Create physical and psychological barricades which prevent touching • Ensure guide informs visitors appropriately	Tourism beneficiary	• Monitor for signs of touching • Check tour group for appropriate behaviour
Trampling - breakage and splintering of fossils, loss of site significance	• Provide raised boardwalks and viewing platforms	Tourism beneficiary	• Monitor deposit for undue trampling • Check for possible exposure of new fossils • Ensure correct placement of paths (in conjunction with researcher) •
Theft of fossils - loss of site significance	• Provide front and tail end tourist guides and helpers to keep watch • Keep fossils locked in store • Remove valuable pieces to off-site laboratory • Post appropriate behaviour notices • Provide verbal explanations and requests not to collect • Provide replicas or non-valuable souvenirs for sale	Researcher, for worked sites. Tourism beneficiary to provide all surveillance of visitors	• Monitor groups for compliance • Monitor breccia piles for fossils

ENVIRONMENTAL SENSITIVITIES, THREATS AND RISKS	MANAGEMENT MEASURES	RESPONS-IBILITY	MONITORING CRITERIA
Crowding - decreases value of tourist experience	• Reduce tourist numbers • Provide alternative activities elsewhere • Stagger trips • Break groups into smaller sizes • Train more guides	Tourism beneficiary	• Monitor for crowding
The need for tourist infrastructure - quality of tourist experience	• Basic minimum infrastructure requirement inevitable	Tourism beneficiary. Tourism quality control body	• Monitor for adequacy, quality and maintenance of tourism infrastructure - quality control necessary
The need for tourist guides - major requirement for interpretation of site significance	• Urgently needed training facility • Urgently needed setting of standards • Syllabus specific to the WHS • Accreditation required to maintain standards of presentation of the WHS • Urgently needed recruitment and monitoring	MANAGEMENT AUTHORITY?, SAHRA (sect 44 of Act)	• Monitor factual knowledge of sites and ability to field questions • Monitor personal presentation, communication skills • Monitor knowledge of first aid, emergency handling
The need for site museum	• This is part of development planning	Tourism beneficiary	• Monitor for appropriate content, presentation • Monitor for vitality and contemporaniety
SITE INTERPRETATION	•		•
Quality control on all signage, labels, brochures, publications and texts	• SAHRA reserves the right to comment and approve	SAHRA	• SAHRA monitors to monitor all signage throughout the WHS
Labeling of significant trees	• Label trees for greater educational value for visitors	Tourism beneficiary	• Check accuracy and condition of labels
Information plaques - e.g. sundial, maps, medicinal and toxic plant information	• Ensure adequate information on non-fossil related site significance, e.g. plants, fauna, historical, other cultural significance	Tourism beneficiary, SAHRA to check	• Monitor for factual accuracy and quality, conformity with SAHRA requirements

15 Globlar Street
Private Bag X9549
POLOKWANE 0700
Tel (015) 295 7414/5/9
Fax (015) 291 1249

Lebowa
PROVINCIAL GOVERNMENT

05 December 2002
Ref:11/1/11

TO: THE DIRECTOR GENERAL.
DEPARTMENT OF ENVIRONMENT AND TOURISM

FROM: THE MEC
DEPARTMENT OF SPORT, ARTS & CULTURE

SUBJECT: WORLD HERITAGE NOMINATION : MAKAPAN VALLEY HERITAGE SITE

1. This letter serves to confirm our full support for the declaration of;

   The farm "Makapansgat" 39 KS, 19 km E-N-E of Mokopane (Potgietersrus) situated in Limpopo Province, South Africa and surrounding farms that form part of the "conservancy", which have been identified as a suitable buffer zone,

   as a World Heritage site.

M.R. SEMENYA
MEC FOR THE DEPARTMENT OF SPORT, ARTS & CULTURE
DATE:

DEPARTMENT OF SPORT, ARTS AND CULTURE
OFFICE OF THE MEC

MOGALAKWENA

MUNICIPALITY

P O Box 34
MOKOPANE
0600

Tel. no. **015 491 9600**
Fax no. **015 491 9755**

Reference : 7/3/3/68 **Enquires:** Irene de Villiers

19 December 2002

The Manager : Limpopo Regional Office
The South African Heritage Resources Agency
P O Box 1371
POLOKWANE
0700

FAX 015 291 1819

Sir

NOMINATION AS A WORLD HERITAGE SITE : MAKAPANS VALLEY, FARM MAKAPANSGAT 39KS

Your letter 9/2/257/002 dated 28 November 2002 refers.

I am directed to inform you that the council of the Mogalakwena Municipality resolved on 12 December 2002 that the application for world heritage status for the farm Makapansgat, 39KS is wholeheartedly supported in both capacities as local authority and landowner.

Yours faithfully

D H MAKOBE
MUNICIPAL MANAGER

ONTVANG/RECEIVED 2003 -01- 06

H4/3/2/721/1: Die kenteken en vlag van **die Metropolitaanse Polisiediens van die stad Tshwane**, soos by Goewermentskennisgewing No. 435 van 19 April 2002 gepubliseer.

H4/3/4/684: Die wapen, kenteken en standaard van **Clyde Webb**, soos by Goewermentskennisgewing No. 1291 van 7 Desember 2001 gepubliseer, die wapen waarvan verander is onder Goewermentskennisgewing No. 446 van 19 April 2002. Goewermentskennisgewing No. 446 van 19 April 2002 het per abuis die indruk geskep dat die kenteken en standaard verwyder is van die aansoek. Dit is nie die geval nie.

H4/3/4/691: Die wapen en standaard van **Michael Brian Goodrick**, soos by Goewermentskennisgewing No. 446 van 19 April 2002 gepubliseer.

H4/3/4/699: Die wapen van **Brian Gaylord Jeffs**, soos by Goewermentskennisgewing No. 446 van 19 April 2002 gepubliseer.

H4/3/4/700: Die wapen van **Alexia Leontyne Gordon**, soos by Goewermentskennisgewing No. 446 van 19 April 2002 gepubliseer.

H4/3/4/702: Die wapen van **Graaf Marian Voss de Cousances**, soos by Goewermentskennisgewing No. 446 van 19 April 2002 gepubliseer.

H4/3/4/706: Die wapen van **Richard Curtis Patterson**, soos by Goewermentskennisgewing No. 446 van 19 April 2002 gepubliseer.

H4/3/4/707: Die wapen van **Giovanni Simone Valtorta**, soos by Goewermentskennisgewing No. 446 van 19 April 2002 gepubliseer.

H4/3/4/715: Die wapen van **Sidney Warren Gaddy**, soos by Goewermentskennisgewing No. 446 van 19 April 2002 gepubliseer.

H4/3/4/718: Die wapen van **Yuri Michailovitch Romanenkov**, soos by Goewermentskennisgewing No. 446 van 19 April 2002 gepubliseer.

H4/3/4/719: Die wapen van **Patricia Fay Casey (née Spurgin)**, soos by Goewermentskennisgewing No. 446 van 19 April 2002 gepubliseer.

H4/3/4/723: Die wapen van **William Evans Crowder IV**, soos by Goewermentskennisgewing No. 446 van 19 April 2002 gepubliseer.

H4/3/4/622: Die wapen van **Kurt-Wilhelm Bütow**, soos by Goewermentskennisgewing No. 160 van 18 Februarie 2000 geregistreer, is met 'n silwer barendsteel as differensiëring vir sy oudste dogter Anike Bütow geherregistreer as 'n heraldiese erfgenaam.

No. 854 28 June 2002

SOUTH AFRICAN HERITAGE RESOURCES AGENCY

DECLARATION OF MAPUNGUBYE AS A NATIONAL HERITAGE SITE

The South African Heritage Resources Agency hereby declare the Mapungubye Cultural Landscape, in terms of s27 of National Heritage Resources Act, No. 25 of 1999, as a National Heritage Site. The Mapungubwe cultural landscape covers the same area as the Limpopo Valley National Park. It is situated between the Limpopo River to the north and the R572 between Pont Drift and Messina to the south. The western boundary is the R521 from Pont Drift to the R572 turn off. The eastern boundary is formed by the farms Weipe and Reidel.

The Mapungubwe Cultural landscape records the sequency of social and economic changes between AD900 and AD1300 that reflect the evolution of class distinction and sacred leadership in the settlements known as Schora, K2 and Mapungubwe These are the only places where exotic trade and non-utilitarian items have been found in such large quantities in Southern Africa.

No. 889 28 June 2002

SOUTH AFRICAN HERITAGE RESOURCES AGENCY

DECLARATION OF MAKAPANS VALLEY AS A NATIONAL HERITAGE SITE

The South African Heritage Resources Agency hereby declare the Makapans Valley, in terms of s27 of National Heritage Resources Act, No. 25 of 1999, as a National Heritage Site. The Makapans Valley, its many caves and other sites of cultural. historical, archaeological and palaeontological importance, are situated on the farm Makapansgat 39ks some 19 kilometres from Potgietersrus in the Limpopo Province of South Africa.

Makapansgat 39ks is culturally significant in the categories = aesthetic. historical, scientific, social, spiritual, linguistic and technological value. The scientific, environmental and clutural heritage value of the site must not only be preserved but presented to as wide a public as possible and utilised for educational purposes.

Setshaba
Ons erfenis
Heritage for the nation
Ifa la lushaka
Ndzalama ya rixaka

SOUTH AFRICAN HERITAGE RESOURCES AGENCY
LIMPOPO PROVINCIAL OFFICE
ESTABLISHED IN TERMS OF THE NATIONAL HERITAGE RESOURCES ACT, 25 OF 1999
4 HANS VAN RENSBURG STREET, POLOKWANE, 0699 P.O. BOX 1371, POLOKWANE, 0700
TEL: (015) 291 1804 FAX: (015) 291 1819
E-MAIL: sahra.np@mweb.co.za

REF: 9/2/257/ 002

R REF:

ENQUIRIES: Ron Viney

DATE: 28 November 2002

The Council and Executive Mayor
Mogalekwena Municipality
Box 34
Mokopane
0600

By Fax: 015 491 5142
Attn.: Ms Lizzie Mailula

NOMINATION AS A WORLD HERITAGE SITE: MAKAPANS VALLEY, FARM MAKAPANSGAT 39KS.

As you are aware, nomination of the Makapans Valley as a World Heritage Site under the auspices of UNESCO has been an ongoing process for a number of years. We are now close to submitting the nomination dossier in February of 2003. **The nomination documentation requires the Municipality's support as local authority and approval as landowner for the nomination to proceed.** The benefits of having a world heritage site within the Municipal boundaries well worth it.

Time frame are, however, critical and we would need your written confirmation by at least 15 December 2002.

Yours faithfully

Manager: Limpopo Regional Office

NMC REF: NMC404/C

NATIONAL MONUMENTS COUNCIL

DECLARATION AS A NATIONAL MONUMENT
CONSENT FORM

I/We, the Transitional Local Council of Greater Potgietersrus

have been duly notified by the National Monuments Council of its intention to recommend to the Minister of Arts, Culture, Science and Technology the declaration of ~~my~~/our property situated at the remaining portion of the farm Makaparsgat 39KS district Potgietersrus

as a national monument in terms of the National Monuments Act, No. 28 of 1969. My/Our approval for the declaration of the said property is granted herewith.

SIGNED: .....

Date: 14-12-99

Provision of the following information would be appreciated:

1. The ~~erf no.~~/farm no. of the property: Remaining portion of the farm Makaparsgat, 39KS
2. Street number and name (where applicable):

   —
3. The number and date of the Title Deed: T.61330/97
4. Postal address of owner/s:

   P.O. Box 34

   Potgietersrus 0600
5. Telephone number/s of owner/s: ~~(H)~~ (F) 015 491 5142

   (W) 015 491 2244

this Get copy with deleted

H4/3/2/721/1: Die kenteken en vlag van **die Metropolitaanse Polisiedienste van die stad Tshwane**, soos in Goewermentskennisgewing No. 435 van 19 April 2002 gepubliseer.

H4/3/4/604: Die wapen, kenteken en standaard van **Clyde Webb**, soos by Goewermentskennisgewing No. 1291 van 7 Desember 2001 gepubliseer, die wapen waarvan verwyder is onder Goewermentskennisgewing No. 446 van 19 April 2002. Goewermentskennisgewing No. 446 van 19 April 2002 het per abuis die indruk geskep dat die kenteken en standaard verwyder is van die aansoek. Dit is nie die geval nie.

H4/3/4/691: Die wapen en standaard van **Michael Brian Goodrick**, soos by Goewermentskennisgewing No. 446 van 19 April 2002 gepubliseer.

H4/3/4/699: Die wapen van **Brian Gaylord Jeffs**, soos by Goewermentskennisgewing No. 446 van 19 April 2002 gepubliseer.

H4/3/4/700: Die wapen van **Alexia Leontyne Gordon**, soos by Goewermentskennisgewing No. 446 van 19 April 2002 gepubliseer.

H4/3/4/702: Die wapen van **Graaf Marian Voss de Cousances**, soos by Goewermentskennisgewing No. 446 van 19 April 2002 gepubliseer.

H4/3/4/706: Die wapen van **Richard Curtis Patterson**, soos by Goewermentskennisgewing No. 446 van 19 April 2002 gepubliseer.

H4/3/4/707: Die wapen van **Giovanni Simone Vallorta**, soos by Goewermentskennisgewing No. 446 van 19 April 2002 gepubliseer.

H4/3/4/715: Die wapen van **Sidney Warren Gaddy**, soos by Goewermentskennisgewing No. 446 van 19 April 2002 gepubliseer.

H4/3/4/718: Die wapen van **Yuri Michallovitch Romanenkov**, soos by Goewermentskennisgewing No. 446 van 19 April 2002 gepubliseer.

H4/3/4/719: Die wapen van **Patricia Fay Casey (née Spurgin)**, soos by Goewermentskennisgewing No. 446 van 19 April 2002 gepubliseer.

H4/3/4/723: Die wapen van **William Evans Crowder IV**, soos by Goewermentskennisgewing No. 446 van 19 April 2002 gepubliseer.

H4/3/4/622: Die wapen van **Kurt-Wilhelm Bülow**, soos by Goewermentskennisgewing No. 160 van 18 Februarie 2000 geregistreer, is met 'n silwer barendeteel as differensiëring vir sy oudste dogter Anika Bülow geborregistreer as 'n heraldiese erfgenaam.

No. 854 28 June 2002

SOUTH AFRICAN HERITAGE RESOURCES AGENCY

DECLARATION OF MAPUNGUBYE AS A NATIONAL HERITAGE SITE

The South African Heritage Resources Agency hereby declare the Mapungubye Cultural Landscape, in terms of s27 of National Heritage Resources Act, No. 25 of 1999, as a National Heritage Site. The Mapungubwe cultural landscape covers the same area as the Limpopo Valley National Park. It is situated between the Limpopo River to the north and the R572 between Pont Drift and Messina to the south. The western boundary is the R521 from Pont Drift to the R572 turn off. The eastern boundary is formed by the farms Waipe and Reidel.

The Mapungubwe Cultural landscape records the sequency of social and economic changes between AD900 and AD1300 that reflect the evolution of class distinction and sacred leadership in the settlements known as Schoria, K2 and Mapungubwe. These are the only places where exotic trade and non utilitarian items have been found in such large quantities in Southern Africa.

No. 889 28 June 2002

SOUTH AFRICAN HERITAGE RESOURCES AGENCY

DECLARATION OF MAKAPANS VALLEY AS A NATIONAL HERITAGE SITE

The South African Heritage Resources Agency hereby declare the Makapans Valley, in terms of s27 of National Heritage Resources Act, No. 25 of 1999, as a National Heritage Site. The Makapans Valley, its many caves and other sites of cultural historical, archaeological and palaeontological importance, are situated on the farm Makapansgat 39ks some 19 kilometres from Potgietersrus in the Limpopo Province of South Africa.

Makapansgat 39ks is culturally significant in the categories of aesthetic, historical, scientific, social, spiritual, linguistic and technological value. The scientific, environmental and cultural heritage value of the site must not only be preserved but presented to as wide a public as possible and utilised for educational purposes.

2000-01-31

Northern Province

OFFICE OF THE PREMIER

26 BODENSTEIN ST.
PRIVATE BAG X9483
PIETERSBURG
0700
TEL: 0152 - 295-3910
FAX: 0152 - 295-3840

Ref: DG 3\13\4
Enq: Mabasa M R

27 June 1997

The Deputy Director-General
Department of Trade, Industry and Tourism
Private Bag X9484
PIETERSBURG
0700

MAKAPANSTAD/DOORTBERG ECO-TOURISM CONSERVATION PROJECT

I append hereto an extract from Executive Council Decision taken on 13 June 1997 in the above regard for your information and implementation:-

"DECISION NO. 54\97

The Executive Council approved the proposal that Government should support the declaration of the Makapan-Strydpoortberg project as a conservancy area for eco-tourism development.

The Department of Agriculture, Land and Environment should encourage people who acquire farms in the area to utilise them for game farming".

CHIEF DIRECTOR: EXECUTIVE SUPPORT SERVICES

copy DF

S.A.H.R.A
2002-10-02
ONTVANG/RECEIVED

SOUTH AFRICAN HERITAGE RESOURCES AGENCY

4 HANS VAN RENSBURG STREET, PIETERSBURG, 0699 P. O. BOX 1371, PIETERSBURG, 0700

TEL: (015) 291 1804 FAX: (015) 291 1819

Established in terms of the National Heritage Resources Act, 25 of 1999.

Cel.: 083 411 4521

e-mail: sahra.np@mweb.co.za

OUR REF: ~~9/2/224/002~~

YOUR REF:

ENQUIRIES: Ron Viney

DATE: 12 September 2002

The Vice-president: Technical Administration
Box 782078
Sandton
2146

By fax.: 011 883 5226
ATTN: Mark Whitehead

NOTICE OF PROPOSED PROVISIONAL PROTECTION IN TERMS OF SECTION 29 OF THE NATIONAL HERITAGE RESOURCES ACT, 25 OF 1999.

PROPOSED PROVISIONAL PROTECTION OF:

PROPOSED PROTECTED AREA AND CONSERVANCY AROUND THE FARM MAKAPANSGAT 39KS:

- **OOSTENRYK 92KS, RUSLAND 93KS, DUITSCHLAND 95KS, FRANKRYK 59KS, SCHIETFONTEIN 58KS, BELGIE 52KS, NEDERLAND 51KS, VIER-EN-TWINTIG RIVIERE 49KS, MARIBASHOEK 50KS, HIGHLANDS 60KS, RIETFONTEIN 34 KS, EERSTELING 17KS, DE BERG 35KS, WEENEN 40KS, DE HOOP 54KS, BUFFELSHOEK 53KS, PLANKNEK 43KS, GROOTVALLEY 57KS, PORTUGAL 55KS, SPANJE 36KS.**

NOTIFICATION IN TERMS OF SECTION 29[4] OF THE NATIONAL HERITAGE RESOURCES ACT [NHRA], 25 OF 1999.

Please be informed that at a meeting of the SAHRA council on 28 June 2002 it was agreed to proceed with Provisionally Protecting for a period of two [2] years from the date of publication of a notice in the Government Gazzette as contemplated in section 29[1] of the NHRA the abovementioned erven, properties and areas

The Provisional Protection is invoked as SAHRA believes that these heritage resources are threatened, that the threats can be alleviated by negotiation and consultation and for further investigation in terms of the NHRA.

Please note that the designated area is **protected for 30 days from date of this notice in terms of section 29[5]** of the NHRA or until publication of a notice in the *Government Gazette* for the protection of the site for 2 years, whichever is the shortest.

No person may damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of a provisionally protected place or object without a permit issued by SAHRA. [THIS INCLUDES ALL OBJECTS, FIXTURES, FURNITURE AND FITTINGS]

Please inform any personnel in your organisation who deal with any of the areas concerned.

You are requested to confirm receipt of this notice by signing and returning a copy of this notice.

Yours faithfully

Manager: Limpopo Provincial Office

Received by..MARK L. WHITEHEAD

Signature...

Date.....17 SEPT 2002

[redacted]

SOUTH AFRICAN HERITAGE RESOURCES AGENCY

4 HANS VAN RENSBURG STREET, PIETERSBURG, 0699 P. O. BOX 1371, PIETERSBURG, 0700
TEL: (015) 291 1804 FAX: (015) 291 1819

Established in terms of the National Heritage Resources Act, 25 of 1999.
Cel.: 083 411 4521
e-mail: sahra.np@mweb.co.za

OUR REF: 9/2/253/025

YOUR REF:

ENQUIRIES: Ron Viney

DATE: 13 September 2002

DEPARTMENT
REGISTR
02-09-17
P/BAG X9487 POLOKWANE 0700
LIMPOPO PROVINCE

Department of Agriculture
Private Bag X9487
POLOKWANE
0700

By fax.:
ATTN: Head of Department

NOTICE OF PROPOSED PROVISIONAL PROTECTION IN TERMS OF SECTION 29 OF THE NATIONAL HERITAGE RESOURCES ACT, 25 OF 1999.

PROPOSED PROVISIONAL PROTECTION OF:

1. **ERVEN 995, 996, 997, 998 AND 978 OF PIETERSBURG [EXTENSION No. 2] [INDUSTRIAL SITES] TOWNSHIP: GIFTERS CORUNDUM/ TRANSVAAL CORUNDUM COMPANY.**
2. **REMAINING EXTENT [0] OF ERF 527, TOWNSHIP OF PIETERSBURG: PIETERSBURG SYNAGOGUE.**
3. **TOWNSHIP OF NIEU-PIETERSBURG SITUATED ON THE REMAINING EXTENT OF THE FARMS DOORNKRAAL 7680 LS AND STERKLOOP-WES 688 LS.**
4. **PROPOSED PROTECTED AREA AND CONSERVANCY AROUND THE FARM MAKAPANSGAT 39KS: OOSTENRYK 92KS, RUSLAND 93KS, DUITSCHLAND 95KS, FRANKRYK 59KS, SCHIETFONTEIN 58KS, BELGIE 52KS, NEDERLAND 51KS, VIER-EN-TWINTIG RIVIERE 49KS, MARIBASHOEK 50KS, HIGHLANDS 60KS, RIETFONTEIN 34 KS, EERSTELING 17KS, DE BERG 35KS, WEENEN 40KS, DE HOOP 54KS, BUFFELSHOEK 53KS, PLANKNEK 43KS, GROOTVALLEY 57KS, PORTUGAL 55KS, SPANJE 36KS.**

5. **BALENI [aka SOUTINI] SALT WORKS, MAHUMANI TRADITIONAL AUTHORITY, SITUATED ON THE KLEIN LETABA RIVER, GREATER GIYANI MUNICIPALITY.**

NOTIFICATION IN TERMS OF SECTION 29[4] OF THE NATIONAL HERITAGE RESOURCES ACT [NHRA], 25 OF 1999.

Please be informed that at a meeting of the SAHRA council on 28 June 2002 it was agreed to proceed with Provisionally Protecting for a period of two [2] years from the date of publication of a notice in the Government Gazzette as contemplated in section 29[1] of the NHRA the abovementioned erven, properties and areas

The Provisional Protection is invoked as SAHRA believes that these heritage resources are threatened, that the threats can be alleviated by negotiation and consultation and for further investigation in terms of the NHRA.

Please note that the designated area is **protected for 30 days from date of this notice in terms of section 29[5]** of the NHRA or until publication of a notice in the *Government Gazette* for the protection of the site for 2 years, whichever is the shortest.

No person may damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of a provisionally protected place or object without a permit issued by SAHRA. [THIS INCLUDES ALL OBJECTS, FIXTURES, FURNITURE AND FITTINGS]

You are requested to ensure that all Departments within the Municipality are aware of the status of these properties and areas.

You are requested to confirm receipt of this notice by signing and returning a copy of this notice.

Yours faithfully

Manager: Limpopo Provincial Office

Received by....Thupana J

Signature....

Date....18/09/2002

(23) *(a)* All reproduction rights either in two or three dimensions in respect of a heritage site, subject to any existing rights and the agreement of the owner of such site, belong to the State and vest in the heritage resources authority responsible for the protection of such site or, by agreement with the authority or public institution responsible for the management of such site.

(b) Subject to the provisions of paragraph *(a)*, no person other than the owner of the site may make such reproduction for profit without a permit issued by SAHRA or a provincial heritage resources authority, as the case may be, which may prescribe the fees payable in respect of such reproduction and must deposit such fees in a trust fund dedicated to the conservation of such site or of heritage resources in general.

Protected areas

28. (1) SAHRA may, with the consent of the owner of an area, by notice in the *Gazette* designate as a protected area—

(a) such area of land surrounding a national heritage site as is reasonably necessary to ensure the protection and reasonable enjoyment of such site, or to protect the view of and from such site; or

(b) such area of land surrounding any wreck as is reasonably necessary to ensure its protection; or

(c) such area of land covered by a mine dump.

(2) A provincial heritage resources authority may, with the consent of the owner of an area, by notice in the *Provincial Gazette* designate as a protected area—

(a) such area of land surrounding a provincial heritage site as is reasonably necessary to ensure the protection and reasonable enjoyment of such site, or to protect the view of and from such site; or

(b) such area of land surrounding any archaeological or palaeontological site or meteorite as is reasonably necessary to ensure its protection.

(3) No person may damage, disfigure, alter, subdivide or in any other way develop any part of a protected area unless, at least 60 days prior to the initiation of such changes, he or she has consulted the heritage resources authority which designated such area in accordance with a procedure prescribed by that authority.

(4) With regard to an area of land covered by a mine dump referred to in subsection (1)*(c)* SAHRA must make regulations providing for the protection of such areas as are seen to be of national importance in consultation with the owner, the Minister of Minerals and Energy and interested and affected parties within the mining community.

(5) A heritage resources authority may make regulations providing for specific protections for any protected area which it has designated, including the prohibition or control of specified activities by any person in the designated area.

(6) A local authority may, with the agreement of the heritage resources authority which designated a protected area, make provision in its town planning scheme or in by-laws for the management of such area.

Provisional protection

29. (1) SAHRA, or a provincial heritage resources authority, may, subject to subsection (4), by notice in the *Gazette* or the *Provincial Gazette*, as the case may be—

(a) provisionally protect for a maximum period of two years any—

(i) protected area;

(ii) heritage resource, the conservation of which it considers to be threatened and which threat it believes can be alleviated by negotiation and consultation; or

(iii) heritage resource, the protection of which SAHRA or the provincial heritage resources authority wishes to investigate in terms of this Act; and

(b) withdraw any notice published under paragraph *(a)*.

(2) A local authority may, subject to subsection (4), by notice in the *Provincial Gazette*—

(a) provisionally protect for a maximum period of three months any place which it considers to be conservation-worthy, the conservation of which the local authority considers to be threatened and which threat it believes can be alleviated by negotiation and consultation; and

(b) withdraw any notice published under paragraph (a):

Provided that it notifies the provincial heritage resources authority within seven days of such provisional protection.

(3) A provincial heritage resources authority may, by notice in the *Provincial Gazette*, revoke a provisional protection by a local authority under subsection (2) or provisionally protect a place concerned in accordance with subsection (1).

(4) A heritage resources authority or a local authority may not provisionally protect any heritage resource unless it has notified the owner of the resource in writing of the proposed provisional protection.

(5) A heritage resource shall be deemed to be provisionally protected for 30 days from the date of service of a notice under subsection (4) or until the notice is withdrawn or the resource is provisionally protected by notice in the *Gazette* or the *Provincial Gazette*, whichever is the shorter period.

(6) A heritage authority or a local authority may at any time withdraw a notice which it has issued under subsection (4).

(7) SAHRA shall inform the relevant provincial heritage authority and local authority within 30 days of the publication or withdrawal of a notice under subsection (1).

(8) A provincial heritage resources authority shall inform the relevant local authority within 30 days of the publication or withdrawal of a notice under subsection (1).

(9) A local authority shall inform the provincial heritage authority of the withdrawal of a notice under subsection (2)(b).

(10) No person may damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of a provisionally protected place or object without a permit issued by a heritage resources authority or local authority responsible for the provisional protection.

Heritage Registers

30. (1) A provincial heritage resources authority must compile and maintain a heritage register listing the heritage resources in the province which it considers to be conservation-worthy in terms of the heritage assessment criteria set out in section 3(3) and prescribed under section 7.

(2) Subject to subsection (7), a provincial heritage resources authority may, by notice in the *Provincial Gazette*, list a heritage resource or amend or delete an entry in a heritage register.

(3) Heritage resources must be listed in accordance with—

(a) the sub-categories of Grade II and Grade III heritage resources prescribed under section 7, if any;

(b) the areas of jurisdiction of local authorities; and

(c) any additional categories prescribed by the provincial heritage resources authority in consultation with SAHRA.

(4) A provincial heritage resources authority must prescribe the procedure and information required for—

(a) the nomination of a resource for listing in a heritage register; and

(b) the compilation of an inventory of heritage resources referred to in subsection (5),

which shall require at least compliance with such minimum standards as may be prescribed by SAHRA for the recording of information under section 39.

(5) At the time of the compilation or revision of a town or regional planning scheme or a spatial development plan, or at any other time of its choosing, or at the initiative of a provincial heritage resources authority where in the opinion of a provincial heritage resources authority the need exists, a planning authority shall compile an inventory of the heritage resources which fall within its area of jurisdiction and submit such inventory to the relevant provincial heritage resources authority, which shall list in the heritage register those heritage resources which fulfil the assessment criteria under subsection (1).

(6) A provincial heritage resources authority may approve an inventory of heritage resources submitted to it by any person for listing in the heritage register.

Setshaba

Ons erfenis

Heritage for the nation

Ifa la lushaka

Ndzalama ya rixaka

SOUTH AFRICAN HERITAGE RESOURCES AGENCY
LIMPOPO PROVINCIAL OFFICE

ESTABLISHED IN TERMS OF THE NATIONAL HERITAGE RESOURCES ACT, 25 OF 1999
4 HANS VAN RENSBURG STREET, POLOKWANE, 0699 P.O. BOX 1371, POLOKWANE, 0700
TEL: (015) 291 1804 FAX: (015) 291 1819
E-MAIL: sahra.np@mweb.co.za

OUR REF: 9/2/257/ 002

YOUR REF:

ENQUIRIES: Ron Viney

DATE: 28 November 2002

LANDOWNERS
FARMS: Makapansgat, Sukses, Swartkrans, FairValley, De Hoop, Buffelshoek, Plankneck, Spanje.
COMMUNITY: Mokopeng and Matlakaneng.

ACCESS CONTROL: MAKAPANS VALLEY.

Further to our discussions with you, SAHRA and our other stakeholders are now in apposition to erect the access control point on the Swartkrans route D1435 to the farm Makapansgat 39KS and the surrounding farms.

The Provincial Roads Agency, however, requires your approval prior to their giving consent for the access control point. It would be appreciated if you would sign this letter to show your approval of the placing and erection of the access control point.

The control point would be placed approximately 100 meters from the R101 on the provincial route D1435 to Swartkrans. A temporary point will be erected until the planning and erection of the permanent structure has been completed. The temporary point will be manned from December 2002. Please inform all your visitors of this, as they may not be permitted entry if the SAHRA site monitors have not been informed.

Yours faithfully

Manager: Limpopo Regional Office

Annexure

LANDOWNER and COMMUNITY APPROVAL: ACCESS CONTROL POINT ON PROVINCIAL ROUTE D1435 to Swartkrans.

Name	Farm	Designation	Signature
R. Broodryk	Sukses		
W. Murzl	Swartkrans	Land-Owner	
Mogalakwena Municipality	Planknek, Makapansgat		
Platreef Resources	De Hoop, Buffelshoek	FARM MANAGER.	
Mr Mphahlele	Fair Valley	Landowner	
W. Maraba	Mokopeng and Matlakaneng - Makapansgat	COMMUNITY FORUM CHAIRPERSON	
Mr Basson Tobas BK.	Spanje Portion 2 of	Landowner.	
Johan Niemand.	Ettrich		

MAKAPANSGAT COMMUNITY AND NATIONAL MONUMENT COUNCIL
REPRESENTATIVE MEETING MINUTES DATE: 2000/03/ 12

Opening: Mrs K.C. Maraba, an educator of the Eiland Primary School (the host school) opened the meeting with a short prayer.

Welcome: Mr Jack Ledwaba, one of the civic leaders welcomed every-body present . In his deliberations, Mr Ledwaba said that he was pleased that the day everybody has long waited for has dawned and was also pleased that attendance was so good though not all members have attended.

. Roll Call: Though statistics were not taken , ± 100 members of the community members attended the meeting.

. Introduction of the Guest Speaker: Mr Maraba W.M. the principal of the host school and also the chairperson of the meeting, being the spokesperson of the Makapansgat Community, introduced the guest speaker as Mr Ron Viney, representing the National Monument Council,which is presently called the South African Heritage Resources Agency (SAHRA).The man deligated to upgrate by way of developing Makapansgat to gain or regain its international status for tourism. He is here to discuss with the community, to guide and also to introduce his council to the community so as to make the people he found occupying the land know and understand aims and purpose of his coming here, that he and the community should join hands in making this a success.

. The Guest Speaker: Mr Ron Viney introduced himself as :

.1. Ron Viney from the National Munument Council

.2. The council founded in 1936.

.3. The council responsible for tourism internationally.

.4. The council which is part of UNESCO.

.5. The council that believes that for it to achieve its goals in tourism, consultation and working together with indigenous people of the area concerned is the policy.

. Mr Ron Viney Speech:

.1. Guidance: He read the act empowering him and his council to develop Makapansgat into a Heritage Resource for tourism as one among others in Africa. '' Makapansgat is very important with regard to what is found in it. The following makes it a valuable Heritage Resource:

(a) Mountains wherein there are the Perppercorn Cave (historic), Buffalo Cave (Buffallo bones proving that has lived in that cave during the ancient times), Figures Cave (Historic) are found.

(b) Flora and Fauna: Indigenous animals and plants found in Makapansgat also are of the most important to both the tourist and the people here. These are to be protected otherwise they will parish and Makapansgat will loose its Heritage value.

(c) Living Heritage: When he was exploring villages of Makapansgat, he saw thatched huts and a woman smearing cow dung on walls and floors of her home, He said he saw beautiful art in that activity. He termed that LIVING HERITAGE and that also can be to the interest of the tourist.

(d) Indegenous People: He indicated the importance of the indegenous people of a Heritage Site like Makapansgat.'' No community in a Heritage Site, No tourism'', He said.He indicated that the local people in a heritage site are important because:

1. They have local knowledge of the area.
2. They have memories of their history forming part of the site history.
3. They have ideas and beliefs about their cultural resources and building techniques.

By the above reasons he proved that he supported the stay of this community in Makapansgat.Though he mentioned that he is not the one to decide for the community's permanent stay in Makapansgat,he promised that he is going to recommend strongly to the Potgietersrus TLC and to the South African Government that The Makapansgat Community should not be evicted from the area as all plans of developing Makapansgat into an international Heritage Site will fail if such can be emplimented. He advised the community to help in conserving and protecting heritage Makapansgat has.

The community promised earnestly to act like wise.

.2.Important Dates; 2000/04/01: The name National Monument Council changes to South African Heritage Resources Agency
2000/03/22 Mr Ron Viney 8s presentation to the Greater Potgietersrus TLC at the farmhouse.
2000/03/26: WITS UNIVERSITY representative meets those to be taken for training.

. Responce: Members present were so satisfied that they clapped hands that they promised to work co-opperatively with Mr Viney. They even promised to clean the farmhouse before the meeting with the Potgietersrus TLC.

Closure: Mr Maraba W.M. closed the meeting with a short prayer.

e above minutes are a true record of what transpired at a meeting
tween the Makapansgat Community and Mr Ron Viney the representative of
e National Monument Council at Eiland Primary School on the
2/03/ 2000.

Signatures: 1. _____ Date: _____

2. _____ Date: _____

3. _____ Date: _____

4. _____ Date: _____

PLAASLIKE OORGANGSRAAD VAN GROTER

TRANSITIONAL LOCAL COUNCIL OF GREATER

Verwysing:
Reference: 7/3/3/68

Navrae:
Enquiries: I de Villiers/cvg **POTGIETERSRUS**

16 November 2000

R. N. C. / N. M. C.
2000 -11- 28
ONTVANG / RECEIVED

The Manager: Northern Province
SAHRA
P O Box 87552
HOUGHTON
2041

FAX: (011) 482 8196

Sir

THE REMAINDER OF THE FARM MAKAPANSGAT, 39 KS

Your reference 9/2/257/002 refers.

I am delighted to inform you that the Transitional Local Council of Greater Potgietersrus approved on 30 October 2000 the donation agreements for the following:

- Approximately 77ha to the University of the Witwatersrand; and
- The remainder of the remainder of the farm Makapansgat to the Northern Province Department of Finance, Economic Affairs and Tourism.

The donation agreements have already been forwarded to the two benificiaries and we are waiting for their response.

Yours faithfully

IRENE DE VILLIERS
ACTING TOWN SECRETARY

✉ 34, 0600 ☎ (015) 491 2244 FAKS (015) 491 5142

SURNAME	NAMES	ID NUMBER	ABILITY	NO. OF CHILDR
MASEDI	DAVID MATSOBANE	4005015337087	BUILD WITH STONES	19
MASEDI	ROSINA RAMOKONE	4405170217084	MAT MAKING (REED)	WIFE
MASEDI	ROSINA RAMADIMETJA	4905250291081	MAT MAKING "	WIFE
MASEDI	CHRISTINA R.	7006100561083	PASSED GR 11 —	DAUGHTER —
MASEDI	MOGALE ALFRED	7205165555085	SA DEFENCE FORCE	SON
MASEDI	STEVE LESIBA	7604045978089	PASSED GR 12 —	SON —
MASEDI	LIZZY		DOMESTIC W. PASSED GR 11	DAUGHTER —
MASEDI	JOHANNES FANA	8006100337008	LEARNER GR 11	SON
MASEDI	SUZAN RAISIBE	8306060382085	LEARNER GR 12	DAUGHTER —
MASEDI	LEAH		LEARNER GR 10	DAUGHTER
MASEDI	WILLIAM OUPA	8706025458088	LEARNER GR 7	SON
MASEDI	DOCTOR IKIDO	8906045511086	LEARNER GR 6	SON
MASEDI	MARTIN MADIMETJA	6509155524089	EMPLOYED: BRICKW.	SON
MASEDI	JOHANNA MOKGAETJI		EMPLOYED "	DAUGHTER
MASEDI	ANNA RARAME	6903290601086	EMPLOYED "	DAUGHTER
MASEDI	LINA			DAUGHTER
MASEDI	FRANCINA R	7406010308080		DAUGHTER
MASEDI	GLADYS MOSIMA	7608100310088	PASSED GR 12	DAUGHTER —
MASEDI	PAULINA RAMASELA	8005010519081	LEARNER GR 10	DAUGHTER
MASEDI	WILLIAM OUPA		LEARNER GR 8	SON
MASEDI	SYLVIA MAPHARI		LEARNER GR 5	DAUGHTER.
MASEDI	GRANNY		LEARNER GR 7	GR. DAUGHTER
MASEDI	SINA		LEARNER GR 8	GR. DAUGHTER
MASEDI	PORTIA		LEARNER GR 5	GR. DAUGHTER
MASEDI	JOHANNES		LEARNER GR 4	GR. SON
MASEDI	JULIET		LEARNER GR 5	GR. DAUGHTER
MASEDI	ROMEO		LEARNER GR R	GR. DAUGHTER
MASEDI	DOCTOR		LEARNER GR R.	GR. SON
MASEDI	DAVID		LEARNER GR R	GR. SON.
MASEDI	PONTSHO		LEARNER GR R	GR. DAUGHTER
MASEDI	MALEBO		TODDLER	GR. DAUGHTER
MASEDI	MONGWADI		BABY	GR. DAUGHTER
MASEDI	TIISETSO		BABY	GR. SON
MASEDI	MALESELA JOHANNES	5503115332080	DRIVER CODE 14	4
MASEDI	JOHANNA R.	5906110491084	TRADITIONAL DOCTOR	WIFE
MASEDI	EUNICE MOSADI		PASSED GR 12	DAUGHTER.
MASEDI	JOMO		LEARNER GR 8	SON

P. T. O.

MASEDI FRANS		LEARNER GR11	SON.
MASEDI ALFRED		LEARNER GR R	SON
MASEDI DAVID		BABY	GR1 SON.
MOKGOBI PAULINA R	300218028708 1	MAT MAKING etc	2
MOKGOBI JOSEPHINE R.	7304240879089	BAKING & COOKING	DAUGHTER
MOKGOBI ~~MOSES~~ FRANCINA		DOMESTIC CHORES	DAUGHTER
MOKGOBI SBONGILE		LEARNER GR 8	GR. DAUGHTER
MOKGOBI CHRISTINA		LEARNER GR 7	GR. DAUGHTER
MOKGOBI HOSEA		LEARNER GR 6	GR. SON.
MOKGOBI OAKMAN		LEARNER GR	GR. SON.
MOKGOBI MARY		LEARNER GR 5	GR DAUGHTER
MOKGOBI KGAOGELO		LEARNER GR R	GR DAUGHTER
MOKGOBI EFA		BABY	GR. DAUGHTER
WILLIAM MASEDI	6106195327084	EMPLOYED = W-BRICKS	3
MASEDI GRANNY		LEANER GR 8	DAUGHTER
MASEDI THAPELO		LEARNER GR 5	SON
MASEDI MAPULA (8 YRS)		BABY	SON
SEKHAOLELO REBECCA	5004800282082	MAT MAKING (REED)	4
SEKHAOLELO ALPHEUS	7303036962083	CROUPIER CAESARS GAUTENG	SON
SEKHAOLELO FRANS	7612056003083	GR 10 PASSED	SON
SEKHAOLELO ANAMERS	BORN 1979	GR 9	SON
SEKHAOLELO ROSINA	8206180378080	GR 9	DAUGHTER
SEKHAOLELO ANNAH	3508210103080	MAT-MAKING	4
SEKHAOLELO BETTY	6501156433085	EMPLOYED - W. BRICKS	DAUGHTER
SEKHAOLELO JOHANNES	BORN 1973	EMPLOYED - (TOWN)	SON
SEKHAOLELO MERRIAM	7705120302085		DAUGHTER
SEKHAOLELO JULIA		LEARNER GR 9	DAUGHTER
K CLASS SEKHAOLELO	8005095362082	" GR 10	GR. SON
SEKHAOLELO LEBOGANG		GR 4 LEARNER	GR DAUGHTER
SEKHAOLELO CHRISTOPHER		" GR 8	GR. SON
SEKHAOLELO SELLO		4 YEARS	GR SON
SEKHAOLELO ANNAH		GR 4 LEARNER	GR DAUGHTER
KHOSA JOHANNA	6108050605089	MAT. MAKING	3
KHOSA CLEMENT		LEARNER GR 4	SON
KHOSA GLENDA		LEARNER GR 3	SON

KHOSA BENNY		LEARNER GR 8	SON
AKONDO DANIEL	2701155135083	PENSIONER	3
AKONDO SELINA	3712030185083	PENSIONER	WIFE
AKONDO JOHANNES		STOCK FARMING	SON
AKONDO FRANS		EMPLOYED (TOWN)	SON
AKONDO DONALD		PASSED GR 7	SON
NGOBENI JOHANNAH	4703090572087	PENSIONER	4
NGOBENI MATOTO	7506015961088	EMPLOYED (TOWN)	SON
NGOBENI JOHN		GRADE 6	SON
NGOBENI JOHANNES		EMPLOYED (TOWN)	SON
NGOBENI JULIA		GR 4	DAUGHTER
MOLMA ANGELINAH	7101200826088	DOMESTIC CHORES	4
MOLMA CLEMENT		LEARNER GR 4	SON
MOLMA JOHANNA		LEARNER GR 5	DAUGHTER
MOLMA FLORA		LEARNER GR 4	DAU
MOLMA MARTHA		LEARNER GR 2	DAUGHTER
RAMOKOLO JAMES MATA PHILLIP	6403155538085	EMPLOYED (TOWN)	3
RAMOKOLO JEANET	6602060641088	EMPLOYED. W. BRICKS	WIFE
RAMOKOLO RHOLOFELO		LEARNER GR 6	DAUGHTER
RAMOKOLO SELLO		LEARNER GR 4	SON
RAMOKOLO MAGGIE		" GR 1	DAUGHTER
RAMOKOLO EMILY		PENSIONER	MOTHER
MPŠATONA PAUL		BUSINESS-MAN	
LESO		BUSINESS-MAN	
MOLOMO JOHANNES	5905155517082	EMPLOYED - (TOWN)	4
MOLOMO EMILY		DOMESTIC CHORES	WIFE
MOLOMO COLEN		LEARNER GR 6	SON
MOLOMO POLINA		" GR 9	DAUGHTER

MOKGATHI GLADYS	5210260408083	MATT(MAKING)	3
MOKGATHI FRANS	7702016203089	GRADE 8	SON
MOKGATHI FANA	17 YEARS	GRADE 6 LAPAS	SON
MOKGATHI NANA		GR 9(LEARNER)	DAUGHTER
MKHARI ELISA			5
MKHARI ERNEST		PASSED GR 10	SON
MKHARI FRANS		WORK (TEMPS)	SON
MKHARI ELIAS		11	SON
MKHARI PHILLIMON		11	SON
MKHARI JULLIA		11	SON
HLONGWANE JOHANNES		TRADITIONAL DOCTOR	5
HLONGWANE MABUTI		WORK	SON
HLONGWANE TAN	7001105516089	WORK (WEAVER)	SON
HONGWANE BONUS			SON
HLONGWANE OBED	BORN 1983	GRADE 7	SON
HLONGWANE JERITA			DAUGHTER
HLONGWANE THOMAS			8
HLONGWANE EMILY		TRADITIONAL DOCTOR	WIFE
HLONGWANE ROSINA		GR 2	GR. DAUGHT
HLONGWANE JOSEPHINA	BORN 1983	GR 6	DAUGHTER
HLONGWANE CHRISTINA		GR 6	GR. DAUGHT
HLONGWANE PATRICIA		LEARNER GR	GR. DAUGHTER
HLONGWANE ROSINA		PASSED GR 12	DAUGHTER
HLONGWANE LINA		BABY	GR. DAUGHT
LEBUSA FRANCINA		EMPLOYED W. BRICK	5
LEBUSA PHINEAS		EMPLOYED (TOWN)	BROTHER
LEBUSA SILVIA		DOMESTIC CHORES	SISTER
LEBUSA LIZZY		DOMESTIC CHORES	SISTER
LEBUSA JOHN			BROTHER
LEBUSA ROSINA		LEARNER GR. 8	DAUGHTER

LEDWABA MARY		LEARNER GR 7	DAUGHTER
LEDWABA PIET		LEARNER GR 2	SON
LEDWABA JACKY			SON
LEDWABA SAMUEL		EMPLOYED (TEMPS)	SON
MABASO FLORA	6406050591083	MAT. MAKING	3
MABASO SEWELA		LEARNER GR 3	DAUGHTER
MABASO COLLEN	BORN 1995	LEARNER GR R	SON
MABASO MORRIS	BORN 1986	LEARNER GR 6	SON
MARABA WILLIAM	5205065746083	PRINCIPAL	
MARABA CHRISTINAH	5312100732084	TEACHER	WIFE
MALLA ELINA	5202050544086	MAT. MAKING	4
MALLA BENNET	8312065597081		SON
MALLA JOARTJIE	8010155704084		DAUGHTER
MALLA ALPHEUS	8810025387089		SON
MALLA LESIBA	9210025442084		SON
MASHABANE SIMON ZOMI	2809185137082	PENSIONER	1
MASHABANE	6506175326081		SON
MASHAMAITE KAOS			
MASEMINI PETER	2901155283085	PENSIONER	3
MASEMINI JOHN	7510167478083		SON
MASEMINI POLINAH	8209120433080		DAUGHTER
MASEMINI MALESELA	3001225391085		SON
LEKOLOANE G	3702125252088		
LETSOALO DRIVER	5511095613085	BUILD WITH STONES	2
LETSOALO DANIEL	6907135714087	PASSED GR 8	SON
LETSOALO MMALEHO	8402070364088	PASSED GR 7	DAUGHTER
LETSOALO			WIFE
MOTIMELE PHILLIP	4211115343088	BUILDER	5
MOTIMELE ROSINA		MAT. MAKING	WIFE

MOTIMELE MATSOBANE		BUILDING	SON
MOTIMELE MAISHIBE		COOK & BAKING	DAUGHTER
MOTIMELE CHARLES		BUILDING	SON
MOTIMELE RAMATSOBANE		DOMESTIC CHORES	DAUGHTER
MOTIMELE ELISA			DAUTHER
MOTIMELE LEAH	3 YEARS	LEARNER GR 5	GR DAUTH
MOTIMELE NTHABISENG	6 YEARS	11 GR 1	SON
MOTIMELE MPHO			GR. SON
MOTIMELE KHOLOFELO			GR. DAUGH
MOTIMELE DAVID		GRADE ONE	GR. DAUGH
MOTIMELE PHILLIMON		LEARNER GR 2	GR. SON
MOTIMELE RAISIBE		MAT. MAKING	4
MOTIMELE TLHABISI		WORK (TOWN)	SON
MOTIMELE SARAH	7110070274087	WORK (GAUTENG)	DAUGTHER
MOTIMELE MARIA		DOMESTIC CHORES	DAUTHER
MOTIMELE ALETA		PASED GR 11	DAUTHER
MOLOKOMME RAMASELA	2604040143080	PENSIONER	4
MOLOKOMME VICTOR			SON
MOLOKOMME SIMON	6001255608087	EMPLOYED WIBRICS	SON
MOLOKOMME CASWELL	6601155533085	WORK (TOWN)	SON
MOLOKOMME NANA		DOMESTIC CHORES	DAUGTHER
MOLOKOMME MANKIE		GRADE 4	GR.DAUGHTE
MOLOKOMME SIPHO			SON
MOLOKOMME CONNIE		GRADE 9	GRAND SON
MOLOKOMME JOEY		TOILET	GR.SON
LESWABA ROSINA	6207100471080		3
LESWABA EZEKIEL	7906045399087	GRADACE	SON
LESWABA SONTY		DOMESTIC CHORES	DAUGHTE
LESWABA SALOME		DOMESTIC WORKE	

LEDWABA FLORA	6508205537083	DOMESTIC CHORES	3
LEDWABA HENDRICK	BORN 1986	LEARNER GR 6	SON
LEDWABA DAISY	BORN 1992	LEARNER GR 3	DAUGHTE
LEDWABA COLLEN	BORN 1995	LEARNER GR R	SON
LEDWABA MALOSE		EMPLOYED W. BRICKS	
LEDWABA MOTŠADIBA		DOMESTIC CHORES	
MALULEKA JOHANNES			6
MALULEKA PHINEAS	7304075832088	WORK (TEMP)	SON
MALULEKA ZABA			SON
MALULEKA SENDESA		WORK (TOWN)	SON
MALULEKA THOMAS	7809155525089	WORK (TEMP)	SON
MALULEKE SALOME		DOMESTIC CHORES	DAUGHTER
MALULEKE STEPHEN	7902090397084	LEARNER GR 6	SON
MALULEKE GEORGE			5
MALULEKE QUEEN		DOMESTIC CHORES	WIFE
MALULEKE RICHARD		GRADE 5	SON
MALULEKE THOMAS		GRADE 5	SON
MALULEKE PRETTY		GRADE 4	DAUGHTER
MALULEKE WILLIAM		GRADE 2	SON
MALULEKE ALBERT		GRADE 4	SON
MANGWANE SAMUEL		FARMING	
PHAGO ROSINA			5
PHAGO JOHANNA		DOMESTIC CHORES	DAUGHTER
PHAGO OLIMA		DOMESTIC CHORES	DAUGHTER
PHAGO SAMAUEL		WORK (TOWN)	SON
PHAGO LUCIA		GRADE 7	DAUGHTER
PHAGO PIET		GRADE 2	SON
PHAGO GEORGE		WEENEN BRICKS	4

PHAGO	ONICA	5606025518086	DOMESTIC CHORES	WIFE
PHAGO	MAMSY		GRADE 9	DAUGHTER
PHAGO	TEBOGO		GRADE 9	DAUGHTER
PHAGO	MOSIMA		GRADE 7	DAUGHTER
PHAGO	SHELO		GRADE 6	DAUGHTER
MOKWASHENG	ELISA		DOMESTIC CHORES	6
MOKWASHENG	JANE	4907240294087	DOMESTIC CHORES	DAUGHTER
MOKWASHENG	FRANCINA		11	DAUGHTER
MOKWASHENG	MAGGIE		11	DAUGHTER
MOKWASHENG	HILDA		11	DAUGHTER
MOKWASHENG	OUPA		WORK (TOWN)	SON
MOKWASHENG	DOCTOR		GRADE, 5	SON
LEDWABA	JOHN		WORK (TOWN)	3
LEDWABA	FRANCINA		DOMESTIC CHORES	WIFE
LEDWABA	MICCO	BORN 1988	GRADE 5	SON
LEDWABA	SELLO		GRADE R	SON
LEDWABA	NANCY		GRADE R	DAUGHTER
BALOYI	FRANS	6901015508082	WORK (TOWN)	
BALOYI	ERNIE		DOMESTIC CHORES	DAUGHTER
BALOYI	JAMES		GRADE R	SON
BALOYI	CELIA		GRADE 5	DAUGHTER
NKUNA	A	4501245277 082		
NKUNA	RA	5201160566087	DOMESTIC CHORES	
NKUNA	MJ	80		
NKUNA	PG	9103300843086		
NKUNA				

NYONI	MMAPULA	PENSIONER	.1
NYONI	FRANK	BUILDER	SON

9/2/257/CC2.

SOUTH AFRICAN HERITAGE RESOURCES AG

4 HANS VAN RENSBURG STREET, PIETERSBURG, 0699 P. O. BOX 1371, PIETERSBUR

TEL: (015) 291 1804 FAX: (015) 291 1819

R REF:

IR REF:

QUIRIES:

E:

Martin Masedi

24 October 2002

REPORT BY MARTIN FROM APRIL 2002 TO 14 OCTOBER 2002 FOR TOURIST AT MAKAPAN

05 MAY 2002

28 Adults from Wits University

Guided by Kevin Kykendall

10 MAY 2002

Mamagula Primary School
72 Children
4 Teachers

Makgenene Secondary School
Children 60
Teachers 4

Wits Students
± 10 Students
Guided by Kevin Kykendall

12 M AY 2002
From Gauteng Province
5 Adults
2 Children

Guided by Ron Viney

16 MAY 2002
From Limpopo Community College
Adults 20
Guided by Frans Roodt

18 MAY 2002
From Wits University
Students 25
Guided by Kevin Kykendall
They stayed at Makapan from the 17 May 02 up to 19 May 2002

From Wits University
15 Students
5 Lectures
4 Staff members
Guided by Doctor Kevin Kykendall and Andy Smith
They stayed at Makapan for workshop and excavations which started from the 8th July 02 up to23th July 02

10 JULY 02
Three men for naming the trees

11AUGUST 02
Archaeological society visit
Adults 36
Children 7
Baby 1
Guided by Kevin Kykendall

23 AUGUST 02
From Sasolburg
Adults 8
Guided by Kevin Kykendall

31 AUGUST 02
Botanical Society from Limpopo Province
Adults 20
Children 12
Guided by Ron Viney

03SEPTEMBER 02
Ramolwane Secondary School
Children 89
Adults 5
Guided by MARTIN,STEPHEN and ERNEST

04 SEPTEMBER 02
Adults 4
Tour Operator CHRIS OLIVIER
Guided by Martin,Stephen and Ernest

05 SEPTEMBER 02
From CAPE TOWN and PRETORIA
Adults 10

06 SEPTEMBER 02
From LIMPOPO PROVINCE and WASHINTON DC
Adults 5
Professor Lynne from WASHINTON DC
Moses Ngobeni from LIMPOPO TOURISM AND PARKS BOARD
Other tourists from Polokwane

Marulaneng High School from LOUIS TRICHADT
Children 31
Adults 2
Remarks
Some of their students were drunked

07 SEPTEMBER 02
Children 4
Adults 18
Guided by Professor BRUCE RUBIDGE
Professor Kevin Beck. Geologist from WASHINTON DC

12SEPTEMBER 02
Tourist 20
18 from GERMANY
2 from MALAWI

13 SEPTEMBER 02
Tourist 12
7 From America
3 From Polokwane
2 From Polokwane

14 SEPTEMBER 02
12 Adults from Gauteng province

17 SEPTEMBER 02
1 Adult from Sweeden
Tour Guide Phillip Badenhorst from Polokwane
Guided by Martin Masedi

19 SEPTEMBER 02

WEENEN SCHOOL
Children 17
Adults 2
Guided by Martin, Stephen and Ernest

20 SEPTEMBER 02
MAKGENENE HIGH SCHOOL
Children 65
Adults 4

21SEPTEMBER 02
From MOPANE
Adults 12
Children 8
Guided by Frans Roodt

From Wits University [History Club]
15 Students
Guided by Doctor Kykendall

26 SEPTEMBER 02
From Polokwane
7 Adults
Guided by Ron Viney and Martin Masedi

28 SEPTEMBER 02
From Angola, Mozambique, Zimbabwe and Gauteng
Tourists 16
Organiser Rock Art Society
Doctor Gillion Brennan
Doctor Dion Brandt
Mr Matt Kitcing

02 OCTOBER 02

4 Adults
From Holand
Tour Guide Frans Roodt

03 OCTOBER 02
1 Adult from Germany
Guided by Martin, Stephen and Ernest

08 OCTOBER 02
Adults 2
Children 4
From Western Autralia

10 OCTOBER 02
LANGALIBALELE HIGH SHOOL
Children 33
Adults 6
Guided by Martin and Stephen

3 Adults
2 From LOS ANGELES
1 From ATLANTA

12 OCTOBER 02
Archaeologist; From Gauteng
Guided by Ron Viney

14 OCTOBER 02
Adults 10
Guided by Frans Roodt

MONTH DAY	RECEIPT	NAME, ADDRESS TEL NO.	No. of Adults	Children	GUIDE
10/01/02	2110	MEV. LESSING 011 316 4815	2	4	Ron
10/01/02	2111	083 305 7398	12		
10/01/02	2112	CELESTE ROSSOUW	5		~~Fran~~
06/03/02	2113	THERESA STEYN	4	2	Ron
3/03/02	2114	MEV. CAWOOD (015) 667 0180	2		Ron
3/03/02	2115	MNR LEROUX (082) 481 7785)	2		
3/03/02	2116	OOM SMITTIE (015) 491 8335	1		Ron
13/03/02	2117	MNR V. KRAAYENBURG	2		Frans
19/03/02	2118	(073) 254 2257 (THOMAS)	4	22	
26/04/02	2119/20	NONCHIMUDI P. School	9	129	Martin, Stephen, E
08/05/02	2121	MAMAGOLA PRIMARY	4	72	Martin, Stephen, Er
09/05/02	2122	MAKGENENE SEC SCHOOL	3	52	" " " Hi
09/05/02	2123	DAVID COOPER	5	2	R. Viney
? ?	2124	THOMPSON'S TRAVEL	2		Frans Rood Frans Roo
11/06/02	2125/26	T. MAEDER	5	2	
26/06/02	2127	MONEY DEPOSITED (015) 296 2368 / (082) 853 8910 LAWRANCE			~~ERNEST~~
22/07/02	2128	BUSHVELD TOURS	4		Frans Rood
8-23/07/02	2129	MAKAPANSGAT FIELD SCHOOL			Koruca, Am Frans Rood
23/08/02	2130	MR GILLILAND 0123613368	4		~~R. Viney~~ ~~Frans Roo~~
23/08/02	2131	MR RIDGE 0833061892 Sasolburg 0829761641	4		R. Viney Martin, Steu
28/08/02	2132	RAMOLLWANA 0722045356	7	89	Ernest, Hilo
06/09/02	2133	073 526814 / 0824462725 MAROLENG HIGH SCHOOL		29	Martin, Steve, E Hilda
18/09/02	2135	MAKGENENE 0829372098 LINDIWE		65	Martin, Steve & Hilda, Fra
25/09/02	2136	DS PRETORIUS	32	—	
26/09/02	2137	D TALJAARD Tibani Lodge	7	—	Ron, Ernest
01/10/02	2138	MR. VLOK Germany	4	—	Ernest, Stephen, Mar
3/10/02	2139	H.C FREUDENBERG			ERNEST, Stephen
8/10/02	2140	M. McKEVIN			ERNEST, Martin,
10/10/02	2141	LANGALIBALELE HIGH		33	Martin, Stephen, E.
			1		

	Name address & tel	no	Guide
3/05/02	Magalies school		R. Viney
/05/02	Visitors from Gauteng	28	K Kykendalla
6/05/02	N.P. Community College	20	F Roodt
7/05/02	Wits students		K. Kykendall
0/8/02	Archaelogical Society	adults 35 / 4 child	Mandy
1/8/02	" "	36 / 7 child	Mandy
29/08/02	Pietersburg Christian School	2 / 24 children	Frans Roodt
1/08/02	Gauteng & Makgoba School botanical Society	20 / children 12	R. Viney
09/02	Christ Olivier	4	Martin, Stephen, Ernest
5/09/02	Tourists ← Cape & Pretoria	100 adults	R. Viney & Site monitors
/09/02	Limpopo T. Board	5 adults	Site monitors & Prof Lynne
07/09	A group of Archaelogists	18 / 4 children	Bruce Rubidge
2/09/02	18 Germany 2 Malawi	20	K. Kykendall
3/09/02	Archaelogists	12 adu	Site monitors
4/09/02	a group from Gauteng	12 adu	R. Viney
7/09/02	A woman from Sweden	1	P Badenhost & Martin
9/09/02	Wenen School	17 / 2 aduts	Site monitors/guides
21/09/02		12 / 8 children	Frans Roodt
21/09/02	History Club (Wits	15	K. Kykendall
28/09/02	Rock Society (Wits)	16	Site monitors / Prof Dirks
3/10/02	Gauteng tourists	4	R. Viney
1/10/02	Group of F. Roodt		Frans Roodt
26/10/02	2 people Gauteng	2	Site monitors / guides
01/11/02	6 adults Germany	6	Site monitors / guides
02/11	tourists	8	Site monitors / guides
03/12/02	J v.d. Walt	56	Site guides
05/12/02			

DAY	RECEIPT	NAME, ADDRESS TEL NO.	of ADULTS	& Childre	GUI
10/10/02	2143	TOURISTS (AMERICAN)	3		MKho R Vin
25/10/02	2144	GAVIN DUKE	3		MKh.
4/10/02					
25/10/02	2145	PIET BOER	2		R. Vin. Site
4/11/02	2146	Dr RMB AUERBACH (0829227946)	9		Monito Mase
4/11/02	2147	CAPTAIN SOMO (SAPS)	4		MKha
10/11/08/02		MEMBERS of the ARCheologist	30		Mand
01/11/02	2148	GERMAN TOURISTS	6		Matti.
15/11/02	2149	ALISON — UK	2	Ma	matth Ernes.

APPENDIX 7

ZONATION AND CONSERVANCY DOCUMENT

9/2/257/0025

FORMAL REPORT

ZONATION OF MAKAPANSGAT CONSERVANCY

1. Background

The Makapan Valley is one of the premier palaeoanthropological sites on the African continent (Rubidge, 2001). The Makapans Valley, on the farm Spanje, is unique in that its is the only place where it is possible to study and witness an extended history of human endeavour from more than 3 miljoin years ago up to the present day (Rubidge, 2001). This area is also identified as a potential heritage site. Areas surrounding the farm Spanje belong to the Potgietersus Municipality and some private landowners who show interest in the formation of a conservancy. Several farms on the mountain towards Zebediela are state owned land that was recommended for protection of water catchments and conservation of sensitive habitats, plant communities and landscape. A holistic approach is needed in order to zone this are according to different land use patterns and to identify areas for sustainable tourism development.

2. Introduction

The IUCN World Conservations Strategy see conservation as the management of human use of the biosphere so that it may yield the optimum sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations.

A holistic approach is thus needed to maintain essential ecological processes and life support systems, preserve genetic diversity and ensure sustainable utilization of species and ecosystems

The Outdoor Resource Commission of America recommends a system of classifying outdoor recreation in order to provide a common framework and to serve as an effective tool in recreation management. This approach is one of recreation zoning, based upon relationships between physical resource characteristics and public recreation needs. Under this concept, particular types of resources and areas would be managed for definite recreation uses, sometimes in combination with other uses (Swart, 1997). This concept of classifying specific zones according to their land use was adapted for South African circumstances.

The aim with zoning of this area, which consists various land-use areas, is to combine related activities to achieve a functional and goal orientated land use. It also helps to achieve regulated land use, cost-effective management and sound planning in the construction of tourist facilities.

Zoning does not replace the normal approach of managing an area according to homogeneous management areas or physiographic-physiognomic units. Zoning options should therefore concentrate on sustainable land use, conservation actions and sustainable utilization, and be presented systematically.

the costs become more than the economic gain (economic capacity). (Presidentsraadverslag 1991, 162)

3.12 The most important factors determining the tourist carrying capacity of an area are:

i **On physical level**:
the size of the area,
the physical characteristics of the environment,
the planned activities,
the goals and objectives of the area,
the natural and cultural diversity of the area,
the areas " relaxing" value,
the current infrastructure,
accessibility of the area, and
location of the area in terms of local, regional and national important aspects.

ii **On ecological level**:
characteristics of the ecosystems,
components of the ecosystems,
ecological balance,
survival thresholds,
the physical carrying capacity of the resources,
ecological implications of recreation activities, and
effective management.

iii **On economic level**:
cost effectiveness,
multipurpose usage of facilities, and
feasibility of developments.

iv **On psychological level**:
the motivation for recreation,
the factors which give rise to recreation activities,
the expectations of visitors,
the quality of the experience of the tourists,
the tourist's personal space needs, comfort and hygienic needs, and
the tourists' social habits and behaviour.

3.13 Tourism and development in conservation areas must consider the following aspects:

ecologically responsible,
potential linked,
sustainability,
market orientated,
goal orientated,
capital extensive, and

3. GENERAL ZONING PRINCIPLES APPLICABLE

The following principles are applicable when zoning is done.

3.1 The evaluation will be done in a broader (regional perspective) conservation and development context.

3.2 Peripheral development is regarded as essential and is a worldwide phenomenon.

3.3 Zoning is carried out within the framework of the management / conservation objectives of all relevant role players. The sensitivity and objectives of the conservancy will dictate the type of potential development and the carrying capacity for tourists.

3.4 Development options should be compatible with and viable within the natural resource potential.

3.5 An EIA must be carried out before any developments will be allowed.

3.6 The sense of place, integrity and aesthetic qualities of the conservancy should not be altered by potential developments.

3.7 Developments should not adversely impact on the biotic integrity of the conservancy.

3.8 Zoning is a consultative process between environmental management and developers and zoning must be carried out according to a) the natural resource potential and b) the development objectives.

3.9 Development parameters / guidelines must be developed, and the adopted zoning plan, with its development parameters, should provide the development framework to be used in all future developments, discussions and conservancy framework programmes.

3.10 Management actions (roads, burning programmes, game capturing etc.) will have implications on developments and tourism activities. An integrated management plan is thus necessary, and a joint management forum must be established.

3.11 The carrying capacity of an area for tourists is the threshold of tourist activities where:

facilities are over-saturated (physical capacity),

the environment is degraded (ecological capacity),

the visitors' enjoyment and community values decrease (perceptual & psychological capacity), and

industry effectiveness.

Zoning of the Potgietersrus- Eersteling- Zebediela complex (Makapans Cave Conservancy) is carried out with existing available information.

4. CONSERVANCY ZONING CLASSIFICATION OR LAND USE CATEGORIES

The IUCN distinguishes, on reserve/ conservancy level, between nature and cultural zones. Nature zones are areas of size where geomorphological and life systems exist, and man does not significantly modify that. Cultural zones include areas where structural developments exist.

Zoning is carried out according to the natural resource potential and the objectives of the conservancy.

The following zoning classification is followed:

4.1 **According to the natural resource potential.**

4.1.1 CLOSED ZONE

extremely sensitive areas,
not accessible for tourists,
could also be a research / monitoring site etc.

4.1.2 WILDERNESS ZONES (pristine area)

area characterized by an essentially unmodified natural environment,
this extensive area represents landscapes and plant communities of the conservancy which are conserved in the unspoilt state,
it is a totally undeveloped area - no facilities for comfort or convenience of the user are provided,
these areas will stay undeveloped,
spacing of groups informal and dispersed,
no marked paths permitted,
the area is also characterized by the lack of access roads open to the public,
motorized use within area is not permitted,
the area is accessible for certain applicable activities such as hiking..

4.1.3 SEMI-WILDERNESS ZONE

semi-developed unmodified natural areas,
roads, lookout points etc. occur in the area but are limited,
the area is accessible for certain applicable activities such as hiking or game viewing.

4.1.4 NATURAL ENVIRONMENT

predominantly unmodified natural environment,
rustic facilities are provided but kept to a minimum, eg.: trails and bush camps, toilet, camp sites, etc.,
spacing of groups by means of paths and designated overnight sites,
Motorized transport limited to service tracks, but may be excluded in some sensitive areas.

4.1.5 PROTECTED / SPECIALLY PROTECTED NATURAL ENVIRONMENT

an area set aside in recognition of an important site which would receive the highest conservation priority and may require special protection measures,
examples of such sites are: breeding sites of rare animal/ bird/ plant species, rare or endangered ecosystems or components, important historical and archaeological sites, areas occupied by animal/ plant species of limited distribution or special significance, sites for long term research or monitoring, and ultra-sensitive areas (Grobler, 1983),

Van der Merwe (1996) suggests that no man made structures should be permitted in such areas and excess will be either strictly limited or totally forbidden.

4.1.6 BUFFER ZONE

areas which form a buffer between developed areas outside the conservancy and the reserve itself,
areas which form a buffer between conservation-important areas inside the reserve and developments inside the reserve

4.1.7 REHABILITATION ZONE

areas of severely disturbed habitats that must be rehabilitated or are in the process of rehabilitation,
rehabilitation could be of an active or passive nature,
disturbance could be as a result of agricultural developments, natural or unnatural erosion, injudicious planning and development such as building sites, roads and unacceptable alignment servitudes of electricity.

4.1.8 RECLAMATION ZONE

areas of severely disturbed habitats that cannot be rehabilitated in the

near future and are still in use,
disturbance could be as a result of prospecting / mining activities, mining servitudes, gravel pits, and unacceptable alignment servitudes of electricity, telephone lines or roads.

4.1.9 FACILITY ZONE

are characterized by substantially modified natural environment, sights and sounds of man are readily evident, and the concentration of users is often moderate to high,
includes all types of camps,
includes high density recreation such as accommodation, camping and caravanning sites and information centres,
also includes staff housing, service facilities etc.,
the emphasis is at all times on offering the visitor an experience of educational and spiritual value.

4.2 **According to the development objectives.**

4.2.1 RUSTIC ZONES (low impact zone)

in a semi-wilderness zone.

4.2.2 MEDIUM IMPACT ZONE

in a natural environment

4.2.3 HIGH IMPACT ZONE

in a facility zone.

4.3.4 TRANSIT ZONE

includes all roads that are used for tourism purposes,
includes all roads that are used for maintenance and management by operators,
include all management roads,
all roads have to classified according use, condition and maintenance input

4.3.4 BUFFER ZONE

these zones include areas that are used as buffer areas between, for example hunting concessions, tourist camps etc.

5. BACKGROUND AND PRINCIPLES APPLICABLE TO MAKAPANS CAVE HIGHLANDS CONSERVANCY

The following principles are important as a development framework for the Makapans Cave Conservancy:

7.4 All developments on MCC should be carried out within the framework of the objectives of this conservancy as described in the Goal Orientated Management Plan.

7.5 The mission of the MCC would probably the protection of a national heritage site, conservation of the biodiversity of Ysterberg mountain range, with its diversity of habitats, communities and species. It is therefore necessary to follow a system approach. The role of the conservancy within the broader system should therefore be acknowledged and included in the development framework.

7.6 The entire conservancy should be zoned as a system in terms of land use, conservation status, resource potential, tourism potential and development objectives, etc.

7.7 Developments should not take place in sensitive areas or habitats.

7.8 Mitigation actions should be taken to rehabilitate / minimize existing development in sensitive areas and associated habitats.

Characteristics of the natural environment on this conservancy of this size, can be utilized for a variety of programmes for specific target groups of limited numbers. Although the size of the area is large, its is apparent that quality of the experience on the conservancy should receive priority before quantity of activities for visitors.

By keeping the developments within the conservancy according to its carrying capacity, following a system approach and keeping the system in as natural a state as possible, wildlife numbers/ tourist facilities will be optimum. This will be the most suitable manner to maintain the tourism attraction / product.

By incorporating the Makapans Cave Conservancy in the larger Waterberg development strategy, a variety of accommodation and activities can be provided in different localities all along this system. Some of these facilities and activities already exist. The system can be collectively marketed as a destination, and conserved in the most suitable manner.

6. METHODS

Due to time restrictions, only existing published and unpublished information could be evaluated. A concept map is produced. Natural recourse data should, however, over time is produced on GIS. Existing maps and information received from Mr. M. Howard, Mr. J Botha and Mr. S. Rodgers have been taken into account in compiling a zoning map.

Natural resource inventory data (geology, soils, vegetation, sensitive areas, conservation importance, etc.) were screened with regards their land use potential, ecological- archaeological and tourism potential.

7. LAND USE CATEGORIES

The following land use categories have been considered for various parts of the conservancy (Map 1). Only those activities relating to the policy for each zone will be permitted within the designated area.

7.1 Facility zones

This zone, an intensive use zone (high density development zone), is characterized by substantially modified natural environment. Sights and sounds of man are readily evident, and the concentration of users is often moderate to high. This zone consists of staff housing, offices, service facilities and day visitor's area. (group camp). The geographic separation between the bush camps creates an opportunity to have two zones on the periphery that can function separately from each other. The ratio of visitors in this zone should be limited according to its capacity, as well as the carrying capacity of the conservancy as a unit. The following facilities and activities are available:

7.1.1 Group camp

A group camp with a number of bungalows will probably develop in future.

7.1.2 Day visitors area

This includes areas for parking, picnicking, ablutions, etc. for day visitors to the conservancy and Makapans Caver and museum.

7.1.3 Bush camp (10)

7.1.4 Educational Centre

This area consist of a information and educational centre, rehabilitation facilities for wildlife, ablution etc.

7.1.4 Outlook points

7.1.5 Service area

Areas set aside for staff housing, workshop, storerooms, etc. tied up with the management and maintenance of the area.

The zone currently accommodates 60 tourists / people when the occupancy rate is a 100%. This excludes staff working on the reserve. The impact of the specific activities of these tourists or groups will finally determine the viability and carrying capacity.

7.2 Rehabilitation zones

These zones include areas of disturbed habitats as a result of agricultural development, mining operations, injudicious planning and development such as old building sites, borrowing pits, roads and unacceptable alignment servitudes of electricity etc (Van der Merwe, 1996).

Attention should be given to the rehabilitation of the following:

Erosion on roads and other erosion sites identified within the conservancy.
Old lands and bush encroachment areas.
Demolition of old farmhouses and rehabilitation to a "natural state".
The placement / replacement of roads that are in sensitive areas should be evaluated.

7.3 Natural environment

This zone occurs in areas of ecologically moderate sensitivity and moderate conservation value. The areas are characterized by a predominantly natural environment with moderate evidence of the sights and sounds of man. Roads for motorized public transport are provided. Marked hiking trails can also be provided. Rustic facilities such as picnic sites and game viewing hides may be provided. All developments of the above-mentioned nature will be undertaken with the strict aim of minimizing environmental impact and degradation. Only developments with a medium impact are allowed, namely trail camp, tent camp or bush camps etc., and only after an EIA and feasibility study has been undertaken.

7.4 Specially protected zone

A specially protected zone is an area set aside in recognition of an important site which would receive the highest conservation priority and may require special protection measures. Examples of such sites are: breeding sites of rare animal species, rare or endangered ecosystems or components, important historical and archaeological sites, areas occupied by species of limited distribution or special significance, sites for long term research or monitoring, and ultra-sensitive areas (Grobler, 1983). Van der Merwe (1996) suggests that no man made structures should be permitted in such areas and access will either be strictly limited or totally forbidden.

7.4.1 A cave complex existing of the historical Makapans Cave, cave of hearts, Rainbow cave, Buffalo cave, ficus cave and peppercorn cave- rich in fossis artifacts and geological strata.

7.4.2 Other caves such as t

7.4.3 Lime works
The old lime work reviled remains of the ape-man (Australoppithecus africanus) and is also rich in fossil remains.

7.4.4 Waterfall

7.4.5 Tufa

7.4.6 Unique plant communities

7.4.7 Cultural and historical sites

7.4.8 Fountain and sponges

7.5 Buffer zone

This zone is classified separately from the special protected zone because of its important role in the protection of specific biotic or abiotic components that are specially protected.

6.6 Reclamation zone

Areas which have been subject to active agricultural activities and prospecting and mining activities.
The reclamation process should be monitored on a regular base

6.7 Semi- wildeness zone

This area is characterized by lack of access roads. This pristine area represents landscapes and plant communities on the reserve, which are conserved in the un spoilt state. No facilities for comfort or convenience are permitted.

.....
G.C.O. de Beer
Ecologist
Dept. of Finance, Economic Affairs, Environmental Affairs and Tourism.

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MAKAPAN VALLEY PROJECT

BUSINESS PLAN

FIFTH DRAFT

JANUARY 2003

Compiled by W. du T. Malan
Limpopo Economic Development Enterprise

On behalf of the:

Makapan Valley Management Committee

MAKAPAN VALLEY BUSINESS PLAN

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INTRODUCTION

The Makapan Valley is a candidate World Heritage Site and is unique in that it preserves an almost unbroken record of proto-human and human occupation and resource exploitation extending from australopithecine times about 3,5m years ago to the present.

The rich geological history in the region makes it the ideal vantage point to exhibit the impressive geological history and mineral wealth of Southern Africa in the cradle years of our planet. In its immediate vicinity and in the Limpopo Province the geological history goes back to the greenstones of the Primitive System and Archaean granites more than 3,5 billion years ago. The Transvaal Supergroup, Bushveld Igneous Complex, Waterberg Group, the first gold mine in South Africa, the historic lime operation as well as current platinum and diamond operations are some of the geological elements in this exceptional area.

The impressive fossil history preserved in the valley extends back to include some of the earliest fossilized life forms exemplified by the billions year-old stromatolites which occur in the rocks of the area. Many fascinating and well-preserved fossil species such as the sabre-toothed cat and giant fossil dassies are found in the ancient cavern sediments. The fossil element as well as the well-exposed geological strata and landforms make it an excellent site to exhibit the history of life on earth.

The Makapan Valley also has a diversified cultural heritage and a tragic 19th century history - being the site of an epic siege costing the lives of up to 1000 people. Current research is focussing on the relatively unknown period between 1650 and 1850.

Its location, topography and varied micro-habitats gives it an extremely rich botanical heritage. It forms part of the Wolkberg bio-diversity hot spot making it an area of international natural significance. The local vegetation includes at least 150 edible plants and some 340 species of muti-plants amongst its 800 plant species. The Gladiolus Dolomiticus is unique to the area.

There is some 64 mammal species found in the area. By linking it to the Potgietersrus Game Breeding Centre and facilitating a large-scale conservancy it has the potential to become one of the great game breeding centres of Africa and the world.

The central location in the Limpopo Province of South Africa and in Southern Africa makes it an ideal point to exhibit the entire heritage of the province and Southern Africa.

A Master Plan has already been compiled, architectural work done, a business plan drafted and extensive stakeholder mobilisation has taken place. Some work

has also been done to protect the sensitive caves and to facilitate visitor access. It was accorded National Heritage Status in 2002 and received a relatively small budget of R804 000 to improve the protection and road access to the sites.

PROJECT SUMMARY

To apply for World Heritage Status by linking it to the Sterkfontein - Cradle of Humankind Site. To transform the historic Peppercorn homestead as a visitor reception and archaeological exhibition centre. To make the core archaeological caves accessible to visitors and to protect the rich cultural and natural heritage of the area. Around the core area a conservancy of at least 15 000ha is to be established. This will be linked to the Potgietersrus Game Breeding Centre to create one of the foremost game breeding centres in the world.

Donor funding is to be mobilised for the visitor reception area, a geological exhibition, a cultural village, a mining village, and an open air museum. The project also has major educational, research, recreational and tourism components for the local, provincial, national and international community.

VISION

To ensure the Makapan Valley is a renowned World Heritage Site.

MISSION

We, the proud custodians of the Makapan Valley, aim to:

- Facilitate the conservation, development, presentation and management of the unique cultural and natural heritage resources of the valley and to utilise and share their benefits in a responsible and sustainable manner;
- Transform the Valley into a key tourism icon for the Limpopo Province and strive for its recognition as a World Heritage Site of note;
- Promote continued multi-disciplinary scientific research so that the knowledge, education and enjoyment of local and international students and visitors can be enhanced;
- Mobilise public and private partnership to develop the project and ensure that local communities are integrated into and benefit meaningfully from it.

OBJECTIVES

Developmental objectives

- Obtain World Heritage status
- Stimulate the tourism industry and attract tourists.
- Job creation.
- Skills training.

- Education, recreation and enjoyment for school children, the local community, the provincial and national population and the international community.
- Small business development and training.
- Create the foremost game breeding centre in Africa.
- Empower the local community.

Financial objectives

- To mobilise adequate funds to cover the financial requirements to implement the project.
- To become a financially self-sustainable and stable project.

Conservation objectives

- Effective conservation of the extensive archaeological and cultural heritage of the area.
- Establishment of a large-scale conservancy to serve as a buffer zone of the core area, to protect the rich natural environment and to diversify the tourism product.
- Breeding of scarce, endangered and valuable game and plant species of Southern Africa.

BENEFITS OF THE MAKAPAN VALLEY PROJECT

The project has the real potential to provide numerous social, educational economic, and environmental benefits.

Social and community benefits

One of the guiding principles of the project management is to uplift the local community in as many ways as possible and to spread the benefits as widely as possible. Specific opportunities identified are:

- Capacity building and training of selected members of the local community to become trained as Heritage Officers and Monitors.
- Selection, training and employment of local residents as tourist guides (process already initiated); initially as site-specific guides and later for special interest guides e.g. muti plants and food plants.
- Inclusion of local community into hospitality industry (tourist accommodation), using on-site local villages as the venue.
- The incorporation of local community into the tourism industry as providers of inter-site transport.
- Training and employment of local community in the building programmes associated with the proposed developments (Phase 1) as pavers, tillers, plasterers and various other building-related activities. Capacity building is to form part of the requirements in the Terms of Reference document for developers.

- The training and employment of local people as field assistants in various ongoing research programmes (process already initiated and in use).
- Training and employment of local community as excavators and field assistants in fossil and archaeological recovery projects (process already initiated and in use).
- Increased tourism activity should provide an improved market for local crafts and products.
- Training and capacity building within the local community with regard to monitoring, regulating and the participatory management of plant resources.
- The envisaged establishment of nurseries in order to grow suitable species of medicinal plants for commercial purposed. This could provide a viable income for local inhabitants.
- The training of knowledgeable local residents as rangers and environmental monitors.
- Increased tourism will create jobs in various categories.
- The new development will provide a recreational facility for local and surrounding communities.
- The museum and associated educational programmes will enhance educational opportunities for thousands of school children in surrounding areas and beyond. Syllabus-related worksheets and displays are planned, as well as the use of the valley as an" outdoor classroom". The linkage with the adjacent Game Breeding Centre and planned conservancy could create an extremely rich environmental education opportunity.
- Local people will be trained to be educational officers capable of teaching in local vernacular languages.
- Improved sanitation.
- Improved water installation.
- Improved access to electricity.
- Implementation of poverty relief programmes e.g. Working for Water, Alien Plant Control and Firebreak Cutting.
- Strengthened access control would improve security for local people.

Infrastructure benefits

- Improved access, roads, culverts, drainage etc.
- Plans for improved sanitation.
- Plans for improved water accessibility and management.
- 'Best practice' waste management and pollution control.
- Plans to upgrade electricity supply to the site.

Ecological and environmental benefits

- Plan for catchment management (if buffer zone is created).
- Control of invasive alien vegetation, with skill transfer.

- Improved sanitation and waste management.
- Preservation, monitoring and showcasing of biodiversity.
- Rehabilitation of the planned conservancy as a natural environment.
- Breeding of scarce and valuable game in association with the Game Breeding Centre and the Limpopo Tourism and Parks Board.

Economic benefits

The critical economic benefit to be made by the project is to serve as a catalyst for the development of the Mogalakwena Municipality area as a prime tourism destination. This potential has been conservatively estimated at more than R1000 million of investment but is completely undeveloped because of a number of constraints. This potential is centred around a number of proposed anchor projects i.e. the Greater Makapan Valley Project incorporating the planned conservancy and the expansion of the adjacent Game Breeding Project, the Entabeni/Doomdraai area, the Masebe/Moepel Project in the Waterberg Biosphere Reserve and a possible development of the Nylsvley/Mogalakwena wetlands. By utilising the central location of the area and developing the Makapan Valley Project and the Waterberg Biosphere Reserve as the main drawcards a host of smaller opportunities would become feasible. Given the extensive employment and economic multiplier effect of the tourism industry it should be able to transform the economy of the Mogalakwena Municipality currently becoming highly reliant on the mining industry.

Specific economic benefits identified:

- Improved financial sustainability of the Potgietersrus Game Breeding Centre.
- Direct impact on the development of the Eco-Park Project. Plans are currently made to develop this concept on the back of the development of the Makapan Valley Project.
- Increased business for existing hotels such as the Protea Park and the Protea Ranch Hotel and planned tourism projects in the area.
- Several small business opportunities.
- Diversification of the economy of the Mogalakena Municipality.
- Employment and community benefits – see community and social benefits above.
- Critical contribution to and complete synergy with the tourism industry of the Limpopo Province as a primary tourism icon.
- Markets for local trades and craft people.

Intended beneficiaries

- The Limpopo Tourism and Parks Board.

- The research activities on the archaeological sites conducted and co-ordinated by the University of Witwatersrand.
- The local community resident on the farm Makapansgat.
- The wider Mogalakwena municipality and community.
- The land-claiming community (Ga-ha-hamane) and Zebediela community depending on the status of their land claim.
- Land owners in the conservancy area.
- The regional, provincial, national and international community.

TYPE OF OPERATIONS ENVISAGED: PHASE ONE

A visitor reception area is to be established at the historic Peppercorn homestead. This area would also serve as the administrative centre of the project and would incorporate a tea garden and kiosk managed by private small businesses.

A major exhibition centre is to be established adjacent the reception and administrative centre to exhibit inter alia :

- 3,5 million years of proto-human and human development;
- the rich animal fossil record;
- the geological history of the area;
- the Early, Middle and Late Stone Age eras; and
- the dramatic historic events surrounding the siege of Makapansgat.

About 20 themes for exhibition have already been identified including:

- The development of humankind from its earliest beginning.
- Geological history of Southern Africa.
- Evolution of animals of Southern Africa.
- Wolkberg bio-diversity hot spot.
- Medicinal plants.
- Food plants.
- Protection and importance of water of the area.
- Recent history and the Siege of Makapansgat.
- Wildlife of the area.
- Cultural history of the people living in the area.
- Pioneering mining history of the area.
- The role of game breeding in conservation.

A guided tour of the Limeworks area, the Cave of Hearths and the Historic Cave to show and interpret the prime archaeological sites to the public and to describe the location where the dramatic historical events took place.

Hiking and mountain bike trails and overnight facilities.

The breeding of high value game species by utilising the infrastructure and management of the Game Breeding Centre and game provided by the Limpopo Tourism and Parks Board in a joint venture with the project.

Dormitory accommodation facilities and educational programmes for school children utilising the farm buildings on the adjacent Game Breeding Centre.

Large-scale conservancy of 15 000 to 25 000 (eventually even double this) depending on attitude of land owners.

Small business development and training.

Overnight accommodation utilising the facilities of the guest houses of the Game Breeding Centre and nearby hotels.

The possibility exists that these facilities could be expanded to establish a fully-fledged holiday resort at the Game Breeding Centre.

Game and scenic drives on the Game Breeding Centre, the farm Makapansgat, the Zebediela and municipal "water farms" and selected private farms prepared to accommodate such drives.

TYPE OF OPERATIONS ENVISAGED: PHASE TWO

- Traditional village.
- An African Renaissance village/resort.
- An open-air museum.
- Property development on edge of conservancy.
- Limited traditional farming on western side of the project associated with traditional village.
- A nursery for muti, herbal and other indigenous plants.
- A historical mining village associated with the historical mining activities at the Lime Works and the first gold mine in South Africa.

LINKAGES TO OTHER PROJECTS

A number of crucial linkages exist:

- Linkage to the Sterkfontein site – Cradle of Humankind. This is the key to the World Heritage status of the project and to benefit from archaeological tourism packages and niche markets. It would greatly assist the marketing drive of the project.
- Linkage to the Potgietersrus Game Breeding Centre will enable the utlisation of existing infrastructure for dormitories, overnight accommodation, profitable game breeding and to establish a highly diversified tourism product.

- The conservancy around the core project is important for the Buffer Zone required in terms of the World Heritage status, to conserve the rich archaeological, cultural, botanical and wildlife heritage of the area and to diversify the tourism product.
- Linkages to the Percy Fyfe game breeding centre, and other nature reserves to be controlled by the Limpopo Tourism and Parks Board, are the key to obtain valuable game species for commercial reasons and to re-introduce a spectrum of wildlife to the conservancy in order to rehabilitate the full natural heritage of the area.
- The Waterberg Biosphere and Nylsvley Ramsar Site are other eco-tourism sites of international significance in the area and together the three sites will form a triangle of international importance. A joint marketing office between the Biosphere and Makapan Valley is in the pipeline.
- These three sites, the Aventura Warmbaths Resort, the Marakele National Park and the envisaged Doomdraai Dam/Entabeni project could form a circle of tourism attractions rivalling any tourism destination in Southern Africa.
- Some linkage to Mapungubwe, Thulamela and the two northern Transfrontier Parks should also be established to create a world-class tourism destination north of Gauteng.

LOCATIONAL ANALYSIS

The Makapan Valley project has an ideal location at the centre of the Limpopo Province - the northernmost province of South Africa. Increasingly relevant is its central location within Southern Africa - virtually equi-distant from Cape Town, Walvis Bay and the water shed between the Zambezi and Congo Rivers – considered to be the natural geographical boundary of Southern Africa. Given the increasing importance of the Southern African Development Community and NEPAD this location could make it the appropriate site to exhibit the cultural and natural heritage of the subcontinent.

It is situated directly adjacent the important town of Mokopane currently at the centre of a major platinum mining boom in the Limpopo. Once the linkage with the Game Breeding Centre is established the project will start in the town and stretch for at least 15km in a northeast direction.

The local (Mogalakwena) municipality has a population of about 300 000 people or almost half the population of the Waterberg District – the district having the largest economy and surface area in the Limpopo. The Mogalakwena Municipality has recently been selected by a major international technology consortium as one of two places in the developing world to spearhead its involvement and product development in the developing world.

The project is on the cross roads of four major routes namely the N1 – South and Southern Africa's main arterial route, the R101, N11 and R518. These roads form the backbone of three of the four Spatial Development Initiatives in the Limpopo.

The SDI's providing the spatial focus of the provincial development strategy are the Limpopo Basin SDI linking the Limpopo and South Africa to its northern neighbours, the East-West SDI linking the most important towns in the province and the Dilikong SDI describing the main reeve on which the major platinum development is taking place.

The N1 and R101 trunk routes, adjacent to the project, provide the access way to Polokwane - the capital and economic centre of the province – some 45km distant. The Polokwane Municipality has a population of 483 187.

The third municipality served by the project is Lepelle-Nkumpi, the current site of the Limpopo Legislative Assembly, has a population of 256 798 people.

Very important is its location only 250km or two and a half hours drive from the centre of Gauteng – the largest tourism market in Southern Africa and main entrance for foreign tourists to the subcontinent. Pertinent is the fact that it is midway between Gauteng and the two transfrontier parks developing into the northeast and northwest of the Limpopo. These transfrontier parks are also the site of two world-class archaeological sites namely Mapungubwe and Thulamela – forming the cradle of the most important ancient African civilisation in Southern Africa. This is making the Makapan Valley Project the natural halfway stop to any visitor from Gauteng to these destinations and the northern half of the Kruger National Park.

MARKET ANALYSIS

Some 114 000 foreign (air arrival) tourists visited the Limpopo in 1999 (6.5 per cent of the South African total), 2 000 000 domestic tourists and 550 000 African visitors.

Heritage tourism is a definite tourism attraction but normally not very viable from a financial sustainability point of view in South Africa. (This and the next section is largely based on the Overview of tourism development potential in the Mapungubwe Area by Peter Norton & Associates).

Some 18 per cent of visitors to South Africa indicated heritage tourism as one of the five most appealing characteristics of their visit to South Africa, 38 percent visited a historical site and 35 percent visited a museum or art gallery. Only 150 people visited the Makapan Valley on one of the official guided tours in 1999 increasing to about 101 per month in the last three months of the Year 2002.

However, these figures must be seen in the context of almost no marketing, a shortage of trained guides, the reluctance of Wits to accommodate tourism because of the lack of protection of the key sites and the total underdevelopment

of the site. The lack of facilities to accommodate school groups and tour buses, ablution facilities and no exhibition material seriously constrained tourism.

The fact that there was (and is), no staff to receive tourists at the site is another factor. The reality is as one operator has put it:

"Heritage and cultural tourism works well if it is done well".

The establishment of a visitor reception area, a proper exhibition centre, well-trained and enthusiastic guides, the linkage to an upgraded Game Breeding Centre (currently taking place) and a holiday resort (as recommended by KPMG and planned by LimDev), and access to the magnificent scenery on top of the Highlands mountains on the adjacent farm would completely change the tourism perspective. The private management and marketing of the centre as part of a well-established brand would also make a significant difference. World Heritage Status alone would make a significant impact. International experience indicates a 40 per cent increase in visitors before and after World Heritage Status has been granted.

The most appropriate reference is the Sterkfontein – Cradle of Humankind site. Visitor numbers increased from 75 000 per year before its World Heritage Status (75 percent was schoolchildren) to almost 100 000 people in the previous year. About 5 percent was foreign tourists. The nearby Wonder Caves that is privately managed receive about 40 000 people per year of which 25 percent is foreign tourists. The only advantages Sterkfontein have over Makapan Valley is that it is already recognised as a World Heritage site, is somewhat more prominent as an archaeological site, is situated in an accessible and deep cave, and is situated within the Gauteng market.

The strengths of the Makapan Valley project as planned relative to Sterkfontein as it was before its planned upgrading are:

- Accessibility from a major trunk route,
- Location on the way to two new transfrontier parks, the Waterberg Biosphere and the tourism attractions of the rest of Southern Africa,
- A much more attractive and diversified natural environment,
- Magnificent scenery on the adjacent farm Spanje.
- Much better exhibition facilities,
- A dramatic history,
- The potential linkage with the Potgietersrus Game Breeding Centre.
- Relative few people have visited the place in the past.

Once fully developed in the First Phase, after obtaining World Heritage Status and being privately managed and marketed as part of a recognised brand; it should be possible to attract at least two thirds of the number of tourists that went to Sterkfontein before its World Heritage Status or a similar number of people as is currently visiting the Wonder Caves. If carefully developed, protected, linked

with other projects, professionally managed and marketed there is no reason why the Makapan Valley project could not eventually surpass even the present visitor numbers to the Sterkfontein – Cradle of Humankind site.

A regional point of reference is the Bakone Molapa Museum, which is a cultural village owned and managed by the Polokwane Municipality and the other museums in the region. On average these museums receive about 1000 people per month. It seems realistic that the project should attract at least four times the number visiting these relatively small museums.

A local attraction that also could be used as a point of comparison is the Potgietersrus Game Breeding Centre. Some 12 000 people are visiting the Centre per year. This is expected to increase to 24 000 as a result of the current upgrading and marketing initiatives being done. It should be noted that the Game Breeding Centre does not have the benefit of national or international status and is marketed only at the local level. It seems feasible to attract about double this number to the Makapan Valley project given its unique status and interest particularly if combined with a provincial, national and even international marketing campaign.

A population of about 800 000 people or more is living within one hour's drive from the site in the three adjacent municipalities of Mogalakwena, Polokwane and Lepelle-Nkumpi. It should be feasible to attract about 5 per cent of this population per year particularly if the site's educational value is promoted to the schools in the region.

Given its strategic location at the center of the Limpopo Province and on its busiest route the project should be able to tap into a significant proportion of the two million domestic tourist trips and 114 000 foreign air arrivals visiting the province every year. Foreign arrivals spent some R700 million in the Limpopo in 1999 and domestic tourists spent more than R1000 million. A modest 2.5 per cent of this number of tourists would be required to achieve the targets of the business plan.

Some 10 000 vehicles (1200 heavy vehicles) move along the R101 every day. A similar number of vehicles pass on the N1 trunk route. This gives about 1.1 million people passing the site every year. About five per cent of all passing traffic should be induced to visit the site in order to meet the targeted number of visitors.

An important strength of the project is its central location and the emergence of a number of world-class destinations in the Limpopo Province such as the Great Limpopo Transfrontier Park, the Mapungubwe cradle of African civilisation site, the Waterberg Biosphere Reserve, the Greater Nwanedi project and the Kruger to Canyon Biosphere Reserve. The linkages with the Game Breeding Centre, the Zebediela "water farms", the Mogoto Dam Nature Reserve, the Waterberg

Biosphere Reserve and the imminent launch of the two transfrontier parks to the north of the province are so important that it could catapult the project into one of the most important tourism attractions in South Africa. The emergence of a Waterberg District Tourism Route, the Ivory Trail, a Golden Horseshoe Route and the re-emergence of Southern Africa as a popular and integrated tourism destination once the Zimbabwean situation stabilises could place the project at the centre of one of the fastest growing tourism destinations in the world.

A largely overlooked fact is that the greater part of the Kruger National Park falls within the Limpopo Province. The Kruger Park is the most popular tourist attraction in South Africa outside of the Western Cape. About 15 per cent of all foreign air arrivals to South Africa visited the Park. About 55 per cent (65 000) of all foreign arrivals to the province entered the Kruger Park through the Orpen, Phalaborwa and Punda Maria gates in 1999. The establishment of the Great Limpopo Transfrontier Park and the improvement in the road infrastructure in the Limpopo Province will tend to increase the numbers of tourists going to the northern part of the Park and passing the Makapan Valley Project.

Trends

The latest (2001) report of the World Travel Organisation projected tourism growth of about ten per cent per year for South and Southern Africa over the next ten years – if the international situation returns to stability.

A long-term tourism growth trend of 11 per cent for foreign arrivals to South Africa has emerged in the mid-1980's and 5 per cent for domestic tourism. This reached a peak in 1995 with the Rugby World Cup. Double-digit growth has been the norm except in 1997 and 1999. Foreign air arrivals to the Limpopo increased from 90 187 to 113 764 between 1997 and 1999 – a growth of 12 per cent per year.

Superior growth rates should be realized in the Limpopo because of the emergence of major new tourism attractions as mentioned above, the improvement in infrastructure over the last two years and the explosion of game farms in the Limpopo. The number of new exemption (registered game) farms has increased by a mammoth 1400 over the last few years. One of the great advantages of the province is that it has a vast amount of catch-up to do in comparison to Mpumalanga despite the large potential evident.

The fact that visitors feel safer in the Limpopo than in the rest of South Africa and especially Mpumalanga – its main competitor - is a real plus point.

Another factor supporting rapid growth in visitor numbers is the above-average growth rate in the Limpopo economy. Economic growth in the province has exceeded 5 (5.5%) per cent between 1995 and 2000. This is projected to continue; driven by mining (especially platinum) investment, healthy state

finances, poverty alleviation initiatives and the continued reduction in infrastructure backlogs in the province.

Passing traffic is also increasing faster than economic growth and previous projections according to information provided by the provincial Road Agency and KPMG.

A rapid growth rate of more than 10 per cent in people visiting Makapan Valley should be achieved in the medium to longer term. An important aspect is that the Makapan Valley is a unique attraction, complementary to - and not competing – with other attractions.

Pricing

The two main markets that would support the project are the educational and foreign tourism market. Sterkfontein currently charges a fee of R10 for adults, R7 for school children and R5 if pupils forms part of school groups. Lesedi cultural villages charges R235 to mainly foreign tourists for a cultural package including dances, a video show, lunch and a tour of the four cultural villages.

INCOME AND EXPENDITURE
Income

Assumptions

Number of visitors: Double the number projected for the Game Breeding Centre or 2/3rds of Sterkfontein caves before its World Heritage status. (World Heritage Status should boost visitor numbers by 40 per cent based on international experience). This applies to both the number of adult tourists and school groups. Projected numbers in Year 3:

- School groups and individual pupils: 36 000 per annum or 3000 per month visit the exhibition centre.
- Adult tourists 24 000 per annum or 2 000 per month visit the exhibition centre.
- School groups and pupils taken on a conducted tour of the caves: 24 000 per annum or 2 000 per month
- Adult tourists taken on a conducted tour of the caves: 12 000 per annum or 1000 per month.
- Integrated safari tours – about 2400 tourists (or 10 percent of adult tourists), mainly foreign, visiting the centre, will opt for a Southern African cultural and natural heritage tour that will accommodate both a conducted tour to the caves, the Game Breeding Centre and the view points on the adjacent farm Spanje.

Prices charged would be:

- R15 per person to visit the exhibition area.
- R10 per person for school groups to visit the exhibition center.
- R30 per person for a conducted tour of the caves.
- R15 per person for school groups to visit the caves.
- R150 per person on the integrated safari tour. Only R100 would be received by the Makapan Valley project – the rest will be paid to the Game Breeding Centre.

Joint game breeding venture :

- 100 valuable breeding animals such as roan, sable and clean buffalo brought in from provincial nature reserves e.g Percy Fyfe.
- 20 percent increase per year.
- Average income per additional animal :R100 000
- Potential turnover : R2m
- Cost per year :±R1m
- Half of increased value sold for income: R500 000
- Share of Makapan project 50% :R250 000

Hiking and mountain bike trails : 4% of income of these small businesses as a levy to the total project – half (2%) would be paid to the Game Breeding Centre and half to the Makapan project itself. R50 per person per day using these trails, 16 persons, 50% occupancy.

Tea garden and kiosk : 25% of visitors to project will buy something (R10 on average) from the tea garden or kiosk. Project will obtain 8% of turnover of tea garden and kiosk.

Dormitory : 150 persons, R50 per day, 50% occupancy, 2% of income comes to the Makapan Valley project.

All income reaches maturity in Year 3, 75% of that is achieved in Year 2 and 50% in Year 1. After Year 3 a growth rate of 10% is foreseen.

Important assumptions underlying the above figures are:

- That the project will become an important site for school visits as part of the educational programmes of the Limpopo Department of Education.
- That the Schoemansdal Environmental Education Centre will be prepared to conduct courses at the Game Breeding Centre and visit the Makapan Valley Project – indications are positive.
- The management and marketing of the tourism activity at the site by a reputable private company.
- That good linkages would be established with the marketing drive of the Limpopo Tourism and Parks Board and adjacent hotels and tourist operations to support the marketing effort of the project.

4	Cleaners and gardeners -	R4 800 p.m.
4	Guides -	R12 000 p.m.
1	Scientific coordinator -	R8 000 p.m.
1	Accountant	R 8 000 p.m.
1	Administrative assistant -	R4 000 p.m.
1	Museum manager	R8 000 p.m.

INSTITUTIONAL AND MANAGEMENT PLAN

The project is a 50/50 joint venture (Section 21 company) between the Limpopo Tourism and Parks Board and the University of Witwatersrand.

A cluster of advisory committees ensuring extensive stakeholder involvement supports the Management Committee currently managing the project.

The tourism component of the Makapan Valley Project is eventually to be managed and marketed by a private management company having the track record and competency to manage and market a world-class facility. Preference would be given to the utilization of local capacities. Consideration would be given to use a respected brand in terms of good franchise.

This would assist in ensuring a top class service; forcing management to adhere to the franchise conditions of such a brand.

All services to be sourced are to mobilized through a transparent process to ensure that the public interest would be served.

The Management Committee of the Project will also survey visitor satisfaction on regular basis. By developing it as a financially self-sustainable project it will not be suspect to the vagaries of government budgets. Proper maintenance of all facilities will be given a high priority from a budgeting and operating viewpoint.

A project manager taking responsibility for the entire project will be appointed to ensure accountability and proper coordination amongst the various components.

A scientific coordinator is to coordinate scientific work and maintain the scientific integrity of the project. By utilising a credible management agent, having a project accountant and appointing external auditors proper financial management will be facilitated.

CONCLUSION

The Makapan Valley Project is one of the most important projects in the Waterberg District and the Limpopo. Once World Heritage Status is achieved it will become an internationally significant project and of national economic importance. It is one of the keys together with the Transfrontier parks, the Kruger National Park and the Waterberg and Kruger to Canyon Biosphere to make the Limpopo the preferred tourism destination at the heart of Southern Africa. By carefully combining the core archaeological component with the adjacent game breeding centre and a large-scale conservancy it should become a national tourism icon projecting South Africa on the global stage. It could be possible to become financially self-sustainable if a number of key initiatives in process are achieved and if the marketing drive is up to expectations. Otherwise it would require financial support from relevant government departments as are given to public facilities such as the various museums in the Limpopo. This must be regarded as a last resort. The potential exist to create a new model for the development and operating of key heritage sites and facilities.

DEVELOPMENT BUDGET: MAKAPAN VALLEY PROJECT				SCENARIO ONE	
Preparatory			**Planning**		
Phase			**Phase**		
Description	R'000	Source	Description	R'000	Source
Conservancy study	200	Mog Mun@			
Master Plan	250	NPTB@			
Presentation	50	NPTB	Pre-limanary design	100	At risk*
Training guides	20	NPTB	Social impact study	80	
Fire breaks:			E.I.A	120	
Sentec road	37	Mog Mun*	DFA application	45	
Homestead	2.3	Mog Mun*	Business plan	200	NPDC
Makapan Valley	2.3	Mog Mun*	Consultant for World		
Clearing existing	10		Heritage nomination	250	
path ways			Scoping for guide &		
Research house:			educational material	50	
toilets & drain	1.9	Wits*	Laminated maps 2	6	
repair of fence	1.5	Wits*	Contour study	10	
path to cave	4.8	Wits*			
repair road from Swart-					
krans to house	13	Wits*			
Committees					
running costs	60	NPTB*			
Total costs	652.8				
Minus completed	450				
Minus resourced	70				
Minus pot resourced	122.8				
Net requirement	**10**				
Notes					
* Potentially resourced by this entity					
@ Completed & paid					
No provision has been made for legal fees e.g. transfer fees					
			Total	**861**	

First			**Second**		
Phase			**Phase**		
Description	R'000	Source	Description	R'000	Source
Public toilets	68				
Parking & toilets at cave	81		Muti study	33.4	
Landscaping & parking at			Bridle trails	120	Private &
homestead	217				NPDC loan*
Restoration of homestead	865		Open air		
Restoration of outbuildings	353		museum	n.a.	
New exhibition centre	2000		Peppercorn		
Management Housing	200		cave complex		
Design and installation of			Mining village		
exhibits	500		camp & exhibits		
Exhibit material development	850		Cultural village		
Info routes, boards &					
walk ways	80				
4 guide & utility vehicles	1000				
Long term training of guides	30				
Infrastructure					
Security fence, shut off gates	100				
on municipal farms & caves					
Main entrance gatehouse	200				
Access road to Valley & farms	600				
Access to main caves &					
Ga-a-wàsha	10				
Access to lime works	50				
Signage	3				
Water access	50				
Electricity access	20				
Sewerage treatment	50				
Small business					
opportunities					
Hiking trails & two camps	68	Private &			
Mountain bike trail	30	NPDC loan*			
Conservation					
Security staff per annum	90.2				
Conservancy fence	1500				
Game stocking	1000				
Game breeding infrastructure	1000				
Professional fees	1338				
Total	**12353.2**				
Grand total	**13214.2**				

DEVELOPMENT BUDGET: MAKAPAN VALLEY PROJECT				SCENARIO TWO	
Preparatory			**Planning**		
Phase			**Phase**		
Description	R'000	Source	Description	R'000	Source
Conservancy study	200	Mog Mun@			
Master Plan	250	NPTB@			
Presentation	50	NPTB	Pre-limanary design	100	At risk*
Training guides	20	NPTB	Social impact study	80	
Fire breaks:			E.I.A	131	
Sentec road	37	Mog Mun*	DFA application	45	
Homestead	2.3	Mog Mun*	Business plan	200	NPDC
Makapan Valley	2.3	Mog Mun*	Consultant for World		
Clearing existing	10		Heritage nomination	250	
path ways			Scoping for guide &		
Research house:			educational material	50	
toilets & drain	1.9	Wits*	Laminated maps 2	6	
repair of fence	1.5	Wits*	Contour study	10	
path to cave	4.8	Wits*	Environmental resource		
			management plan	120	
repair road from Swart-					
krans to house	13	Wits*			
Committees					
running costs	60	NPTB*			
Total costs	652.8				
Minus completed	450				
Minus resourced	70				
Minus pot resourced	122.8				
Net requirement	**10**				
Notes					
* Potentially resourced by this entity					
@ Completed & paid					
No provision has been made for legal fees e.g. transfer fees					
			Total	**992**	

First			**Second**	
Phase			**Phase**	
Description	R'000	Source	Description	R'000
Gateway	250			
Cave of Hearths	300		Muti study	33.4
Landscaping & parking at			Bridle trails	120
hornestead	1500		Nursery	1500
Restoration of homestead			Open air	
and outbuildings	9000		museum	2000
Research facility	2000		Peppercorn	
Management Housing	200		cave complex	350
Design and installation of			Mining village	
exhibits	3000		camp & exhibits	2000
Work areas & miscellaneous	1250		Cultural village	2000
Limeworks:boardwalk, park-			Major resort	25000
ing, ablutions & info display	600			
4 guide & utility vehicles	1000			
Accommodation - 25 researchers	2000			
Infrastructure			**Infrastructure**	
Security fence, shut off gates	100		Road network	
on municipal farms & caves			for conservancy	1200
Unforseen items	200			
Access road to Valley & farms	600			
Access to main caves &				
Ga-a-washa	10			
Access to lime works	50			
Signage	3			
Water access	50			
Electricity access	20			
Sewerage treatment	50			
Small business				
opportunities				
Hiking trails & two camps	68	Private &		
Mountain bike trail	30	NPDC loan*		
Conservation				
Game breeding infrastructure	1000			
Conservancy fence	1500			
Game stocking	1000			
Unforseen	350			
Professional fees	4800			
Total	**30931**		**Total**	**34203.4**
Cumulative total	**31923**		**Cumulative total**	**65134.4**

MAKAPAN VALLEY: INCOME AND EXPENDITURE STATEMENT				BUDGET	
Income					
Description:	Year 1	Year 2	Year 3	Year 4	Year 5
Visit to exhibition centre	180000	270000	360000	396000	435600
School visits to the centre	180000	270000	360000	396000	435600
Cultural tours	180000	270000	360000	396000	435600
Educational tours	180000	270000	360000	396000	435600
Integrated safari tours	120000	180000	240000	264000	290400
Joint game breeding venture	0	100000	250000	275000	302500
Hiking & mountain bike trails	1460	2190	2920	3212	3533.2
Dormitory accommodation	0	13687.5	27375	30112.5	33123.75
Tea garden & kiosk	768	1152	1536	1689.6	1858.56
Total income	842228	1377030	1961831	2158014	2373816
Expenditure					
Security	90200	90200	90200	94710	99445.5
Project management	84222.8	137703	196183.1	205992.3	216291.9
Marketing	100000	68851.48	98091.55	102996.1	108145.9
Maintenance	33689.12	55081.18	78473.24	82396.9	86516.75
Staff	876000	876000	876000	919800	965790
Training	43800	43800	43800	45990	48289.5
Administration	120000	120000	120000	126000	132300
Power and fuel	95000	95000	95000	99750	104737.5
Insurance	51600	51600	51600	54180	56889
Water					
Other costs	120000	120000	120000	126000	132300
Total expenditure	1614512	1658236	1769347.9	1857815	1950706
Deficit/surplus	-772284	-281206	192483.11	300198.8	423109.5

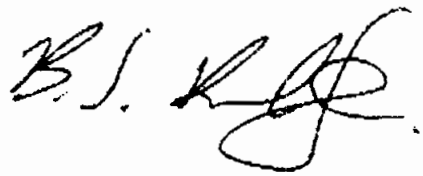
Note: All figures are in current real value.

FOREWORD

Africa is the 'Cradle of Mankind' and the Makapan Valley is one of the premier palaeoanthropological sites on the African continent. This valley is unique in that it is the only place where it is possible to study and witness an extended history of human endeavour from more than 3 million years ago up to the present day. It is thus an extremely valuable heritage site which deserves the greatest protection. At the same time the area should be available for education and tourism as it is one of the great potential tourism resources of the Northern Province, and indeed of South Africa as well.

In developing palaeontological and archaeological sites for tourism, it is essential not to kill the proverbial goose which lays the golden egg. While trying to provide the best experiences for tourists, great care must be taken not to damage bones and artefacts which have survived destruction for millions of years as a result of a unique set of circumstances leading to their fossilization. In addition, scientific research must be allowed to continue in order to keep the sites vibrant for continued tourist visitation.

This master plan, prepared by Cave Klapwijk and Associates in co-operation with Dr Judy Maguire, is the culmination of a great amount of painstaking research. Dr Maguire has been involved with research in the Makapan Valley for more than 30 years and through the years has built up a remarkable store of knowledge on the palaeontology, archaeology, natural and cultural history of this unique valley, which she knows extremely well and has grown to love. This authoritative document will long serve as the essential guiding hand to steer future developments in the Makapan Valley.



PROF. BRUCE RUBIDGE
DIRECTOR, BERNARD PRICE INSTITUTE OF PALAEONTOLOGICAL RESEARCH
UNIVERSITY OF WITWATERSRAND

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Cave Klapwijk and Associates (CKA) and Dr Judy Maguire wish to acknowledge and thank those who assisted us during this Master Planning exercise for the Makapansgat Valley Heritage Site. Their enthusiasm and eagerness demonstrates the high value which is placed on the preservation of our cultural heritage at Makpansgat.

For the benefit of their knowledge and their willingness to share it with us, we wish to thank the following individuals and organisations:

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Mr. Arrie Horn	CEO Tourism Board
Mr. Tom Shearer	Tourism Board

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Mr. Karel Liebenberg	Town Clerk

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Prof. Bruce S. Rubidge	Head of the Department of Palaeontology
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Pietersburg Museum

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Mrs Hester Roodt	Tour guide and educational officer

South African Heritage Resources Council

Dr. Jeanette Deacon	Director
Mr. Ron Viney	Manager, Northern Province Region

EXECUTIVE SUMMARY

The Makapansgat Valley Heritage Site (MVHS) is situated on the farm Makapansgat 39KS (2200 ha) 19 km E-N-E of Potgietersrus in the Northern Province of South Africa.

The MVHS is unique in that preserved in its many caves, in the form of ancient sediments, fossils and archaeological remains, is a record of proto-human and human occupation and resource exploitation extending from australopithecine times about 3.32 million years before present through to the present. This evidence forms much of the foundation of the South African archaeological sequence. There are seventy or more sites in the MVHS and its immediate surrounds.

The desire on the part of the Potgietersrus Transitional Local Council (TLC) and the Northern Province Tourism Board (NPTB) to promote tourism via increased access to the MVHS sites has to be balanced against the need to preserve the scientific integrity of the sites and their contents, and the research potential of a largely undamaged ecosystem in the valley and its hinterland. In this regard, it should be noted that at Sterkfontein Caves, near Krugersdorp, visitors are totally excluded from the immediate vicinity of ongoing excavations and are not allowed access to the fossil locality itself.

The Potgietersrus TLC purchased a strip of seven farms in the Dorpsrivier catchment. The rationale behind this purchase in 1994 was to legally acquire the water rights to the farms on account of the significant water shortfall in the town (Chapter 10 Hydrology). The very real need (by Potgietersrus) for the groundwater reserves of the dolomite aquifer needs to be assessed against the damage dewatering might cause in terms of ground subsidence and sinkhole development. A lowered water table will diminish stream flow and impact on the vegetation.

The Potgietersrus TLC "water farms" are a national asset which were, until recently, also productive agricultural units which generated agricultural produce and income not only for their owners, but for the local farm workers and the government, in the form of tax revenues. Their expropriation has in effect rendered them sterile in terms of both agricultural and financial yield and has impoverished many people who were dependent on farm wages. The purchases have also cost the Potgietersrus TLC money. A negative balance therefore currently exists (Chapter 6 Study Area and Background).

Subsequent to the expropriation, there has been extensive resettlement and occupation of the property by informal settlers. The needs and requirements of informal settlers should be assessed against the damage caused to the vegetation, the unauthorised and increasing wood collection, the increased incidence of veld fires and serious veld burns, overgrazing and bush encroachment, and other forms of subsistence plunder which contribute towards the visual and ecological disfigurement of a world famous palaeonthropological locality. The lack of visible authority and control has allowed the unrestricted and escalating informal settlement and the attendant environmental impacts to continue unopposed, a precedent which could become politically and financially expensive at some future date.

Under proper management, the natural and human resources within the MVHS could be integrated to contribute significantly to the Northern Province's economic, social and material needs. However, effective management of the Makapansgat Valley Heritage Site will not be a simple task. To begin with, the steep terrain, relatively high rainfall and ecological complexity suggest that all alterations should be undertaken only after taking

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1.1 BRIEF FROM THE CLIENT

Since the 1970's, Municipal officials have been pressing the University of the Witwatersrand (Wits University) to allow increased access to the Makapansgat Valley Cultural Landscape (MVCL) sites, more particularly the Historic Cave and recently, the Makapansgat Limeworks as well. The University has always recognized the considerable public interest in these sites, but visitors have up till now had to be controlled and supervised.

Against this background has come a formal request by the Transitional Local Council for Potgietersrus to allow increased but controlled access to the sites in an attempt to boost tourism in the region. The original request was via Mr Karel Liebenberg, then Chief Executive/Town Clerk for Potgieterus.

The proposed scheme can be summarized as follows: 2-3 bus tours per week, all visits being booked through the Arend Dieperink Museum in Potgietersrus, i.e. approximately 400 people per month might visit the site under full-time guided supervision. Fifteen "minimum requirements" for this type of usage are listed in the letter dated 14 February 1997 from Dr. J M Maguire to Mr. K Liebenberg, which explains what the Potgietersrus TLC had in mind. Such usage falls into the "Drive In – Drive Out" category of Tourism.

The brief was to compile a Master Plan for the MVCL, which will determine how best, if at all, these requirements should be accommodated, and how developments can be managed for long-term viability. "Phase One", which will follow on the Master Plan, will examine how appropriate developments can best be put in place without compromising the scientific value, the ecology or the aesthetics of the area, and what their environmental impact is likely to be.

The planning methodology is graphically illustrated in Figure 1.3.

1.2 LOCATION AND EXTENT OF THE MAKAPANSGAT VALLEY

The Makapansgat Valley Cultural Landscape is situated on the farm Makapansgat 39ks, 19 km E-N-E of Potgietersrus in the Northern Province of South Africa. Makapansgat 39 KS covers approximately 2200 ha, of which Wits University has been managing 77 ha for more than 70 years. The scientific involvement of Wits University stems from 1925 when Prof. Dart published the first scientific report on the Makapansgat Valley.

Access to the valley is via the old N1 'Great North Road' from Potgietersrus to Pietersburg (now termed the R101), 15 km out of Potgietersrus is a turn-off to the east, labeled "Zwartkrans": from this turn-off a gravel road takes one on to Makapansgat (Maguire, 1998) (Figure1.1).

This road, which also provides access to farms Zwartkrans and De Hoop, has not been maintained for many years and has become severely eroded and rough in places. Responsibility for its maintenance up to the Zwartkrans gate probably rests with the Province. There is no direct access to Makapansgat from the new N1 freeway, from either the north-bound lane (Pretoria-Pietersburg) or the south-bound lane (Pietersburg-Pretoria). Travellers coming from Pretoria i.e. travelling north, must exit from the freeway at the Nyl Plaza some 12kms south of Potgietersrus and use the R101. Travellers coming from the

dung balls, blow fly pupae and hyaena droppings. Fossil bovids (various species of buck) predominate at the Makapansgat limeworks.

1.3.2 The Cave of Hearths – Historic Cave complex

The Cave of Hearths presents one of the most important deeply stratified archaeological sites in South Africa. It yielded the first stratified (i.e. *in situ* within cave sediments) Early Stone Age (Acheulean) stone tools, fossil remains of archaic *Homo (Homo heidelbergensis)* and an associated fossil fauna from a sub-Saharan African site. The cave preserves a remarkable history of human occupation spanning the Early Stone Age, Middle Stone Age and Later Stone Age. Iron Age relics conclude the depositional sequence. The Cave of Hearths thus records the transition from 'archaic' (before 200,000 BP) to 'modern' human populations. The archaeological significance of the Cave of Hearths artefact assemblage is global because these were the first modern studies of *in situ* artefacts manufactured by late archaic *Homo sapiens (Homo heidlbergensis)* and earliest *Homo sapiens*.

1.3.3 The Historic Cave

The Historic Cave is famous for a siege that took place there in 1854 between Boers, who had systematically been settling in the Transvaal since the early 1800's, and local Ndebele tribespeople. The causes and repercussions of this significant event were far-reaching and the site is consequently of historical and cultural significance to Boer, Brit and Ndebele alike. Regrettably, the once-numerous relics of this event have been irresponsibly removed from the cave by generations of curious sight-seers and unauthorized visitors, so that today little remains to be seen. This situation needs urgent attention.

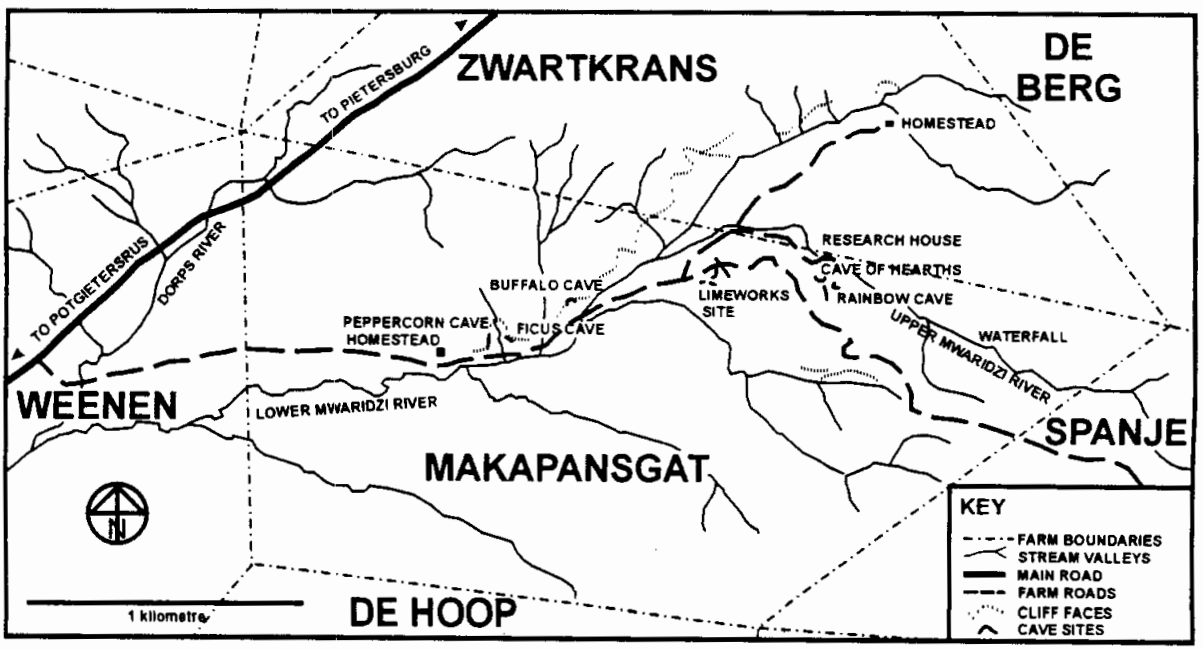


Figure 1.2: **Map of Makapansgat 39KS with most important sites**

1.4.1 Impacts and risks on the Scientific and Cultural Environment

The following impacts and risks have been identified on the Scientific and Cultural environment:

- The sites remain largely unexcavated and are incompletely scientifically explored. This is particularly true of the Historic and Rainbow Caves and the *in situ* concrete-hard Limeworks breccias, which remain virtually untouched.

- Areas that are palaeontologically and archaeologically sensitive are not secured against unsupervised visitor damage.

- Vandalism by unauthorized and unsupervised visitors remains a problem (e.g. damage to a section of Iron Age packed dry stone walling in the Historic Cave; removal of an *in situ* fossil suid skull from the Limeworks and the damaging removal of a fossil antelope skull from Member 2 at the Makapansgat Limeworks). The scientific information that has been lost is irreplaceable.

- Many extracted fossils and fossiliferous breccia blocks awaiting transportation to the laboratories at the University are lying in open piles. These are at risk to be stolen as souvenirs.

- The informal settlers and visitors to the valley are depleting the natural resources by removing firewood, aloes and other sought-after plants.

- The sites are, in places, extremely dangerous. Rock mechanics engineers and mine safety officials who have inspected the caves have condemned them as unsafe for public access. There are numerous concealed pits and areas that are susceptible to frequent rock falls from the overhanging roof. The reverberations caused by blasting operations at the nearby open cast Klipspringer Diamond Mine have recently exacerbated this situation. The recent heavy rains have worsened instability of the roof and hanging walls, and fresh falls of loose rock have been noted.

- The sites are not safe or suitable for visitors (dangerous areas are neither marked nor fenced off, there are no first aid facilities, sanitary facilities or running water. Histoplasmosis or "Cave Disease" is present in the Ficus Cave, Peppercorn Cave and in parts of the Historic Cave. Rock dumps and crevices create numerous hideaways for snakes).

- Ongoing scientific experiments (such as pollen traps, sedimentation rate and calcite growth experiments, owl pellet accumulation studies and so forth) are often inadvertently tampered with just by trampling or raising unnecessary dust. One cave (Cold Air Cave) has had to be sealed in order to protect sensitive monitoring equipment. Exposed artefacts and fossils are trampled upon, especially on the currently used access route to the Historic Cave.

- On more than once occasion, armed "hikers" have been encountered in the mountains. The possibility of unchecked poaching is very real.

1.4.2 Recommendations

The following recommendations were made after considering the impacts:

- The uniqueness of Makapansgat Valley Cultural Landscape and its many important archaeological and palaeontological sites, have to be preserved.

1.7.2 Tourism potential

The tourism potential, both domestic and international, of the sites must be developed on a sustainable basis providing recreational and educational options and facilities. Because of the ecological and cultural sensitivity of the sites, and the potential for the discovery of new fossils and cultural relics, a corps of well trained and effective tour guides is an essential prerequisite - to interpret the sites and their significance to the tourists, while at the same time controlling their actions to insure that they do not, either deliberately or inadvertently, do damage to the heritage resources of the sites. A Guide Training Course Outline has been provided (Chapter 11 Tourism) and funds should be budgeted for implementing the training of guides.

In view of the potential hazards inherent in the sites (sinkholes, hazardous surfaces, danger of rockfalls, risk of histoplasmosis and other illnesses), the Bernard Price Institute (BPI) for Palaeontological Research and Wits University must be adequately protected and indemnified against all claims for illness, injury or death arising from tourist usage of the cave sites and facilities under its control.

1.7.3 Research and development

Research and development are viewed as a collaborative responsibility - good displays and an exciting product that tourists will travel far to see are dependant on research results, but research can be done only if funds are available, so provision for funding and supporting research programmes must be built into any assessment of the financial viability of any proposed development or project.

1.7.4 Management Plan

The Management Plan should not be considered final and inflexible; it should grow and adapt as circumstances change.

1.7.5 Collaboration

The successful implementation of the Management Plan and any subsequent developments aimed at promoting tourism will only succeed if productive and amicable collaboration between Wits University, SAHRA, the landowner (Potgietersrus TLC), the local and regional authorities and developers can be maintained. It is imperative that a Makapansgat Project Management Committee and a competent Project Director be appointed to promote and coordinate the multifarious aspects of the overall project. The Project Management Committee could draw on expertise from a variety of stakeholders.

MAKAPANSGAT VALLEY MASTER PLAN

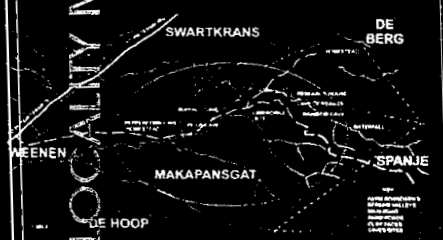
MAKAPANSGAT VALLEY CULTURAL LANDSCAPE

SITE ASSESSSMENT AND PLANNING GUIDELINES FOR THE PROPOSED NEW VISITORS FACILITIES AT MAKAPANSSAT, POTGIETERSRUS NORTHERN PROVINCE

BACKGROUND TO THE PROJECT

The Makapansgat Valley, in the form of ancient sediments, fossils and archaeological remains is a record of proto-human and human occupation and resource exploitation extending from australopithecine times about 3.32 million years before present through to the present. There are seventy or more sites in the Makapansgat valley and its immediate surrounds

LOCALITY MAP



LOCALITY

The Makapan Valley, its many caves and other sites of archaeological and palaeontological importance, are situated on the farm Makapansgat some 19 km outside Potgietersrus in the Northern Province of South Africa.

RESEARCH PROBLEM

The need for a carefully constructed management plan is essential to ensure that any development that takes place is both sensitive and sustainable in order to address the following problems:

- Areas which are palaeontologically and archaeologically sensitive need to be secured.
- Protection against vandalism.
- The problem of histoplasmosis or "Cave Disease"
- Dangerous areas has to be marked or fenced off
- The lack of facilitites.

GOALS AND OBJECTIVES

- Safeguarding one of the major palaeontological and archaeological sites in Southern Africa
- Protection and welfare of the heritage area.
- Developing of sustainable tourism of recreational and educational interest
- Initiation of research programmes and development.
- Implementation of a Management Plan.

GENERAL METHODOLOGY

The methodology [illegible] ging:

1. **Introduction**
   Description of project background, brief and the study area location identify goals and objectives
2. **Site Investigation**
   Description of natural site conditions and features. Describe the social site conditions.
3. **Evaluation and Determination of Site Potential: Analysis**
   Categorise the site into ecological units. Land use zoning. Tourism potential determination.
4. **Development Proposals: Master Plan**
   Provide land use and development proposals Provide management proposals

- [illegible] and palaeontologically sen[illegible] ...ld be secured.
- [illegible] status should be continued to a broad [illegible] ...ys and fossil remains of all sites
- [illegible] the whole valley from unauthorized en[illegible]
- [illegible] World Heritage Site status should be applied [illegible] ...tained.
- [illegible] ...seum and on-site displays should be [illegible]
- The [illegible] ...ing numbers of informal settlers should [illegible] ...addressed.

CAVE KLAPWIJK & ASSOCIATES | Dr J M MAGUIRE | GRAPHICS BY CHRYSALIS

THE METHOD SEQUENCE FOR THE PLANING OF THE MASTER PLAN

FIGURE 1.3

MAKAPANSGAT VALLEY CULTURAL LANDSCAPE MASTER PLAN

CHAPTER 2 BACKGROUND

2.1 INTRODUCTION

Since the 1970's, Potgietersrus Municipal officials have been pressing the University of the Witwatersrand (Wits University) to allow increased access to the Makapansgat Valley sites, more particularly the Historic Cave (Figure 2.1) and recently, the Makapansgat Limeworks as well. Wits University has always recognized the considerable public interest in these sites, but visitors have always had to be controlled and supervised.

Figure 2.1: **Inside the Historic Cave or Makapansgat. Note the cleavage plane on the hanging roof block. The children are standing on a fallen roof segment. Rock falls from the roof are a constant danger (Photo: J.M. Maguire)**

Against this background has come a formal request by the Transitional Local Council for Potgietersrus to allow increased but controlled access to the sites in an attempt to boost tourism in the region. The original request was via Mr Karel Liebenberg, then Chief Executive/Town Clerk for Potgieterus, in 1996.

The scheme which he proposed can be summarized as follows: 2-3 bus tours per week, all visits being booked through the Arend Dieperink Museum in Potgietersrus, i.e. something of the order of 400 people per month might visit the site under full-time guided supervision. Some 15 "minimum requirements" for this type of usage are listed in the letter dated 14 February 1997 from J M Maguire to Mr K Liebenberg, which explains what the Potgietersrus TLC had in mind. Such usage falls into the Drive In – Drive Out category of Tourism.

The planners brief is to construct a Master Plan for the Makapansgat Valley Cultural Landscape which will determine how best these requirements should be accommodated (and indeed, which of them can be accommodated at all), and how developments can be

The broader Conservancy concept is to be recommended for a number of reasons:

- The management of the entire Highlands water catchment will be facilitated. It is good catchment management that is going to ensure the long-term availability of water, not only of surface water, but of the all-important ground water as well. Guaranteed water supply will be crucial to the continued industrial development and economic survival of Potgietersrus, Mahwelereng and Zebediela.
- Fire control and management will be facilitated.
- The options for different tourism-orientated land uses will be broadened with the larger area available.
- The envisaged conservancy area contains or is closely adjacent to some 50 important historical, archaeological, palaeontological or geological sites, monuments or places of interest which could support archaeo-tourism "packages" on offer.

2.2 SUMMARY

This chapter has drawn attention to a number of tensions that exist in the Makapansgat Valley Cultural Landscape which will require resolution:

- The desire on the part of the Potgietersrus TLC and Tourism authorities in the Province to promote tourism via increased access to the Makapansgat Valley Cultural Landscape sites needs to be balanced against the need to preserve the scientific integrity of the sites and their contents, and the research potential of a largely undamaged ecosystem in the valley and its surrounds.

- The very real need for the groundwater reserves of the dolomite aquifer needs to be assessed against the damage dewatering might cause in terms of ground subsidence and sinkhole development. A lowered water table will diminish stream flow and impact on the vegetation.

- The needs and requirements of informal settlers should be assessed against the damage caused to the vegetation, the unauthorized wood collection on an increasing scale, the increased incidence of veld fires and serious burns, overgrazing and bush encroachment, and other forms of subsistence plunder which contribute towards the visual and ecological disfigurement of a world famous palaeoanthropological site. The presence of numerous informal settlers (200-300) is incompatable with conservation goals.

- On the other hand, consideration should be given to ways and means by which legitimate residents can meaningfully contribute to and become involved in the Phase One developments and long-term management plan, so that unemployment and poverty in the region can be alleviated.

- The Potgietersrus TLC "water farms" are a national asset which were, until recently, productive agricultural units which generated agricultural produce and income not only for their owners, but for the local farm workers and the government, in the form of tax revenues. Their expropriation has in effect rendered them sterile in terms of both agricultural and financial yield and has impoverished many people who were dependent on farm wages. The purchases have also cost the Potgietersrus TLC money. A negative balance therefore exists at the present time. (More has been spent than has been recouped).

- The lack of visible authority has allowed the unrestricted and escalating informal settlement and the attendant environmental impacts to continue unopposed, a precedent which could become politically and financially expensive at some future date.

- The successful accomplishment of Phase One developments will function, hopefully, as the initializer to Phase Two and Three and is thus a key to future development.

MAKAPANSGAT VALLEY CULTURAL LANDSCAPE MASTER PLAN

CHAPTER 3 CLIMATE

3.1 INTRODUCTION

Makapansgat 39KS is circumscribed by the "C-" Climatic Zone of Poynton's (1971) Moisture Regions. This falls below the Sub-Humid and above the Semi-Arid climatic types, with a moisture index of –20 to 0. This corresponds to the Dry Sub-Humid Climatic Type of Thornthwaite (1948). The moisture index is a measure of the moisture deficit (or surplus, in other climatic types) which is calculated by comparing evapotranspiration (which has temperature as a variable) with precipitation (moisture availability).

Makapansgat falls into Zone 5 of Poynton's (1971) Thermal Regions, at the interface between the Cooler Temperate and Warmer Temperate climate types. Zone 5 experiences moderate frost. Because altitude may have either an exacerbating or ameliorating effect on frost, and given the extremely broken topography at Makapansgat, the occurrence of frost is not uniform across the terrain. Certain areas experience lower temperatures and more severe frost than others.

3.2 SUMMARY

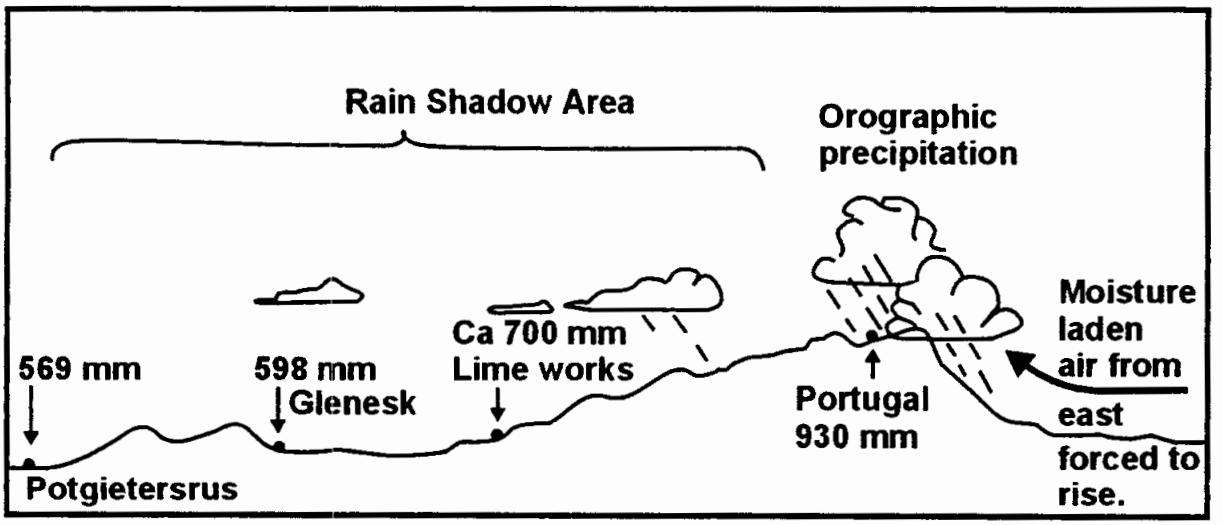


Figure 3.1: **Orographic precipitation and rain shadow effect caused by the N-S trending Makapansgat Highlands range**

- The study area falls within the Dry Sub-Humid Climatic Type and experiences moderate frost.
- Climatic studies of the study area are disadvantaged by the fact that there is no formal weather station on the farm itself or even nearby. The closest weather stations are at Potgietersrus (ca 19km distant) and at Uitloop (approx. same distance).
- The north-south trending Makapansgat-Highands range gives rise to orographic precipitation along the escarpment with a rain-shadow effect on the western side. Rainfall along the mountain crest is ca 920mm p.a. dropping off to ca 700mm at the Limeworks, 598mm at

- Wind-blown dust is a problem.
- Most days are pleasantly sunny. There are sufficient hours of intense sunshine to allow for solar water heaters and solar-powered batteries, even in winter.
- Lightning is not a risk factor in the valley although hikers utilizing the exposed ridges and crests of the highlands should be warned about the higher risk in these areas.

3.3 RECOMMENDATIONS

- Given the erratic nature of the rainfall, dry-land crop farming is not an appropriate land-use option. Agriculture supplemented by groundwater is problematic in that a permit and quota system is in operation and irrigation water will be expensive.
- Water tanks should be installed to catch and store roof run-off.
- Some form of heating should be considered for winter use in any overnight accommodation provided for in terms of the Master Plan.
- The sometimes heavy frost experienced should be borne in mind when choosing landscaping plants.
- The windiest months co-incide with the time that the vegetation is at its most desiccated. This combination creates a fire hazard. Before this time, i.e. before mid-July, controlled burning should be used to create fire-breaks around the property. The internal roads (the access gravel road, the SENTECH mountain road and the De Hoop road) should be used as additional fire-breaks by burning strips on one or both sides of them. This will in effect divide the property into four large sectors which can be used for rotational fire management.
- For most of the year, wind speed is insufficient to operate even a windmill.
- The local geomorphology gives rise to anabatic and katabatic air flows in the valleys: Valley winds during the day and mountain winds in the evenings.
- The air flow creates "fire-corridors" which should be borne in mind when siting infrastructure.
- Outdoor areas such as braai areas, bomas and lapas should be designed with valley and mountain winds in mind.
- Fire-prone building materials such as thatch, reeds and wood should only be utilized where precautions have been taken to minimize fire risk.
- Wind-blown dust off the gravel access road should be minimized by tarring the portion which would be required to provide access to the tourist sites.
- Wind-blown dust off the old agricultural lands should be minimized by ploughing up the "plough pan" and seeding with selected pasture grasses.
- Environment-friendly solar-powered installations should be considered wherever feasible.

MAKAPANSGAT VALLEY CULTURAL LANDSCAPE MASTER PLAN

CHAPTER 4 GEOLOGY AND GEOMORPHOLOGY

4.1 INTRODUCTION

In order to understand the geology (Figure 4.3, 4.4 & 4.5) and the structural controls on the geomorphology of Makapansgat itself more fully, it is necessary to consider the regional geology first.

The rocks of the region around Makapansgat belong mainly to the Transvaal Supergroup, a thick succession of sedimentary and carbonate (dolomitic) rocks that outcrop widely in the Northern Province, Mpumalanga, Gauteng, Northwest Province and Northern Cape, with isolated occurrences in Botswana and in the Free State. The rocks of the Transvaal Supergroup range in age from + 2 500 million years to + 2 200 million years, and are thus somewhat younger than the gold-bearing Witwatersrand System.

Within the area defined by the old Transvaal Province, the outcrop of the Transvaal Supergroup appears as an irregular, elongate, oval, east-west trending basin whose long axis extends from the Transvaal Drakensberg in the east to beyond Lobatse, Botswana in the west, a distance of some 500 km . It is only this northern portion of the Transvaal Supergroup with which we are concerned with.

The Transvaal sediments in the central portion of this basin, focused in the huge expanse occupied by the Springbok Flats, were invaded by a massive intrusion of igneous rocks, termed the Bushveld Igneous Complex. The emplacement of this extensive suite of rocks had a profound effect on the topography and geology of Makapansgat.

4.2 SUMMARY

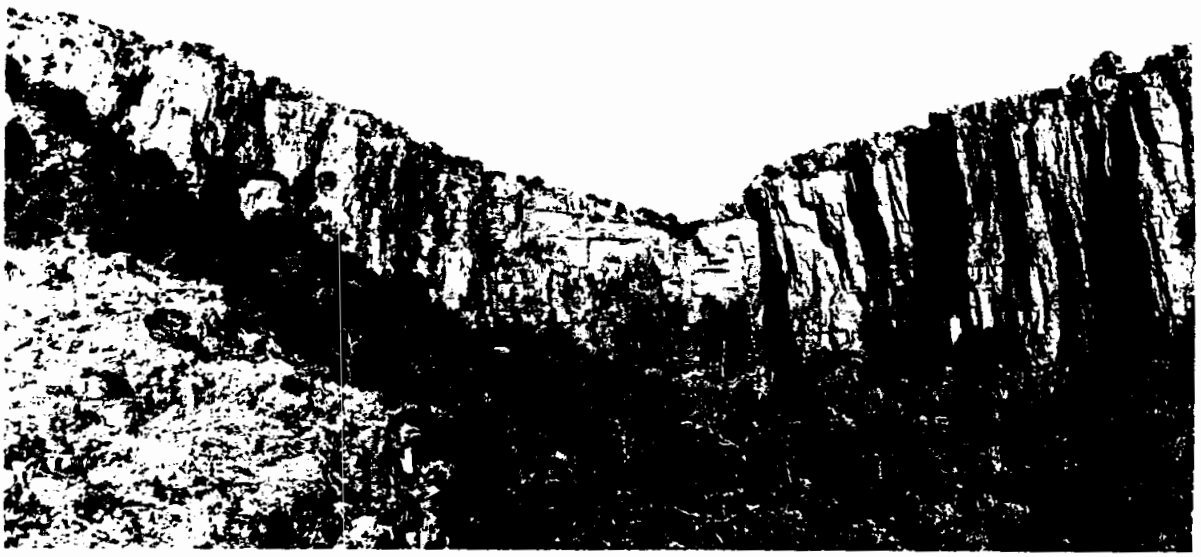


Figure 4.1: **Looking east towards the Black Reef Quartzite cliffs at the head of the Makapan Cave Valley (Photo: B. Maguire)**

- The original water table in the Makapansgat Valley is high; i.e. seasonally as shallow as 9m (Source: Dept. of Water Affairs).

- The water table can fluctuate seasonally, but lowering is primarily induced by groundwater abstraction.

- A high water table keeps the residuum and subterranean voids stable and water filled. Dewatering causes instability, representing a major artificial disturbance of the groundwater regime which greatly accelerates the formation of sinkholes.

- Compaction subsidences develop when lowering of the water table through depths of unconsolidated residuum results in loss of hydrostatic support and consequent compaction of the soil. This causes the formation of depressions, often scarped at the margins, and as much as 17m deep. Compaction subsidence is limited to areas in which the original water table is located within unconsolidated materials. (Brink and Partridge 1965).

- Sinkhole development occurs when unsupported surface material collapses catastrophically into an air-filled subsurface void. If the water table is high, the voids are water-filled rather than air-filled; hydrostatic support keeps the residuum stable. Once an area has been pumped, however, the voids in the substrate become air-filled and destabilized.

- Ongoing abstraction of considerable volumes of groundwater such as the amounts required to supplement water shortfalls in Potgietersrus will result in a lowered water table, perhaps permanently (Chapter 6 Hydrology).

- The very real need to utilize groundwater reserves of the dolomite aquifer should be assessed against the damage dewatering might cause in terms of ground subsidence and sinkhole development.

- There are no direct techniques for locating and demarcating the areal extent of subterranean cavities, whether these are air-filled or water-filled.

- Indirect geophysical techniques, combined with percussion drilling to verify the interpretations made, can be employed in the attempt to locate subterranean voids. A combination of gravimetric, ground radar, seismic and resistivity methods can be applied. The interpretation of anomalies is not easy: Do they merely indicate a change in rock density or is there indeed a void in the substrate? Subsequent percussion drilling is necessary to establish this.

- The costs of such investigations are considerable, i.e. in the region of R175 000 to cover 150ha, being of the order of R1 200 per ha (Source: Partridge, Maud and Associates, July 1999. GEODASS estimates that the cost of covering the 500ha of flat land at Makapansgat would be of the order of R600 000, without the confirmatory percussion drilling.

- Despite application of these techniques, the subsequent risk of sinkhole development can never be completely excluded.

- In dolomite areas, housing development - particularly that of low-cost housing, with the accompanying infrastructure normally commensurate with such scheme, (type of sewage disposal, water supply etc.) is inadvisable.

- The steepness of the hill slopes precludes the development of deep soils. Building and infrastructure on steep slopes present engineering problems.

- The shallowness of the surface soil on the dolomitic hillslopes restricts the choice of sites for the installation of infrastructure such as pipelines, soakways, foundations, etc. all of which would require drilling and blasting to establish and conceal

4.3 RECOMMENDATIONS

- In view of the constraints that the adverse terrain-conditions impose on housing development, it is strongly recommended that the Valley be utilized for recreation, education (including eco-tourism) or game farming. The latter option would only become available within the context of a larger conservancy.

- The unit Makapansgat could not be farmed without the groundwater being freely available. Water costs are likely to render any farming enterprise economically sub-viable. Commercial farming is probably not a good option. Short term leases would in all probability lead to overgrazing and environmental degradation.

- Essential developments should be positioned with care. Mitigating building techniques and materials should be used.

- The shallow water table and fragmented nature of the dolomite render the groundwater susceptible to pollution (Chapter 6 on Hydrology). Special arrangements will have to be made for on-site sanitation, particularly as the groundwater is earmarked for domestic consumption in Potgietersrus.

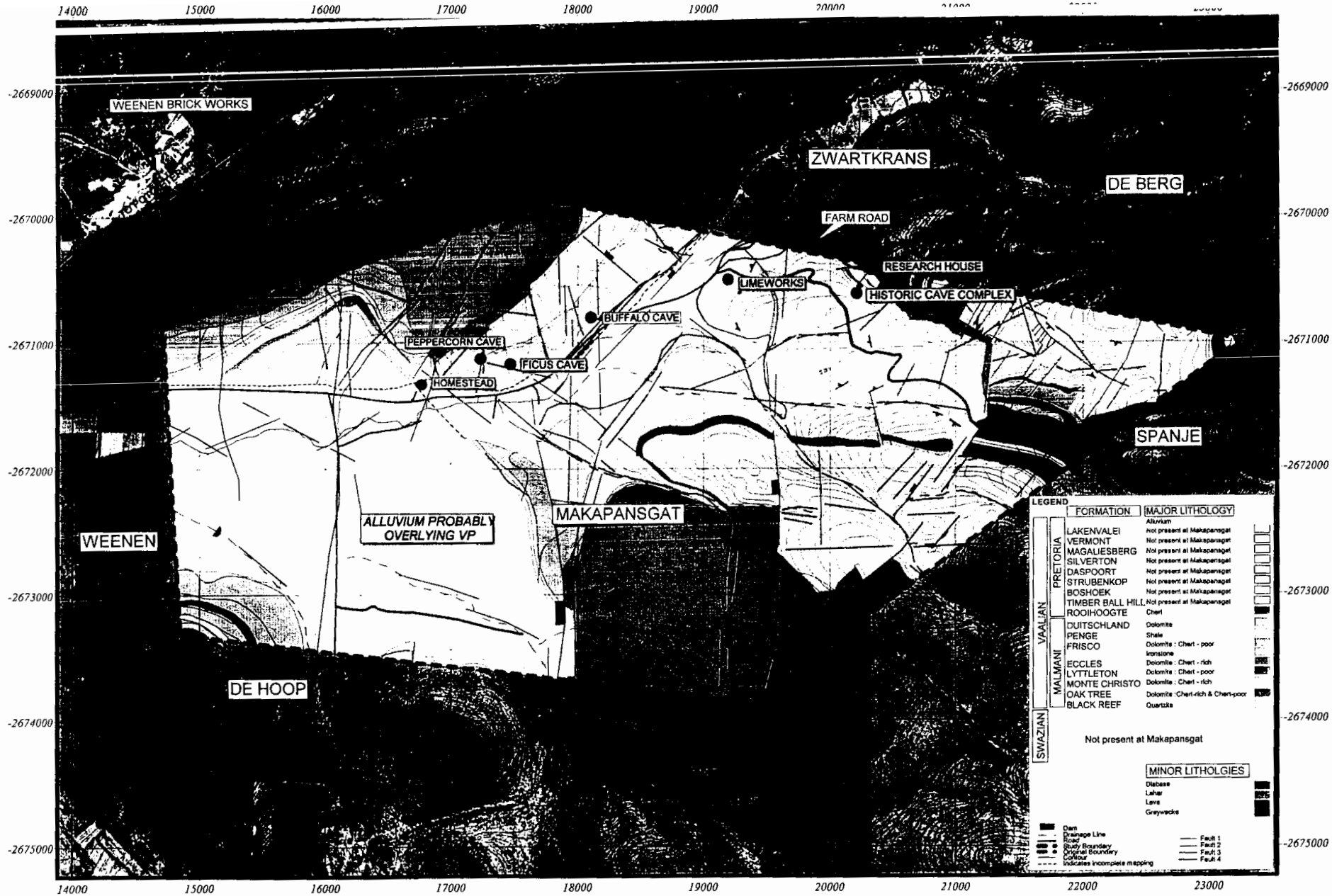
- Areas known to be undermined or cavitous should not be built on, nor have roads or public access of any kind over them.

- The particular dangers of the cavern sites to be opened to the public have been noted in other Chapters. Appropriate safety measures will have to be introduced at all sites to which the public will be allowed access.

- In view of the many features of geological interest in the Valley (Figure 4.5), it is recommended that a series of special interest geological trails be designed. Some of these could be designed to provide 'actuality situations' and back-up practical material for parts of the secondary school syllabus. One geological tour could include a route through an underground cave.

- Underground surveys and mapping of caves should be completed.

- Hand-picking of the dumps for travertine by artesanal workers would produce small but saleable volumes of high-quality travertine, for which a ready market still exists. Fossilferous breccia blocks could at the same time be put on one side.



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Fax: (033) 3423 896
Email: enviromap@iafrica.com

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TEL: (012) 362-4684
FAX: (012) 362-0394
E-Mail: cka@cls.co.za

Makapansgat Valley Cultural Landscape
GEOLOGY MAP

FIGURE 4.3

N

SCALE 1: 30 000

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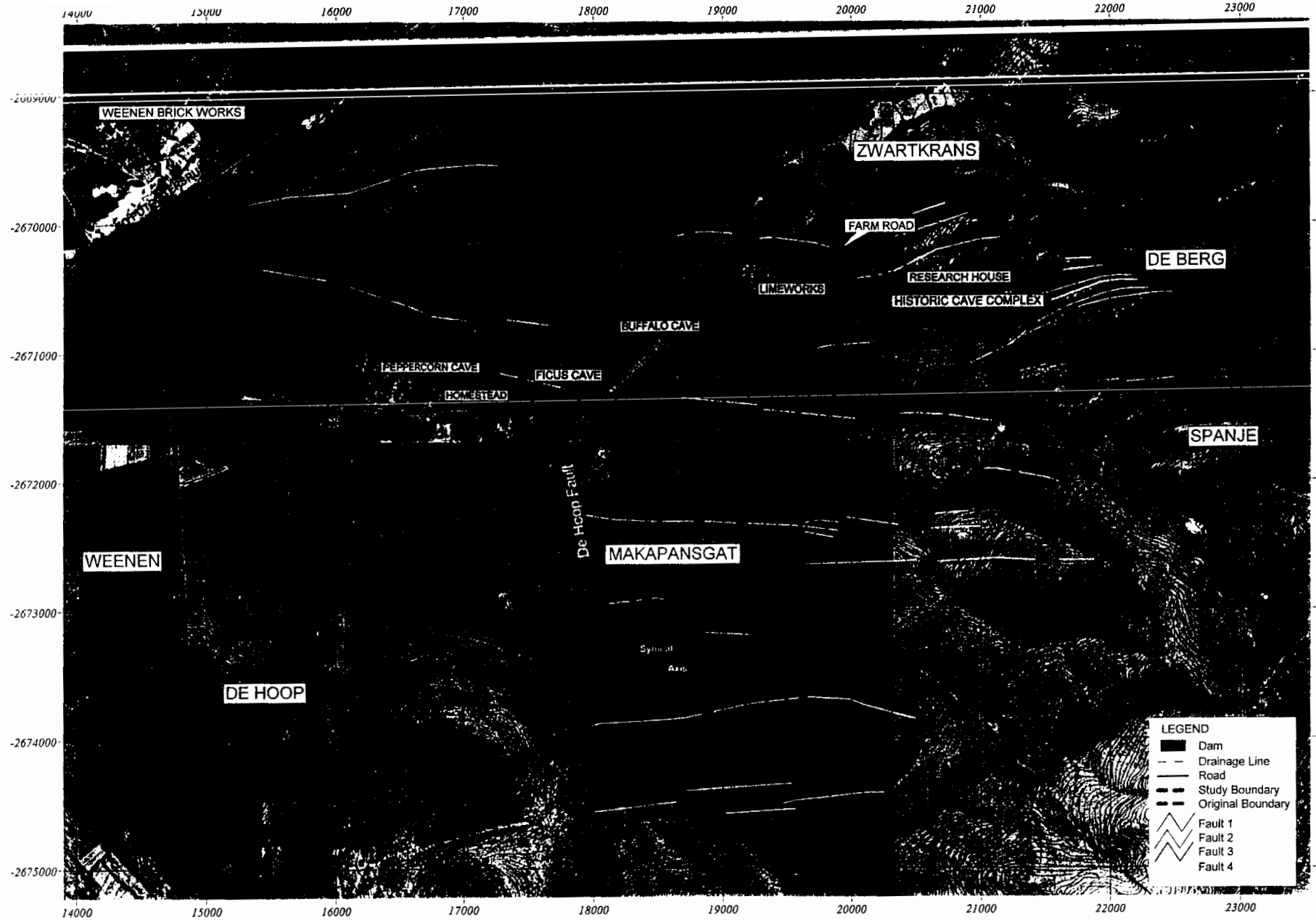

Makapansgat Valley Cultural Landscape
STRUCTURAL GEOLOGY MAP

FIGURE 4.4

SCALE 1: 30 000

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cka
TEL: (012) 362-4684
FAX: (012) 362-0394
E-Mail: cka@cis.co.za

Makapansgat Valley Cultural Landscape
PLACES OF GEOLOGICAL INTEREST MAP

FIGURE 4.5

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Fax: (033) 3423 886
Email: envimap@telkra.com

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FAX: (012) 362-0394
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SCALE 1: 30 000

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MAKAPANSGAT VALLEY CULTURAL LANDSCAPE MASTER PLAN

CHAPTER 5 PEDOLOGY / SOILS

5.1 SUMMARY

This chapter deals with a study of the soil-landform resources of the Makapansgat Valley Cultural Landscape (Figure 5.1) with the objective to conduct a soil-landform survey at a scale of 1:10 000, interpret the resources in terms of their suitability for various educational, recreational and landscape planning uses, identify sensitive sites on the basis of these resources, evaluate the impact of possible development on these resources and recommend mitigatory measures and actions to minimise negative impacts.

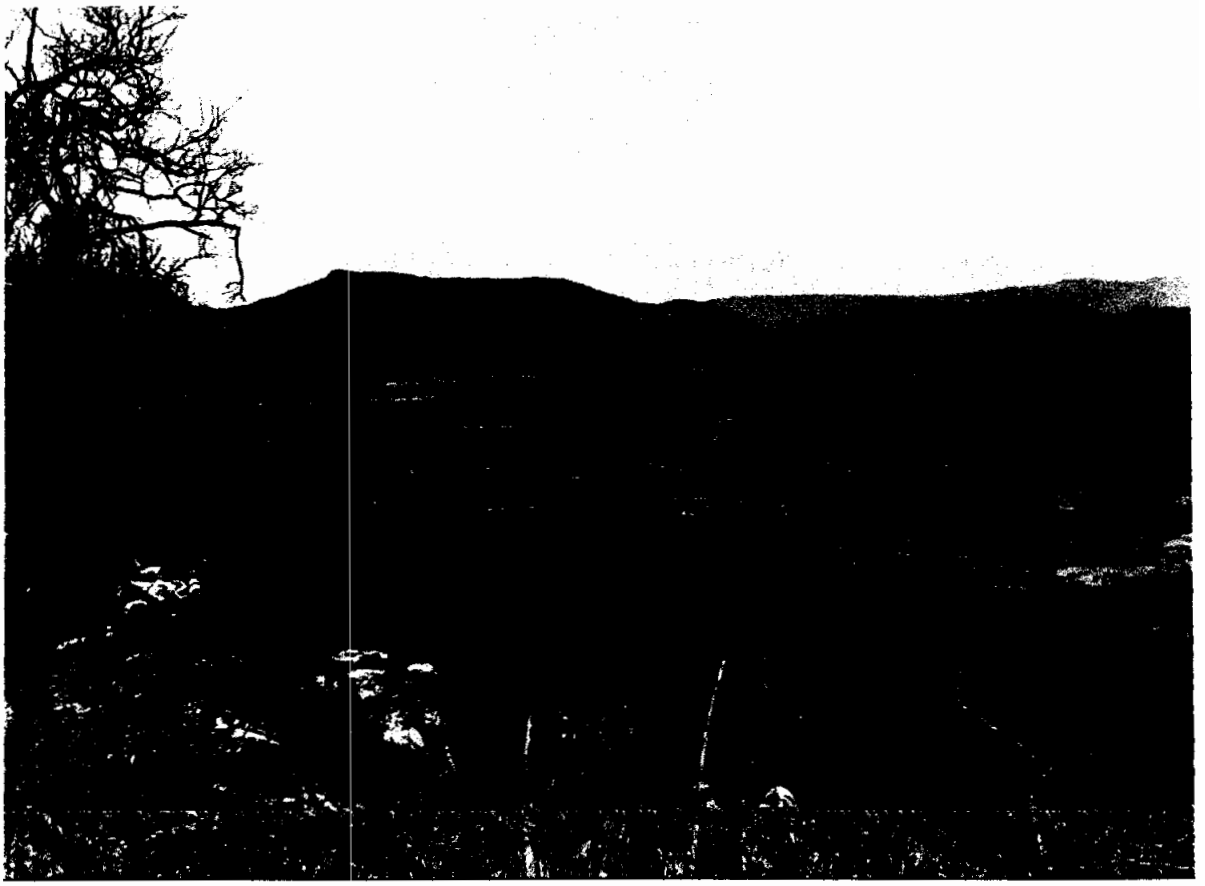


Figure 5.1: **A view of the broad alluvium-covered Makapan Valley looking west (Photo: B Maguire)**

A soil-landform survey has been conducted according to standard procedures. Due to time and accessibility constraints the survey has been done at a detail reconnaissance level. Consequently more detailed survey data are available for the lower lying areas in contrast to the mountainous and hilly terrain, resulting in a higher degree of confidence in the evaluation and assessment processes of the former areas. In this regard, it may be necessary to conduct detail soil surveys of specific sites to satisfy specific objectives.

The soil-landform map (Figure 5.2), shows the distribution of 14 map units, while the accompanying legend (Table 5.1) indicates the dominant soil components as well as the

position (hillslope unit and slope class) they occupy in the landscape. The dominant soils of the more level lying footslopes are well-drained, red, apedal, mesotrophic, loams of the Hutton form, those of the valley bottoms are well-drained, red and brown, cutanic, loam soils of the Oakleaf form, and those of the steeper footslopes and midslopes are litholic soils of the Hutton, Glenrosa and Mispah forms. The sand grade is mainly fine.

The study has established that the environment is sensitive with regard to soil water erosion, soil stability, soil compaction and dustiness. Sensitivity seems to vary according to the soil and landform components as expressed in the map units of the soil-landform map.

The soil-landform factor has been subdivided into physical suitability classes for educational, recreational and landscape planning uses (Table 5.2) on the basis of internationally recognised criteria and attributes limiting their suitability . For this project, classes 1 and 2 can be recommended for any relevant development or use, whereas the development of class 3 land will undoubtedly imply higher financial inputs and the application of compulsory conservational measures to combat a possible higher water erosion hazard. It is inferred that mitigation measures can effectively be implemented in order to minimise the other risk sources. Specific use of class 4 land must be avoided as far as possible. Since ample suitable land with reference to the soil-landform factor seems to be available (map units A1 and A2), selection of land for the intended uses is recommended.

It has been established that the proposed development and uses of the terrain will impact negatively on the soil-landform resources. Impacts such as soil erosion by water, soil compaction and dustiness have been identified, whereas soil stability has not been rated as a potential hazard if those sites with possible instability problems (map unit E1) are not been recommended for any development. The nature and assessment of the impacts without the application of management/mitigation actions for the construction and operational phases are contained in the main report. In general, a moderately rated intensity has been estimated which makes the application of mitigation essential.

Several management/mitigation measures and actions have been recommended in the report which apparently will result in a measurable reduction (low rated intensity) in impact.

Various exercises have been recommended to monitor soil erosion during the construction and operational phases.

Research on the palaeosols and several phases of colluviation/alluviation in order to unravel supplementary information on past climates and possible associated hominid occupation has been strongly recommended.

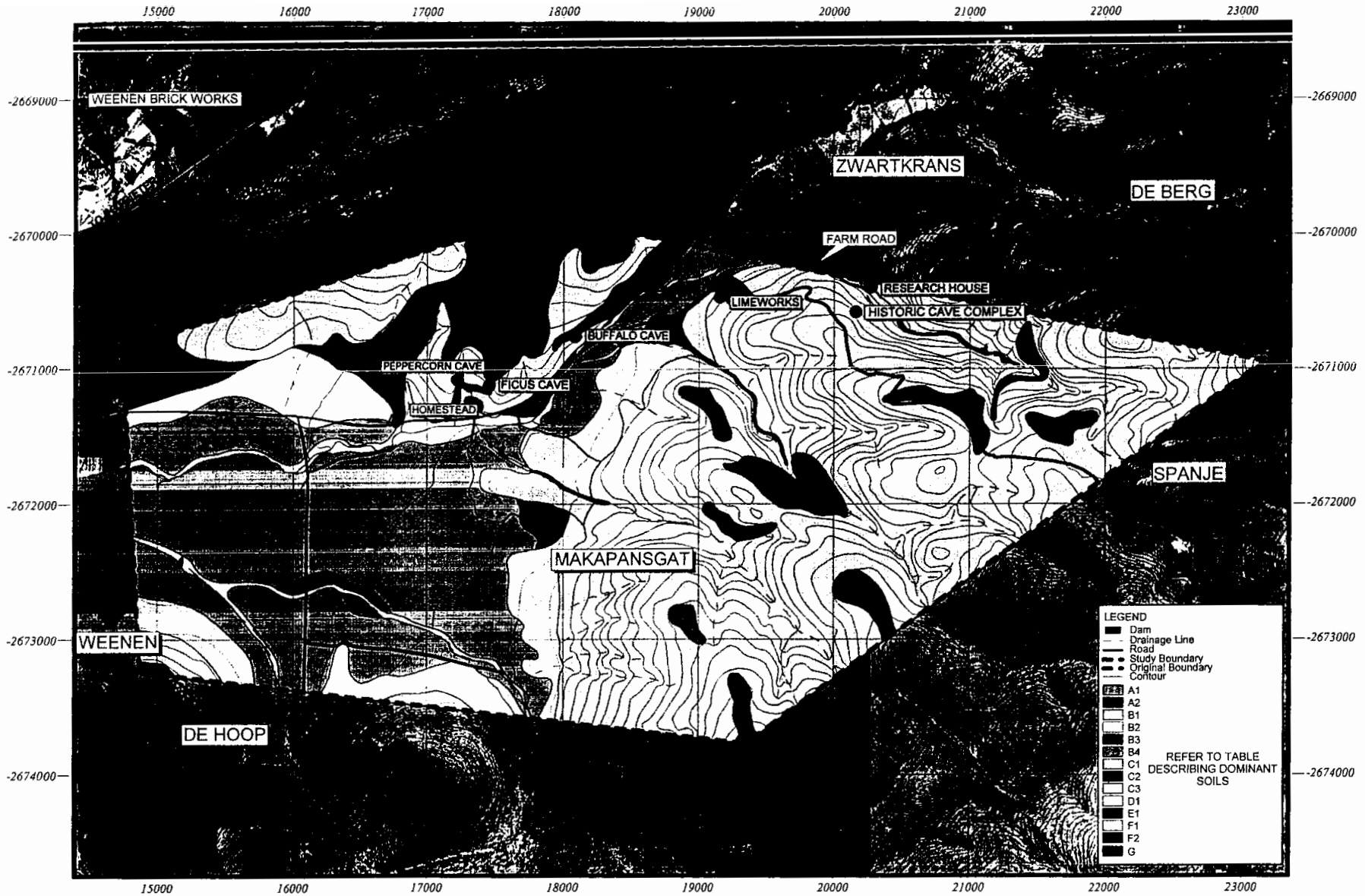
Table 5.1: Description of the dominant soils at the Makapansgat Valley Cultural Landscape

MAP SYMBOL	SOIL FORM AND FAMILY	PROFILE DESCRIPTION
A1, A2, F1	Hutton form, Hayfield loam	Orthic A horizon: 20-30 cm thick, dark reddish brown, apedal to weak subangular medium blocky, slightly hard to hard, sandy loam, loam and sandy clay loam (clay content 15-25 %), gradually overlying Red apedal B horizon: >150 cm thick, dark red, apedal to weak subangular fine and medium blocky, slightly hard to hard, loam, sandy clay loam and clay loam (clay content 20-35 %), in places with reddish cutans and soft Fe/Mn concretions Stoneline: occurring in the majority of profiles from 20-120 cm soil depth, >60 % slightly rounded stones
B1, B2, B3, B4	Hutton form, Hayfield fine sandy loam	Orthic A horizon: 10-30 cm thick, dark reddish brown, apedal to weak subangular medium blocky, slightly hard, fine sandy loam to loam (clay content 15-20 %), clearly overlying Stoneline: 10-50 cm soil depth, 60-80 % subangular to angular gravel and stones, abruptly overlying Rock: slightly weathered
B1, B2, B3, B4	Glenrosa form, Tsende fine sandy loam	Orthic A horizon: 10-30 cm thick, dark greyish brown, apedal, slightly hard, fine sandy loam (clay content 15-20 %), clearly overlying Stoneline: 10-50 cm soil depth, 60-80 % subangular to angular gravel and stones, abruptly overlying Lithocutanic B horizon/rock: slightly weathered rock and brownish soil of limited extent
C1, C2, C3, D1, E1	Mispah form, Myhill loamy fine and medium sand to fine and medium sandy loam	Orthic A horizon: 1-30 cm thick, dark greyish to dark brown, apedal, slightly hard, loamy fine and medium sand to fine and medium sandy loam (clay content 10-20 %), abruptly overlying Hard rock
F1	Oakleaf form, Dipene fine sandy loam to sandy clay loam	Orthic A horizon: 20-40 cm thick, dark brown, weak medium to coarse blocky, hard, fine sandy loam to sandy clay loam (clay content 15-30 %), gradually overlying Neocutanic B horizon: >150 cm thick, reddish brown, weak coarse blocky, hard, luvic, fine sandy clay loam (clay content 20-35 %), common clay cutans
F2	Oakleaf form, Buchuberg fine sandy loam to sandy clay loam	Orthic A horizon: 20-40 cm thick, dark greyish brown to dark brown, apedal, slightly hard, fine sandy loam to fine sandy clay loam (clay content 15-25 %), gradually overlying Neocutanic B horizon: 50-100 cm thick; brown to yellow brown, weak coarse blocky, slightly hard, fine sandy clay loam (clay content 20-30 %), common clay cutans, abruptly overlying Hard rock

Table 5.2: Suitability * of map units for selected land uses

MAP SYMBOL USES	A1	A2	B1	B2	B3	B4	C1	C2	C3	D1	E1	F1	F2	G
Dams - reservoir area - embankments	 3 2	 3 3	 4 4	 4 4	 4 4	 4 4	 4 4	 4 4	 4 4	 4 4	 4 4	 3 3	 3 3	 4 4
Shallow excavations	1	2	2	2	2	2	3	3	3	3	4	¾	4	3
Foundations for low buildings	1	2	2	2	2	2	2	2	3	2	4	4	4	3
Local roads and streets	1	2	2	2	2	2	3	3	4	3	4	3	4	4
Landscaping	2	2	3	2/3	3	2/3	3	3	4	3	4	2	3	4
Growth medium - shallow root - deep root	 2 1	 2 2	 3 2/3	 2 2/3	 3 2/3	 2 2/3	 3 ¾	 3 ¾	 3 ¾	 3 ¾	 4 4	 2 1	 2 2	 4 ¾
Topsoil	3	3	4	4	4	4	4	4	4	4	4	4	4	4
Camping and picnic areas	2	2	3	2	3	2	3	3	4	3	4	2	2	4
Playground	2	3	3	3	3	2	¾	4	4	4	4	2	3	4
Hiking and horse trials	2	2	2	2	2	2	3	3	¾	3	4	2	2	4
Soil for effluent disposal in septic tank seepage fields	½	2	4	4	4	4	4	4	4	4	4	3	4	4
Soil to cover sanitary landfill trenches daily	2	3	4	4	4	4	4	4	4	4	4	4	4	4

*Physical suitability rating: 1 = high
2 = moderate
3 = low
4 = very low to none



Makapansgat Valley Cultural Landscape
SOILS MAP

FIGURE 5.2

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Fax: (033) 3423 896
Email: envimap@telkia.com
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SCALE 1: 30 000

500 0 500 1000 1500 Meters

MAKAPANSGAT VALLEY CULTURAL LANDSCAPE MASTER PLAN

CHAPTER 6 HYDROLOGY

6.1 GENERAL

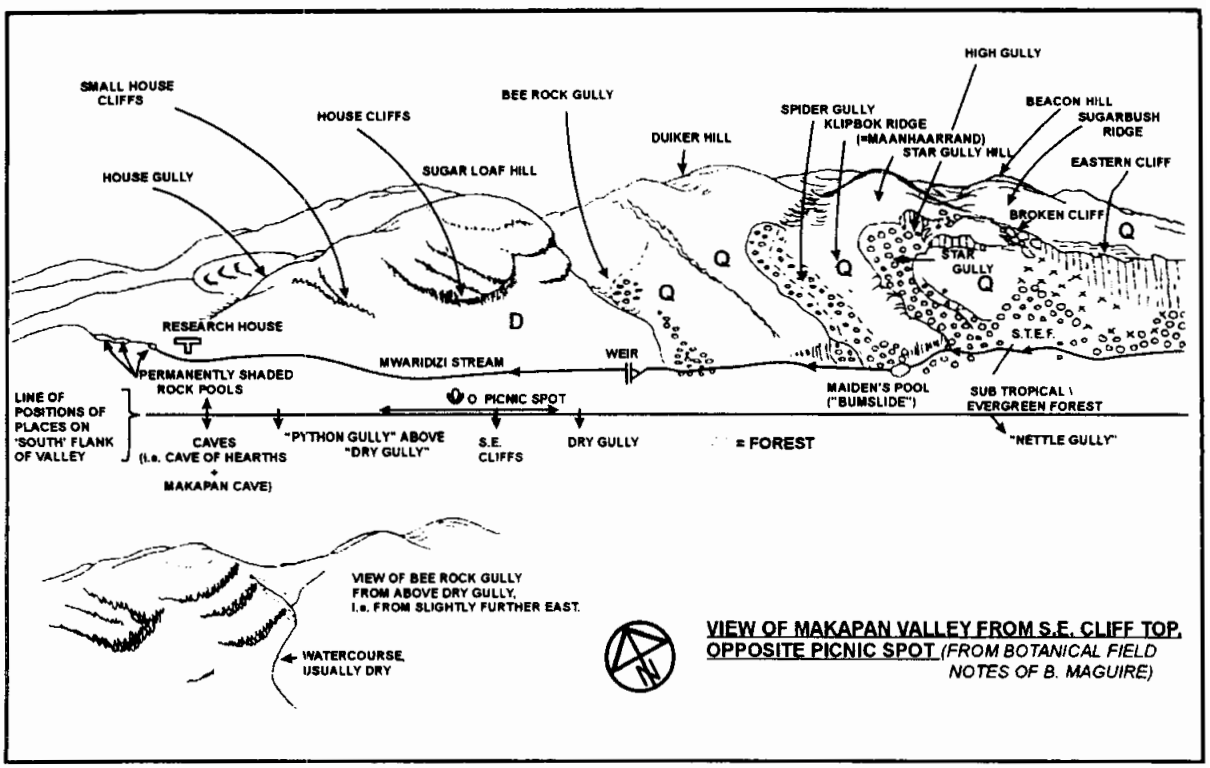


Figure 6.1: **Sketch showing cut-away view of the Makapan Cave Valley viewed from the south-east cliff-top directly above the 'valley's end' picnic spot, showing disposition of quartzite, dolomite and forested gullies (From botanical field notes of B. Maguire)**

- The hydrology of Makapansgat (Figure 6.1) needs to be considered with an awareness of the economic circumstances and geohydrological background which precipitated the purchase of the farm by the Potgietersrus TLC in the first place.
- Since the early 1960's, the Municipal authorities in Potgietersrus have been aware of a critically diminishing water supply for the town and its people.
- More than any other factor, regional and local water shortfalls will inhibit the economic growth of the town and region.
- The over-riding consideration governing the decision-making process is likely to be water availability for the growing human population of the greater Potgietersrus area.
- Makapansgat, as one of the Potgietersrus TLC's "water farms" will of necessity be implicated.
- The Dorpsrivier Catchment area has been declared a Groundwater Control Area. A water permit system is in place, allocating permissible groundwater abstraction.
- Makapansgat 39KS, with an area of some 2220ha, has a groundwater allocation of 5370 kl per annum. Water in excess of this amount will have to be purchased from the Municipality. This constraint probably rules it out as a viable commercial farming enterprise.

- The farm is currently the property of the Potgietersrus TLC, with the exception of a 77ha bequest to the University of the Witwatersrand.

- Makapansgat was purchased by the Potgietersrus TLC specifically to acquire the water rights, in order to conserve and ultimately utilize the groundwater reserves.

- There is irrefutable evidence for diminishing water supply in the Potgietersrus region:

    - The desiccation of the Nyl/Mogalakwena floodplain
    - The permanent loss of stream flow form once-perennial rivers
    - The desiccation of the Highlands catchment
    - Depletion of groundwater reserves
    - Changes in local vegetation patterns

The causes and some effects of this are discussed in the text.

- The lack of adequate water supplies has serious economic consequences. Examples are given in the text. Usually, lack of water translates into diminished production and loss of jobs.

- Responsibility for the diminishing water supply can be attributed unequivocally to the effects of human impact, such as prolonged abstraction of groundwater, rather than to droughts.

- Droughts are a normal phenomenon of the cyclical local rainfall pattern. However, the human psyche perceives the years of good rainfall as "normal' and droughts as abnormal.

- The trade-off for adequate water supplies which are substantially supplemented with pumped groundwater is cessation of stream flow, desiccation of the wetlands and destruction of vlei vegetation in the lower reaches of catchment areas, as well as a more-or-less permanently lowered water table.

6.2 GROUNDWATER

6.2.1 General

- The estimated recharge of the Dorpsrivier Catchment varies over quite a wide range but the average of all the methods used in its estimate yield an average recharge of 19mm/annum. This is equivalent to 3,05 x $10^6 m^3/a$ for the catchment area of $160km^2$ (Bredenkamp et al. 1993).

- This volume is lower than the value obtained by Lyness (1980) i.e. 5,8 x $10^6 m^3$, a figure that was used for the calculation of the water allocations attached to groundwater permits.

- Since the Potgietersrus TLC is already abstracting between 3,0 and 5,0 x $10^6 m^3$ (Haupt 1995) it is clear that the upper limit of sustainable yield of the catchment has already been reached.

- Obviously, abstraction fluctuates with fluctuating water availability from other sources (Doorndraai Dam, Combrink Dam) and with rainfall.

- Whatever theory may predict, however, groundwater recharge is typically only a very small portion of the average rainfall in dry regions. Recharge occurs in rare pulses when a closely

following succession of large rainfall events exceeds the soil profile water-holding capacity and the evaporative demand – for example the current (1999/2000) wet season, which, however, is a 1- in 70-year event.

- In some years groundwater recharge can be zero, while in abnormally wet years it may be substantial.
- Groundwater abstraction, however, proceeds steadily at (or even above) the 'safe yield' calculation, regardless of any recharge deficit.
- Early calculations of the "safe yield" by Porszasz (1977) gave an inflated recharge volume of $28{,}6 \times 10^6 m^3$.
- Abstraction at well over the real "safe yield" rate proceeded on the basis of these early calculations for twenty years or more.
- Well-fields such as the Volspruit have been over-pumped and abandoned and the Planknek field too is showing signs of stress. A new well-field on the Ettrick portion of Weenen has been constructed.
- Lowering the water-table reduces stream and spring flow; i.e. dries up rivers.
- Lowering the water-table enhances the risk of subsidences and sinkhole formation in areas underlain by dolomite (Chapter 4 Geology and Geomorphology).
- Lowering the water-table impacts on vegetation.
- Lowering the water table impacts on visual aesthetics.

6.2.2 Water at Makapansgat

- Most of the farm is underlain by dolomite. The Monte Christo Formation and the Duitschland and Rooihoogte Formations are the best aquifers in the Dorpsrivier Catchment but the latter two formations are not well-exposed at Makapansgat.
- The Monte Christo Formation, although well-exposed at Makapan, does not have a great thickness of high-yielding zones so that overall transmissivity over the full thickness of the geological unit, is still relatively low.
- At Makapansgat, the permeability of specific horizons must be high to sustain the large pumping rates.
- There are four (4) private boreholes (at present decommissioned) and "Peppercorn's Spring" (in the Peppercorn Cave).
- The combined production of the four private boreholes was 34 l/s (28 000 gals/hour) in 1994, when Mr Peppercorn left.
- The production of Peppercorn's Spring was 56.6 l/s (27 000 gals/hour). This spring, classed as "Perennial" in 1995 by Water Affairs officials, is at present completely dry, even though no groundwater pumping in the Makapansgat Valley has taken place for over five years. (Addendum: The underground lake level recovered after the 1999/2000 wet season).

- There are 11 Government Boreholes: G1, G2, G30397; G31509; G31532-36; G31540 and G31541. The first two are fitted with recorders.
- Except for three holes (test yields only), the yields of the Government boreholes is unknown.
- Little appears to be known about the recharge rate of the local aquifer, the length of the recovery period and the safe yield.

6.3 SURFACE WATER

Figure 6.2: The "Maiden's Pool" or "Bumslide Pool" above the weir. Note sluggish inflow trickle, September 1999 (Photo: J.M. Maguire)

- On Makapansgat, stream flow began to fail in the early 1960's. The only perennial steam today is the upper reaches of the Mwaridzi east of the weir (Figure 6.2).
- The maintenance of this flow throughout the year depends on the preservation of small wetlands, soaks and vleis in the catchment.
- The human population resident on Makapangat (fluctuating, but estimated at around 300) depends on this very limited supply.
- Seasonal lows in stream flow (June to November) mean that this source can stand no additional use. Any developments will have to be groundwater dependant.

- There are no water purification or filtration installations. Water flows through a gravity pipeline originating at the weir pool and along the course of which there are a number of off-take points.

- This water source, particularly at the in-take point at the weir and the stream course and pool immediately upstream, is at risk from pollution by both humans and animals.

- The water available along the gravity pipeline has attracted two foci of informal settlements. Residents use the water for domestic purposes and for watering livestock.

- Informal settlement on a considerable scale has added to the numbers of legitimately settled residents, giving rise to the attendant problems of lack of sanitation, fires, wood collection, tree chopping, overgrazing and water shortages, as well as impacting on the visual aesthetics of this world-famous valley.

- Subsistence plunder could ultimately degrade the valley and heritage site environment to the point that it would be of little interest to tourists.

6.4 WATER QUALITY

- The surface water is potable. The results of chemical and microbiological analyses are pending. Wits University staff have been using the Mwaridzi water (untreated) with no ill-effects for over 60 years.

- The groundwater is potable and suitable for most agricultural uses. It compares favourably with water from the dolomitic areas around Irene, Pretoria and Lichtenburg.

- The groundwater from the Peppercorn's Cave has a somewhat higher nitrate concentration than that from boreholes on account of the beds of bat guano inside the cave which contaminate the water.

- The groundwater from this source as well as from the Makapansgat boreholes is fluoride deficient (0,086mg/l), since 1mg/l of fluoride ion is desirable for optimal dental health.

- Long-term groundwater users on Makapansgat are advised to take a fluoride supplement to ensure dental health.

- The groundwater is slightly 'hard", with a carbonate hardness (as mg/l $CaCO_3$) of 215,07 (recommended limit 200mg/l SABS) and a non-carbonate hardness (as mg/l $CaCO_3$) of 23,75.

- The groundwater at Makapansgat has a generally alkaline pH of between 6,70 and 7,7 so that pipe corrosion should not be a problem.

- Carbonate encrustation of well screens and casing should not be a problem since the groundwater at Makapansgat appears to be undersaturated with respect to $CaCO_3$ (Saturation Index for Peppercorn's Spring is – 0,41).

6.5 WATER POLLUTION

6.5.1 Surface water

- The water in the weir and the stream above it is highly susceptible to pollution by humans and animals.
- Water-borne contaminants, pollutants and diseases are discussed in the text.
- The lack of sanitation at the informal settlements could ultimately pose a health and pollution risk. Pollution from "grey water" is already a health risk.

6.5.2 Groundwater

- The naturally high water-table at Makapangat (seasonally as shallow as 9m) and the highly fractured nature of the dolomite render the groundwater susceptible to surface-derived pollutants.
- One potential future source of contamination and ultimately pollution is untreated sewage from the informal settlements, if basic sanitation goes unaddressed.
- In a water-scarce environment it does not make sense to risk groundwater pollution.
- This means that on-site sanitation in the form of "long drop toilets" or septic tanks will not be options, particularly in view of the fact that the dolomite aquifer is envisaged as an emergency water supply for Potgietersrus.
- The alternative is water-borne sewage (out of the question in terms of cost-effectiveness/ expense) or pumping sewage into a holding tank, which would have to be trucked out to the nearest sewage works.
- Pending legislation, promulgated in an attempt to protect vulnerable groundwater in dolomitic areas from pollution, may in any case preclude on-site sanitation. Once polluted, the groundwater is difficult and expensive to purify.
- Once in the groundwater, transport of pollutants is relatively fast.

6.6 RECOMMENDATIONS

- A catchment management plan should be initiated without delay, This should include strategies to rehabilitate those aspects of the catchment which are already degraded, or deteriorating.
- Consideration ought to be given to establishing a Makapan Highlands Water Catchment Conservancy on the water farms owned by the Potgietersrus TLC and Zebediela, such as the Mount Anderson Water Catchment Reserve (promulgated and gazetted in 1993). The latter project is supported by the World Wide Fund for Nature, South Africa. Privately-owned land could eventually also be incorporated into the conservancy.

- The possibility of harvesting Highlands Spring Water (but not on Makapansgat; there is insufficient) could be investigated. Profits form the sale of bottled water could be ploughed back into developing the Conservancy and tourist options within it.

- A Water Conservancy would afford protection for the unique mountain flora and fauna, and high-altitude bird life.

- Such a Highlands Conservancy could expand on the tourist options on offer at Makapansgat such as mountain biking trials, hiking trials, tree- and bird identification trails and other low-impact tourism.

- Research into the recharge rate, the safe yield and the recovery rate of the local aquifer ought to be initiated.

- Strategies ought to be put in place to protect the small wetland on the upper Mwaridzi above the Black Reef Cliffs. Degradation of this reed-bed 'soak' will impact negatively on the surface water available.

- Likewise, the incipient vlei on the tributary stream above the large rock pool should be protected from over-burning, trampling and other disturbance. Without this water, parts of the evergreen forest would die.

- Strategies ought to be implemented to protect the weir pool and upstream stretch of the Mwaridzi from pollution. Access to this water ought to be supervised as it is particularly at risk to pollution.

- Water quality control tests should be undertaken regularly (both chemical and bacteriological).

- The 'informal settler' problem should be addressed without further delay. The unresolved nature of this issue will hinder planning in a number of ways.

- If they are to stay, some acceptable form of sanitation will have to be considered.

- Decision-makers are referred to the following documents, which are available free-of-charge from the WRC:

    - Van Schalkwyk, A. (1996). *Guidelines for the Estimation of Domestic Water Demand of Developing Communities in the Northern Transvaal.* WRC Report No 480/1/96.

    - Bami, K. and Murray, E.C. (1998). *Guidelines for the Evaluation of Water Resources for Rural Development with an Emphasis on Groundwater.* WRC Report No 677/1/98.

    - Scott, S. (1998). *An Evaluation of the Enviro-Loo Composting Latrine in an Informal Settlement Area in Greater Johannesburg.* WRC Report No. KV 112.98.

    - Fourie, A.B. and Van Reyneveld (1993). *Environmental Impact of on-site sanitation: A literature review with particular application to South Africa.* WRC Report No. KV 67/94.

MAKAPANSGAT VALLEY CULTURAL LANDSCAPE MASTER PLAN

CHAPTER 7 FLORA / VEGETATION

MAKAPANSGAT VALLEY CULTURAL LANDSCAPE MASTER PLAN

CHAPTER 7 FLORA / VEGETATION

7.1 GENERAL

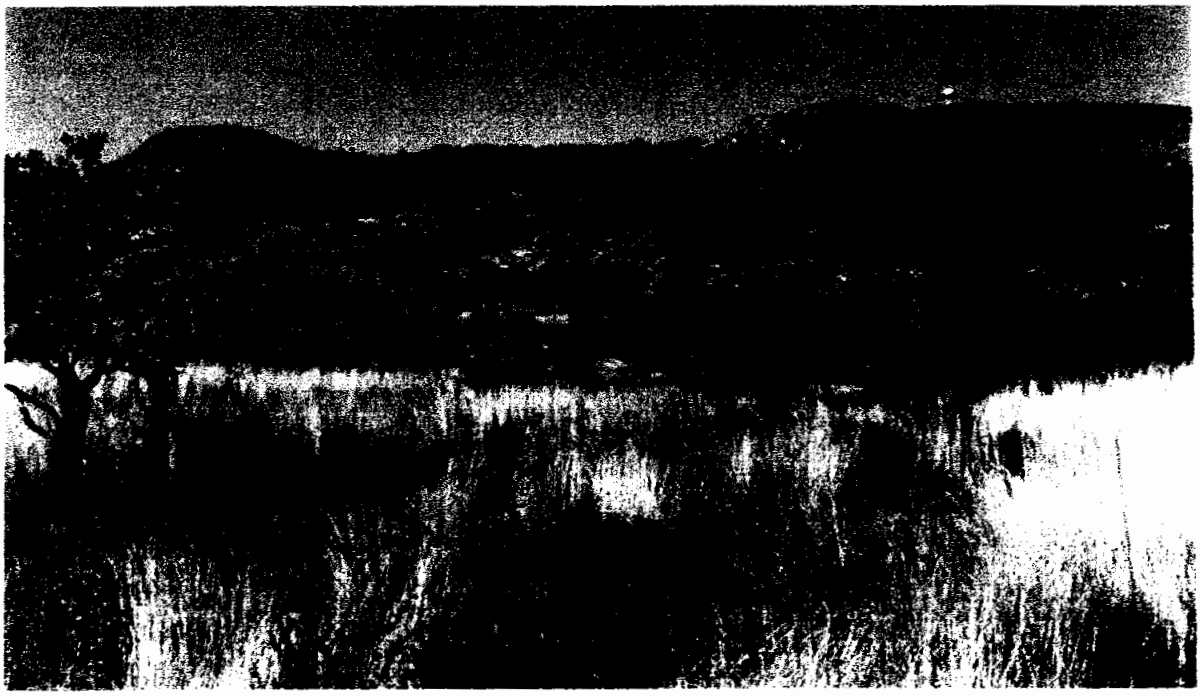


Figure 7.1: **The Black Reef Quartzite uplands above the cliffs of the Makapan Cave Valley. Protea woodland covers the cooler south-facing slopes (hillock, right centre) while the hotter drier north-facing diabase slope is clothed with a sour grassland (Photo: J.M. Maguire)**

- The Makapan-Strydpoort highlands area is a centre of exceptional species-richness and endemism and is part of the "Wolkberg Hotspot" (Cowling and Hilton-Taylor 1997).

- Partly responsible for this is the geographical setting of Makapansgat: the mountain chain connection to the Mpumalanga Drakensberg, and thence via the major river valleys to the tropical east coast, or via the southern mountain ranges to the temperate Cape, or via the Mogalakwena valley corridor access to the tropical north which all serve as convenient plant migration routes. A mix of tropical and temperate floral elements occurs.

- The geographical features present in the Makapansgat region have resulted in six vegetation types (Figure 7.3) being closely juxtaposed, which correspond closely to altitude and concomitant hotter/ drier or cooler/moister growing conditions (Figure 7.1 & 7.2). The six vegetation types are:

    - Springbok Flats Turf Thornveld
    - Sourveld Bushveld (Waterberg Plateau)
    - North-Eastern Mountain Sourveld
    - Sourish Mixed Bushveld
    - Mixed Bushveld
    - Pietersburg Plateau False Grassland (Acocks 1988)

- In the Makapansgat Valley itself, nearly 800 species of plants are enclosed within an area of little more than two and a half square kilometers (Maguire, B. 1978, 1980a, N.D.).

- This is an exceptional species-richness given that the total number of species for the entire British Isles is only 1492 species:

    - Within a radius of 8 km of the Limework 117 edible plants species occur, and 150 within a 16 km radius.
    - Numerous medicinal plant species (340 spp.) occur in the Makapansgat Valley. There are signs of recent extensive exploitation of this resource.
    - Numerous poisonous species also occur (30 spp.), some of which are utilized medicinally despite their known or suspected toxicity.

- The local plant (and therefore animal) resource richness is all focussed in a relatively confined geographical area, and probably accounts for its popularity as an area of human occupation from australopithecine times to the present:

    - The extremely broken nature of the terrain and the great variety of altitude, slope, aspect, geological substrate soils etc has led to an almost infinite variety of growing conditions and a steep ecological gradient along which a large number of species can be packed (Figure7.2).
    - Several species endemic to the dolomites occur in the valley. One species, *Gladiolus dolomiticus*, has so far only been recorded in the Makapansgat Valley itself.
    - The vegetation is strongly influenced by altitude and geological substrate with a tendency for fewer large trees at higher altitude. The lower mainly dolomitic slope is covered with a Sourish Mixed Bushveld whereas the higher mainly quartzitic slopes are covered with a North-Eastern Mountain Sourveld (Figure7.2).

- The small patch of sub-tropical evergreen forest is botanically extremely important as it provides botanical clues occurring plant migration routes and past climatic shifts.

- The small patch of sub-tropical evergreen forest, the adjacent forest margin and riverine thicket vegetation is important on account of the wild food resource they provide for sympathatic populations of both *Otolemur crassicaudatus* and *Galago senegalensis* subsp. *moholi* (thicker-tailed and lesser galagos or nagapies).

- This habitat is also utilized by vervet monkeys (*Cercopithecus aethiops pygerythrus*) and baboons (*Papio ursinus*) and is home to a specialist community of forest birds.

- The small patch of wetland vegetation above the quartzite cliffs is important in that it protects the wetland soak or sponge area and, as long as it remains intact and unburnt, will help maintain the stream in its perennial condition.

- Patches of temperate forest and small areas of 'fynbos' vegetation along the mountain crests are important as they preserve relicts of other vegetation types which provide clues to past climatic changes.

- Much of the vegetation of the valley floor of the Main Makapansgat Valley has been destroyed by agricultural practices and plant resource utilization by local residents and their livestock.

- The human impact on the vegetation has probably continued unabated since the Iron Age.

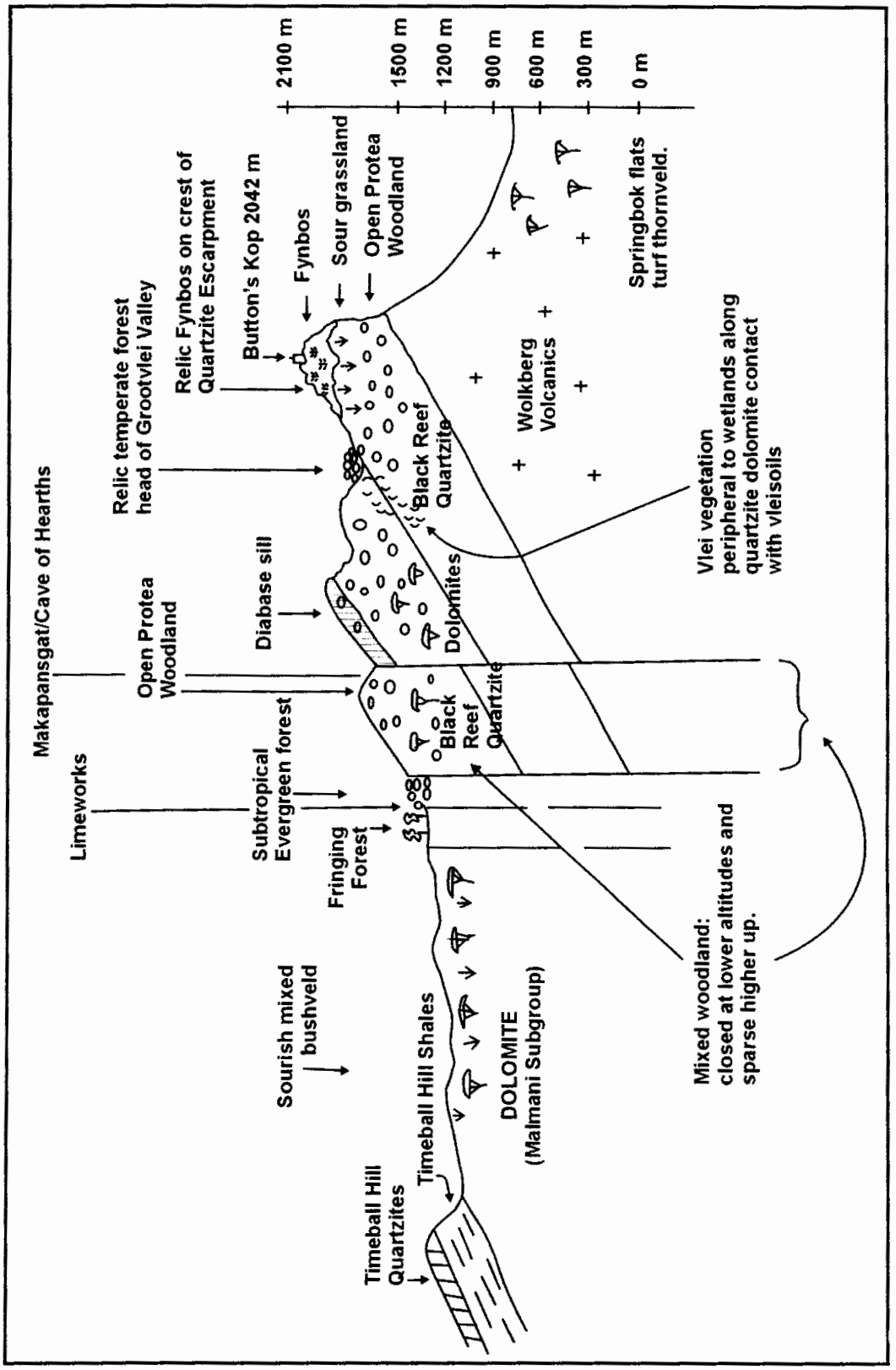


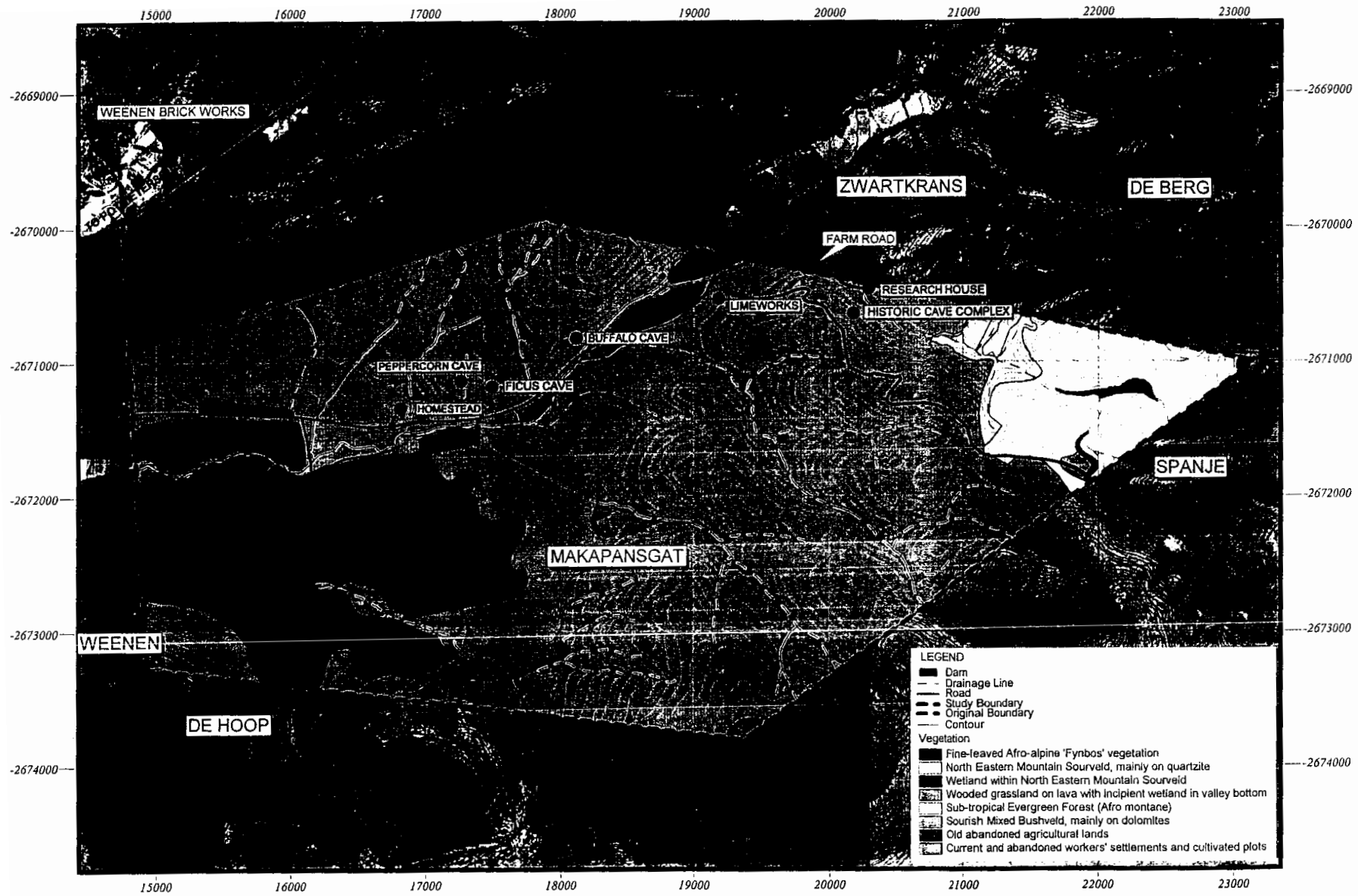
Figure 7.2: **Section from Makapansgat Highlands Mountains towards Potgietersrus**

7.2 RECOMMENDATIONS

- The most serious threat to the vegetation at Makapansgat is the human impact of sustained, on-going and long-term plant resource utilization by the informal settlers, and their livestock and the total lack of control and surveillance of what goes on in the Valley.
- A decision will have to be taken as to the future of the informal settlements as the continuing subsistence plunder of the environment is not consistent with conservation goals.
- Unsupervised uncontrolled access to the valley and its resources will rapidly result in its environmental degradation.
- This will diminish its tourist potential greatly, impact on the tourist options available and make motivation for World Heritage Status much more difficult if not impossible.
- Most negative impacts on the vegetation, fauna, water quality (both surface and subsurface) and visual aesthetics stem for this unaddressed and escalating issue.
- Unauthorised commercial exploitation of the wood resources will have to be stopped with immediate effect. Vehicular access to the sites will have to be restricted by means of locked gates.
- Access up the SENTRA tarred road will have to be stopped with immediate effect as this allows large trucks to penetrate far into the property to remove firewood. It also allows access to poachers and unauthorised sight-seers who gain access by climbing under and over fences.
- Collection and removal of muti-plants will have to be controlled and supervised.
- Woodlots will have to be planted without delay if it is envisaged that people will continue to occupy the farm.
- The riverine vegetation should be re-established to prevent erosion of the river banks. No firewood collection or tree chopping should be allowed in this area, or in the core refuge area of the forest with its vulnerable margin of fire-resistant species.
- Fire control could be practised to maintain the vegetation in its present state. A firebreak should be created along the western flank of the property where many fires originate in the vicinity of Weenen and along the R101. Firebreaks and an inspection route should ultimately be established around the entire perimeter of the property. Controlled burning on a 4-5 year rotation system should be considered. The farm should be divided to sectors, so that only some parts are burnt off at any one time.
- Livestock should not be allowed in the vicinity of the wetland and adjacent soaks.
- A strict limit should be put on the numbers of livestock allowed on the property, if at all. Overgrazing by cattle and goats systematically removes palatable species and permanently affects rangeland quality. Bush encroachment follows, and aloes replace grass tussocks.
- All development, tourist-related or otherwise, should be kept out of the vulnerable forest area. Low-impact activities such as hiking trails and special interest trails could be laid through the area, but the disturbance factor for resident populations of birds and mammals should be borne in mind when selecting routes.

- The forest, fringing forest and riverine thicket (particularly the *Acacia* spp) represent an essential habitat for the survival of three species of primate (greater and lesser bushbabies, *Otolemur crassicaudatus* and *Galago senegalensis* subsp. *moholi*), and the vervet monkey *Cercopithecus aethiops*.

- Development should be focussed on non-sensitive areas that are already environmentally altered, such as in the valley floor area and along its flanks or around the Peppercorn Homestead.



Makapansgat Valley Cultural Landscape
VEGETATION MAP

FIGURE 7.9

SCALE 1: 30 000

500 0 500 1000 1500 Meters

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Tel: (033) 3423 681
Fax: (033) 3423 606
cka
TEL: (012) 362-4684
FAX: (012) 362-0394
E-Mail: cka@cls.co.za

MAKAPANSGAT VALLEY CULTURAL LANDSCAPE MASTER PLAN

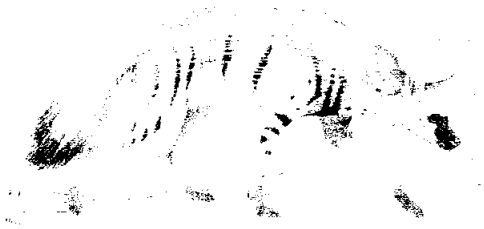
CHAPTER 8 FAUNA / ANIMALS

8.1 GENERAL

- The altitudinal range, closely juxtaposed and varied land systems, numerous land facets and the mosaic of plant communities provide a wide variety of habitats for animals (Figure 8.1).
- A minimum of some 64 species of mammals, 93 birds, 13 reptiles and 15 species of amphibians occur.
- Species which are locally endangered, threatened or vulnerable include:

Orycteropus afer **Aardvark**

Hyaena brunnea **Brown Hyena**



Proteles cristatus **Aardwolf**

Cercopithecus mitis albogularis **Samango monkey**

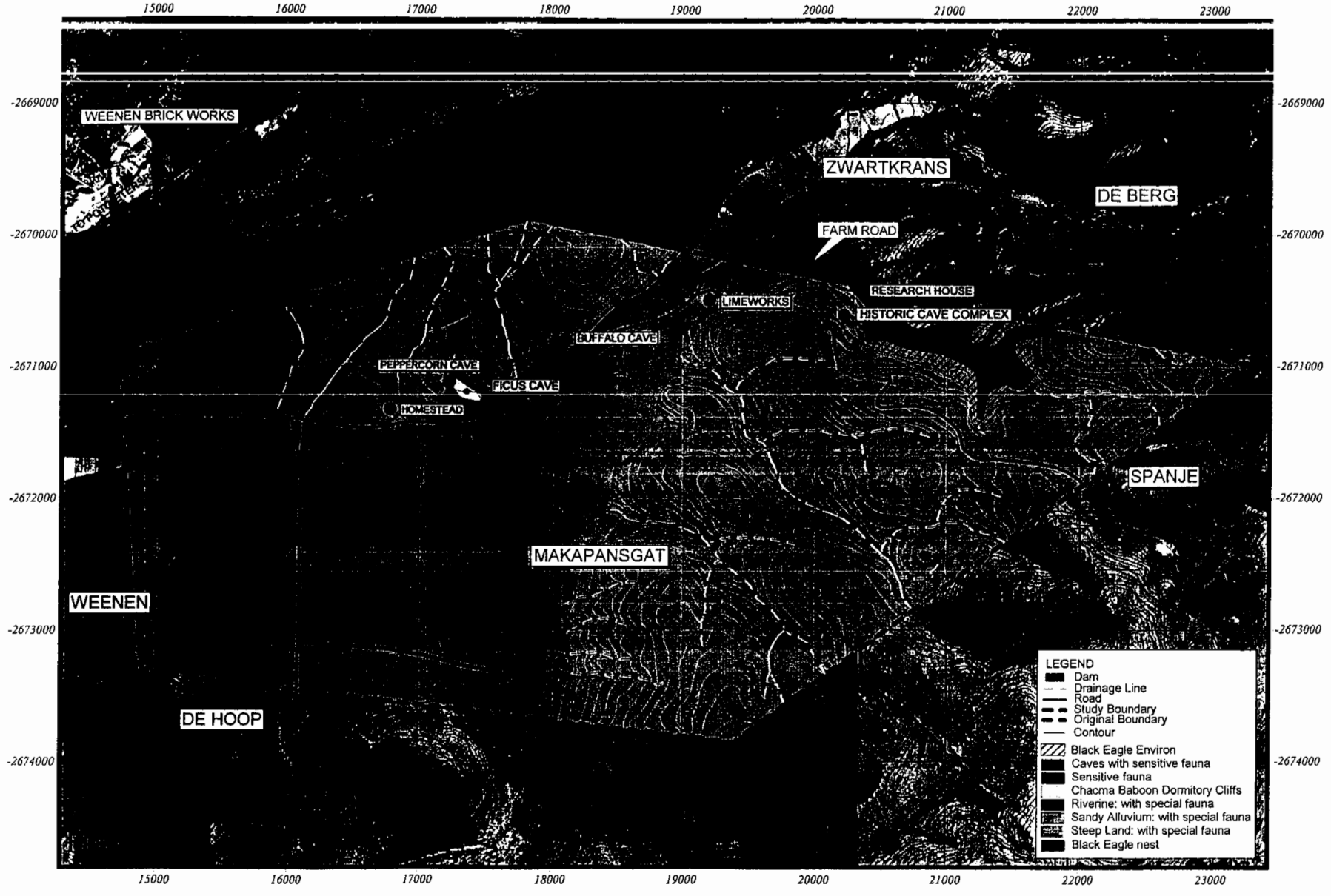
Python sebae **Python**

- Nine faunal habitats can be identified (Figure 8.1):

  - Forest
  - Fringe forest and riverine thicket
  - Close woodland and savanna
  - Open woodland to grassland
  - Montane grassland
  - Cliffs, rock-strewn hillsides and rocky hillslopes
  - Open country: old lands
  - Wetlands, vlei and seeps
  - Caves

8.2 RECOMMENDATIONS

- A speed limit should be imposed on the access roads to minimize road-kills.
- Speed humps should be constructed at strategic places along the access road to enforce a lower speed.
- Hunting, trapping, poisoning and shooting of animals must be stopped. This will necessitate negotiations with the local inhabitants and informal settlers.
- This will also necessitate the control of vehicles into and out of the property.
- It will also necessitate locking the gates providing access at various points along the SENTECH tar road: both the gate near Johannes Maluleke's house and the Makapansgat-Spanje Boundary gate will have to be kept locked.
- By negotiating with the owner of Spanje, a contiguous game reserve-cum-conservancy with the 11 Zebediela "water-farms" would be created. This additional territory could increase tourism options: viz. Mountain-biking trails, over-night hiking trails and special interest trails (birds, trees, flowers, etc.).
- Utmost caution will have to be employed to avoid disturbance of sensitive cave faunas.
- Care will have to be taken not to disturb predator-prey relationships in the Makapan Cave Valley and the rocky slopes immediately enclosing it.
- No development should take place in this area as it constitutes an important faunal refuge.
- Research into the avifauna, reptiles, amphibia and invertebrate fauna of the study area should be encouraged. This could be undertaken by researchers applying to, and authorised by the existing Makapansgat Research Committee.
- Private Nature Reserve status for the entire property should be applied for as this would secure additional protection for the fauna.
- The fauna still present provides numerous educational opportunities which could be used to back up school syllabuses.



Makapansgat Valley Cultural Landscape
FAUNAL MAP

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EnviroMap

Tel: (033) 3423 681
Fax: (033) 3423 888
Email: enviromap@telkrica.com

cka

TEL: (012) 362-4684
FAX: (012) 362-0394
E-Mail: cka@cis.co.za

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SCALE 1: 30 000

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FIGURE 8.1

MAKAPANSGAT VALLEY CULTURAL LANDSCAPE MASTER PLAN

CHAPTER 9 HISTORY, ARCHAEOLOGY AND PALAEONTOLOGY

9.1 GENERAL: SIGNIFICANCE OF SITES

Numerous significant historical, archaeological and palaeontological localities are distributed widely in the landscape of Makapansgat 39KS and the adjacent farm Zwartkrans 38KS (Figure 9.1, 9.3, 9.4 & 9.5).

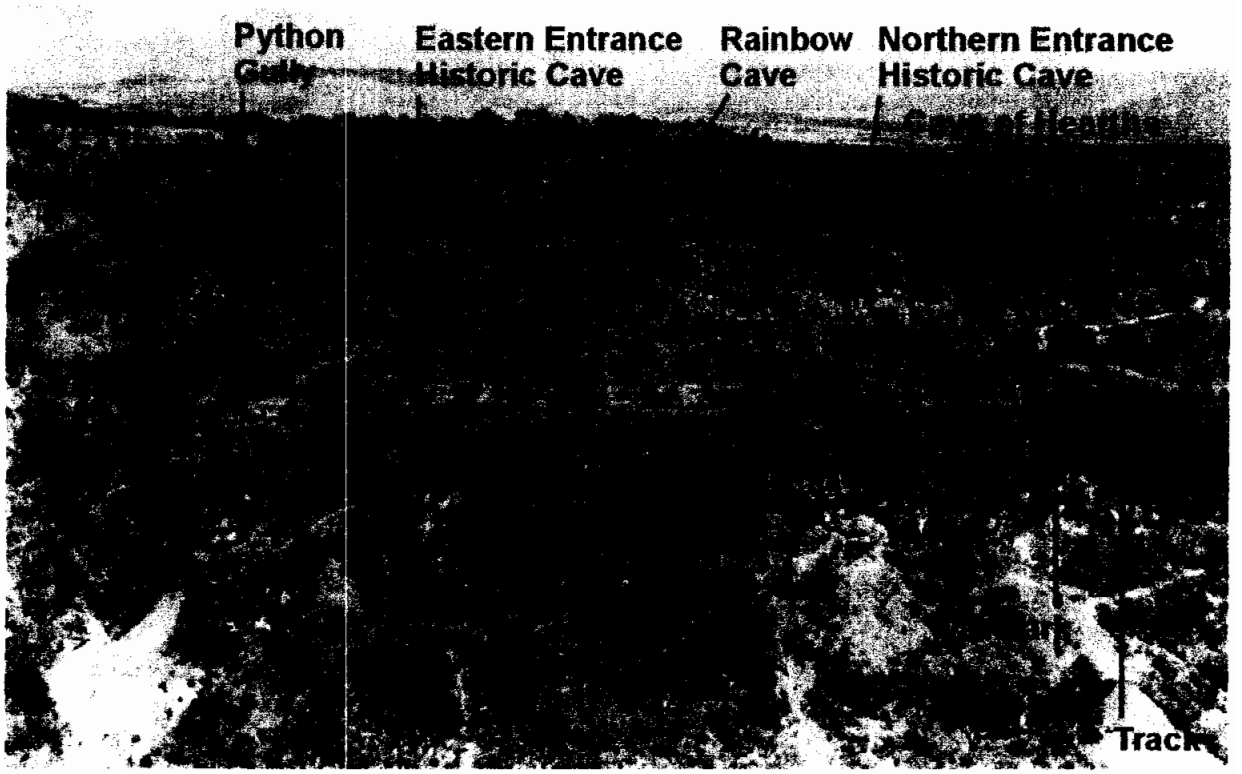


Figure 9.1: **The Cave of Hearths hillside as seen from the opposite slopes of the valley and looking south-westwards (June, 1969)(Photo: B. Maguire)**

9.1.1 Sites of historical interest

- The most important historical site is the Historic Cave or Makapan Cave.
- The abandoned Makapansgat Limeworks is significant from a local mining history viewpoint.
- The Peppercorn Homestead constructed in 1946 or 1947, is also of historical significance.

9.1.2 Sites of archaeological interest

The principal archaeological sites are:

- The Cave of Hearths-Historic Cave Complex, which includes the Hyaena Cave, Rainbow Cave, Python Gully Cutting, and Equus Cutting.

- The Peppercorn Cave-Ficus Cave Complex, which includes the Katzenjammer Cave ("Stinkblaargat"), Colin's I and II, Two Skulls Cave and the Ficus Iron Age site.

- The "open" archaeological sites on the convergence terraces of the Mwaridzi and Driefontein Spruit: the outwash plain of the Makapansgat Valley. Some of these extend onto the adjacent farm Zwartkrans. They nevertheless deserve the same protection as their counterparts on Makapansgat .

- Iron Age sites on the low hills along the southwestern boundary of the farm.

9.1.3 Sites of palaeontological interest

The most important palaeontological sites are:

- The world-famous Makapansgat Limeworks site, together with the Horse Mandible Cave.

- Buffalo Cave.

- The Peppercorn Cave-Katzenjammer Cave area, the full potential of which has not yet been explored.

9.1.4 Sites which are modern analogues

- Caves such as Peppercorn's Cave, Ficus Cave, Hot Air and Cold Air Caves provide modern analogues which help in the understanding of cave development, evolution and cycles of sedimentation in the 'fossil' cave context.

- Scientific work is in progress at most of the above localities, but some remain totally unexplored.

- Taken together, these sites are vitally important heritage resources which record over 3 million years of human and faunal evolutionary development.

- The importance of these sites extends well beyond the national level: Makapansgat, with its rich and magnificently preserved fossil fauna, is internationally recognised as a major australopithecine locality. The Cave of Hearths (Figure 9.2) preserves stratified Acheulean (Early Stone Age) artefacts, hominids and an associated fauna and is equally important. The site records the transition from Archaic to Modern *Homo sapiens* (see pp. 17,18).

- The Makapansgat Valley and surrounding countryside has offered shelter and a rich variety of natural sources to countless thousands of hominids for over three million years. The valley is unique in that nowhere else in the world within the confines of a single valley is there preserved such an extended record of human physical and technological evolution, as well as opportunities to study the climatic fluctuations which characterize the Quaternary. It is truly a Heritage worth preserving.

- These sites and this Heritage belong not to individuals, nor to institutions nor to the State itself; they belong to all the people of the country, and in the sense that Africa is the Cradle of Mankind, to a global community.

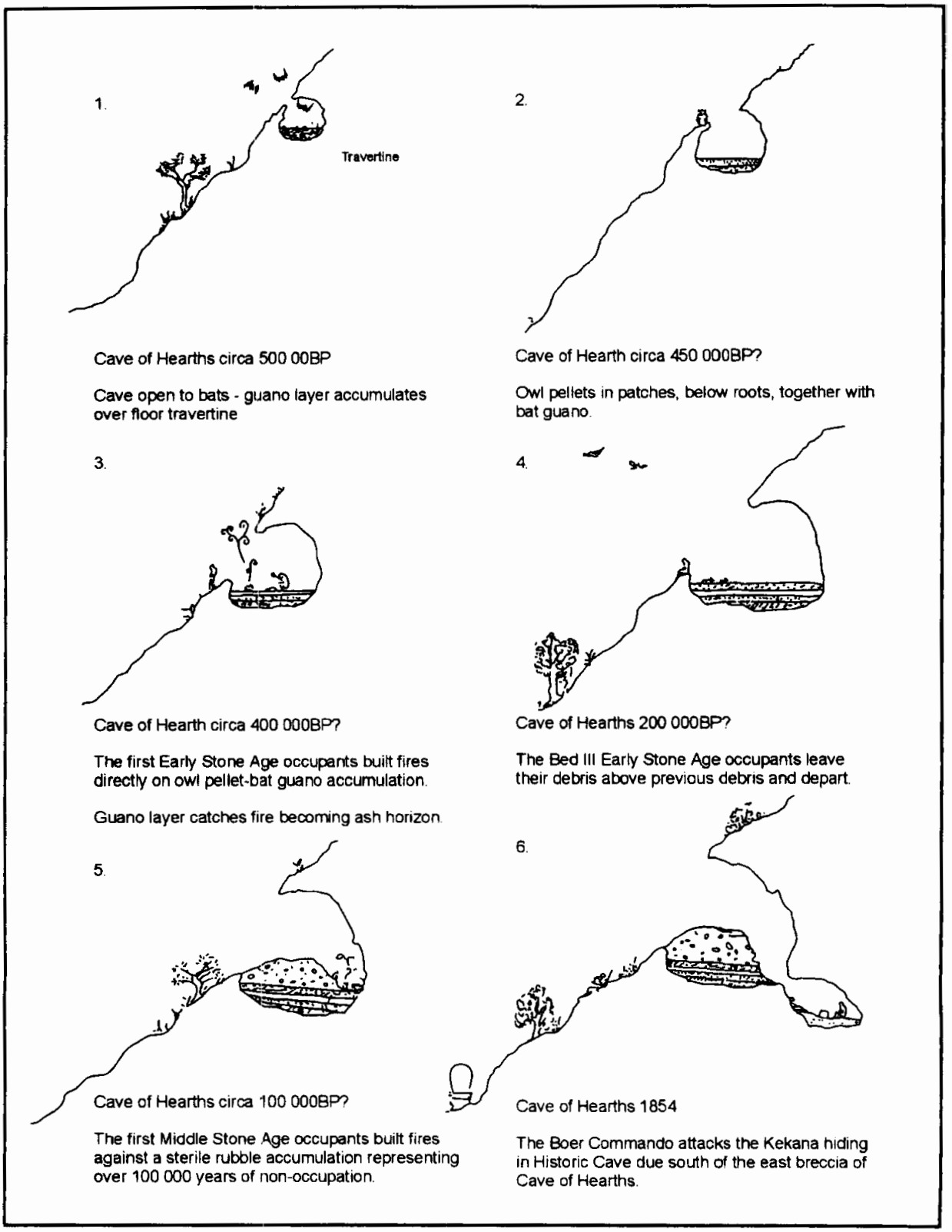


Figure 9.2: Makapan Valley Profile - though Cave of Hearths (Source: Mason, 1988)

9.2 POTENTIAL RISKS TO THE SCIENTIFIC ENVIRONMENT POSED BY TOURIST ACCESS AND INFRASTRUCTURE

9.2.1 Potential risks to the scientific environment posed by tourist access and infrastructure

All the archaeological and palaeontological sites are vulnerable to the following risks:

Trampling: Constant walking to and fro over *in situ* cave deposits damages exposed fossils and artefacts, Organic artefacts and remains such as sleeping mats, plant food materials etc. in the Historic Cave have been trampled to powder. Trucks heavily laden with illegally removed firewood are driving over Iron Age sites.

Theft: Exposed fossils, fossiliferous breccia blocks and loose artefacts have been deliberately removed and/or damaged by members of the public. Scientific workers are not blameless and remove samples of sediments, bone and microfaunal material without the necessary documentation and permits. Metal detectors have been used to locate and remove metal artefacts. Theft extends to the removal of firewood, rock and plant collectables in addition to relics.

Vandalism: Various examples include destruction of Iron Age dry stone walling, the destruction of the COH witness section roof, removal of fencing and security walling, and gates, and unauthorized excavation.

Tampering: Interference and fiddling by unauthorized visitors has destroyed various experiments. Site sample markers have been removed. Owl pellet studies have been disrupted.

Dust: The trampling of dozens of feet raises a considerable amount of dust. This besmirches vertical sections and limestone formations, sullies working surfaces and would spoil any on-site displays or explanatory sinage.

Faunal Disturbance: Constant throughput of visitors disturbs cave creatures such as bats, owls, swifts and dassie which are frequently part of ongoing research studies. The dassie/black-eagle predator-prey relaitonship is particularly at risk.

Impairment, obstruction of views: Installations should not obscure crucial views of the caves or their stratigraphy nor create a visual disfigurement of vistas of the valley and surrounding scenery. Developments should be as unobtrusive as possible.

Destruction of the historical mood and "mystery ambience" at risk: This is a worldwide phenomenon: tourist infrastructure and the associated commercial enterprise destroy the aura of mystique and the chance to experience the remoteness from the ordinary, of special sites. Coca-Cola stands would be completely out of place within the immediate vicinity of any of the sites.

9.2.2 Potential risks to scientific personnel and members of the public

All the cavern sites present similar risks, namely

Collapse: sites are susceptible to unpredictable rock falls and collapse of roof materials. The situation could be exacerbated by reverberations caused by blasting from nearby mines and quarries. Unsupported roof material made heavy by absorptoin of water from the recent rains will dessicate, crack and collapse with drying.

Concealed sinkholes and pits: the existence of unprotected, unmarked "death trap" holes (e.g. Katzenjammer Cave) and collapses within the sites, poses a danger.

Rough terrain: walking over the uneven floors and loose rubble poses a risk of falls, sprains and breaks.

Cave disease: Peppercorn's Cave, Ficus Cave and parts of the Historic Cave are known to harbour Histoplasmosis, or Cave Disease.

Dangerous snakes, bees, wasps, scorpions, spiders: caves are a natural habitat for these creatures. Stings from bees and wasps occur frequently. There is no first aid station for treating these who are allergic. At least three species of venomous snake are known to be resident in the Limeworks. Personnel are not trained to handle emergencies. Cell phones do not work within the confines of the valley.

9.3 RECOMMENDATIONS

9.3.1 For Protection of the Scientific Environment: General

- Steps should be taken to secure National Heritage Site and World Heritage Site status for the valley. Some protection should be afforded the cluster of archaeological sites situated in the Zwartkrans arm of the Makapansgat Valley.

- The National Monuments Act (Act No. 28 of 1969) and the National Heritage Act that will become effective in 1999/2000, protect all Stone Age and other archaeological sites. The definition includes caves, rock shelters, midden and other places in the open that were occupied by Stone Age or Iron Age people as well as rock-art sites and graves.

- It is an offence to destroy, damage, alter or excavate sites, or to remove or export artefacts and fossils without a permit from the National Monuments Council (now SAHRA).

- Such permits are normally issued only to professional archaeologists or to developers who have already hired an archaeologist to excavate and sample all or part of the site that will be affected by development.

- Sites are given special protection if they are declared as National Monuments. The Cave of Hearths, Historic Cave and Makapansgat Limeworks already have National Monuments status. National Monument status is pending for Buffalo Cave and Peppercorn's Cave; it is only the signature of the owner(s) that is awaited. Registered status is imminent.

- The National Heritage Act makes it mandatory for developers to ensure that an archaeological impact assessment is made of any property before major development takes place.

- At Makapansgat, all known archaeological and palaontological sites have been identified. Any developments taking place on or near these sites will have to be undertaken with a trained field archaeologist on hand to conduct a watching-brief.

- The Makapansgat Research Committee, chaired by Prof. B. Rubidge, head of the Palaeontological Department at Wits University, scrutinises and assesses all research proposals submitted requesting to undertake scientific work or sampling in the Valley. The Committee has professional geologists, archaeologists, botanists, zoologists and palaeontologists as representatives, as well as a member from SAHRA.

- All visitors must be supervised and instructed by well-trained and responsible guides. There should be no free-range tourism.

- Public education displays and notice boards to be erected at the sites in order to explain the archaeology or palaeontology (Figure 9.2 & 9.5) in order to make the public aware of how much damage can be caused to the scientific integrity of the sites by irresponsible behaviour. A visitor centre with a field museum is also recommended.

- Developments should not create visual impediments. Visual aesthetics are an important aspect of the scientific integrity of the sites.

- A full-time Heritage Park Ranger with the necessary powers of authority should be appointed to control the theft of firewood, plants, muti-plant collection, illegal hunting and entry to the Heritage Sites. Lack of any visible authority over the last five years has caused considerable problems in this regard.

- A vehicle access control point, i.e. a gateway with a gatekeeper, will have to be established to monitor entrance and egress of vehicles, and to prevent theft of plants, firewood and rock.

- Restricting vehicular access at one or more points may preclude the installation, at the sites themselves, of to many unsightly security devices which destroy the 'unspoilt' ambience which the sites have today. However the Heritage sites need to be secured against unauthorized entry.

- The problem of ongoing subsistence plunder by local residents will have to be addressed.

9.3.2 For Protection of the Scientific Environment: Site specific

Cave of Hearths-Historic Cave Complex:

- No *in situ* development to be undertaken within the Cave of Hearths Complex that would involve disturbing any of the *in situ* deposits.

- Visitor access must be restricted to the Cave of Hearths amphi-theatre, Hyaena Cave and Historic Cave only (north and south chambers). Python Gully Cutting, Equus Cutting and Rainbow Cave to be off limits.

- Visitor ingress to be restricted to balustraded walkways across archaeologically non-sensitive areas. A route up the debris cone to the eastern entrance of the Historic Cave will have to be marked out.

- Any sub-surface development to be accompanied by detailed archaeological assessment of affected areas. This preferably to be avoided.

- Time must be allowed for archaeological excavation ahead of any developments, if such are indicated.

Mwaridzi Terrace Sites:

Although part of this area falls within farm Zwartkrans, the same protective measures must apply:

- Widening of the road, construction of drainage ditches and culverts etc. to be preceded by scrutiny of affected area, Watching brief by trained archaeologist to be conducted of any sub-surface or surface-sterilizing development.

Limeworks:

- Breccia camp should be security-fenced with a locked gate to prevent further pilfering of fossils stored there, and to create a safe outdoor storage area. Field Museum would obviate the need for visitors to stop and examine fossils here.

- Visitor access routed and confined to boardwalks. This will also minimize dust.

- No development should be sited anywhere on areas of exposed cave infill, or over areas where cave sediments exist underground, or over undermined areas.

- Suitable car park will have to be chosen.

Peppercorn's Cave–Ficus Cave Complex:

- Visitor access, if deemed advisable, to be restricted to entrance chamber of Peppercorn's Cave, the occupation floor of the Ficus Cave, and Ficus Iron Age site.

- Katzanjammer Cave/Stinkblaargat, Colin's I and II and Two Skulls Cave to be strictly off limits.

Buffalo Cave:

Visitor access to this locality was not part of the original Phase I discussions.

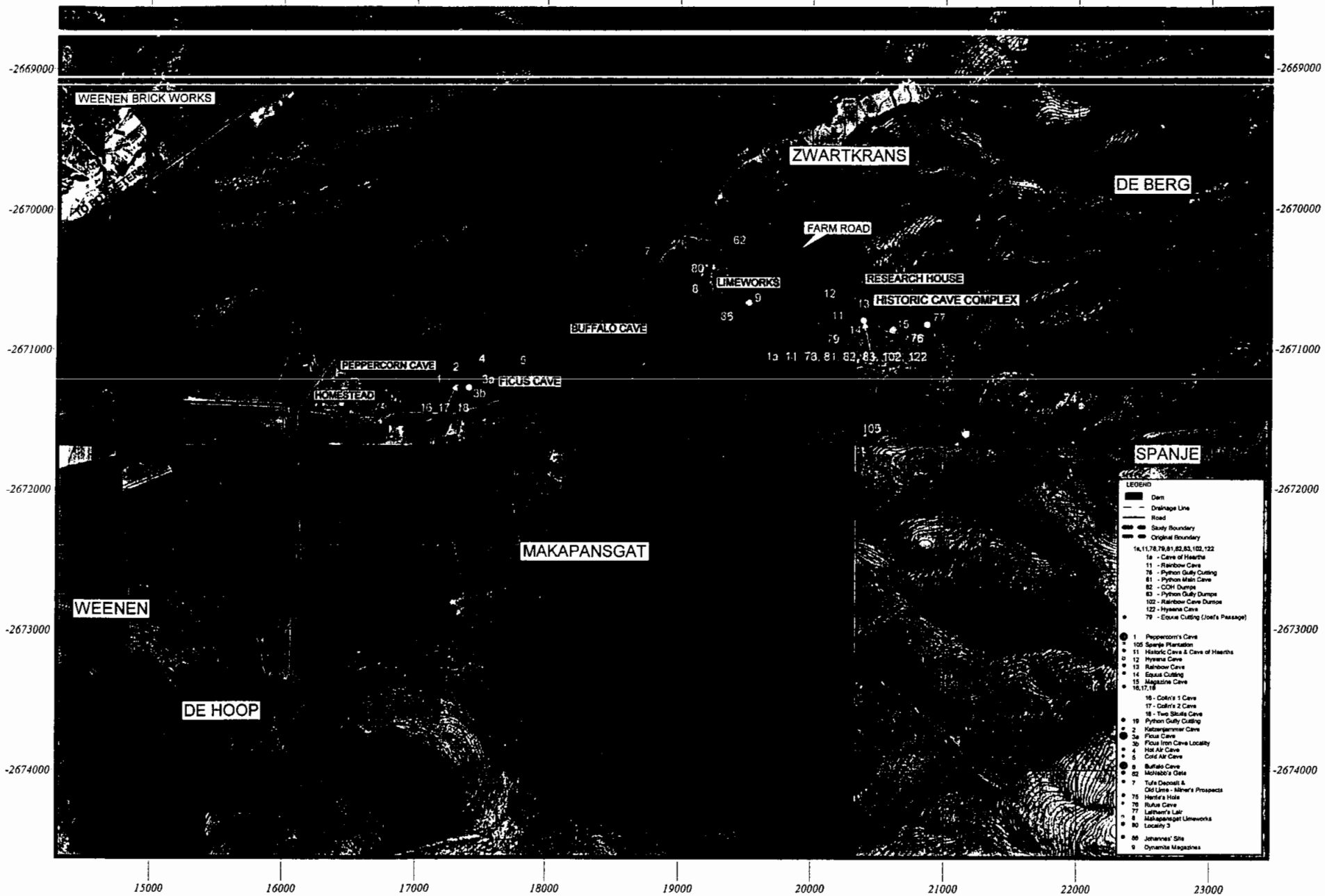
9.3.3 For Protection: Safety of Visitors and Tourists

The caves are known to be dangerous. Members of the public will have to be informed of the known dangers. The legal requirements of indemnity of the University of the Witwatersrand and/or Potgietersrus TLC against claims arising out of injury or disease will have to be investigated.

- Public access through unsafe areas should be avoided. Routes will have to be planned so as to avoid unstable or undermined areas.
- Dangerous areas should be fenced off altogether, e.g. Katzenjammer Cave.
- Visitors will have to keep to marked walkways.
- Areas known to be infested with cave disease will have to be avoided.
- Boardwalks will have to be constructed to provide an even walking surface, and to minimise dust. This has already been done at the Historical Cave, and the Cave of Hearths area is nearing completion.
- First Aid station with trained first-aider (this person would double as a guide) should be set up. Emergency procedures must be put in place.

9.3.4 To Provide Opportunities for Tourism

- A corpus of guides will have to be trained to interpret the various sites to visitors.
- Development provision within the Valley should include facilities for public education and recreation as well as support infrastructure for ongoing scientific research.
- Facilities for public education should include a Visitor Centre with two- and three-dimensional displays and a museum. Displays and notice boards (Figure 9.2 & 9.5) should be erected at the sites themselves. Three-dimensional reconstructions could be constructed at selected areas.
- Various facilities for public recreation could be focussed around the Peppercorn Farmhouse. These might include an agricultural museum, an actualistic African farm-cum-village, a tea-garden and restaurant with sales point, an ethnic restaurant, a carpark, picnic and braai area, small camp-site and toilet facilities. "Living Heritage" such as local Pedi dancers, basket makers etc. and crafts from the past could be demonstrated in a practical way, as currently done at the Arend Dieperink Museum.
- Ongoing scientific research programme requires additional infrastructure as the facilities at the Research House are becoming inadequate.
- At the Historic Cave, the old abandoned carpark and access road is to be re-instated. This will entail re-designing or upgrading the carpark and the lime-surfaced access track. The tar road up to the turn-off to the Historic Cave will have to be widened to allow two vehicles to pass one another. At present, it is a single track. The same is true for the 150m track from the tar road to the carpark. Buses must be kept out and a shuttle-system implemented. The access road is in any case too steep for buses, with many sharp curves and blind corners.
- The carpark should not encroach too close to the undermined cavitous areas as vibrations could cause further roof collapse.



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EnviroMap

Tel: (033) 3423 881
Fax: (033) 3423 806
Email: enviromap@telkrsa.com

cka

TEL: (012) 362-4684
FAX: (012) 362-0394
E-Mail: cka@cis.co.za

Makapansgat Valley Cultural Landscape
HISTORY, ARCHEOLOGY AND PALAEONTOLOGY MAP

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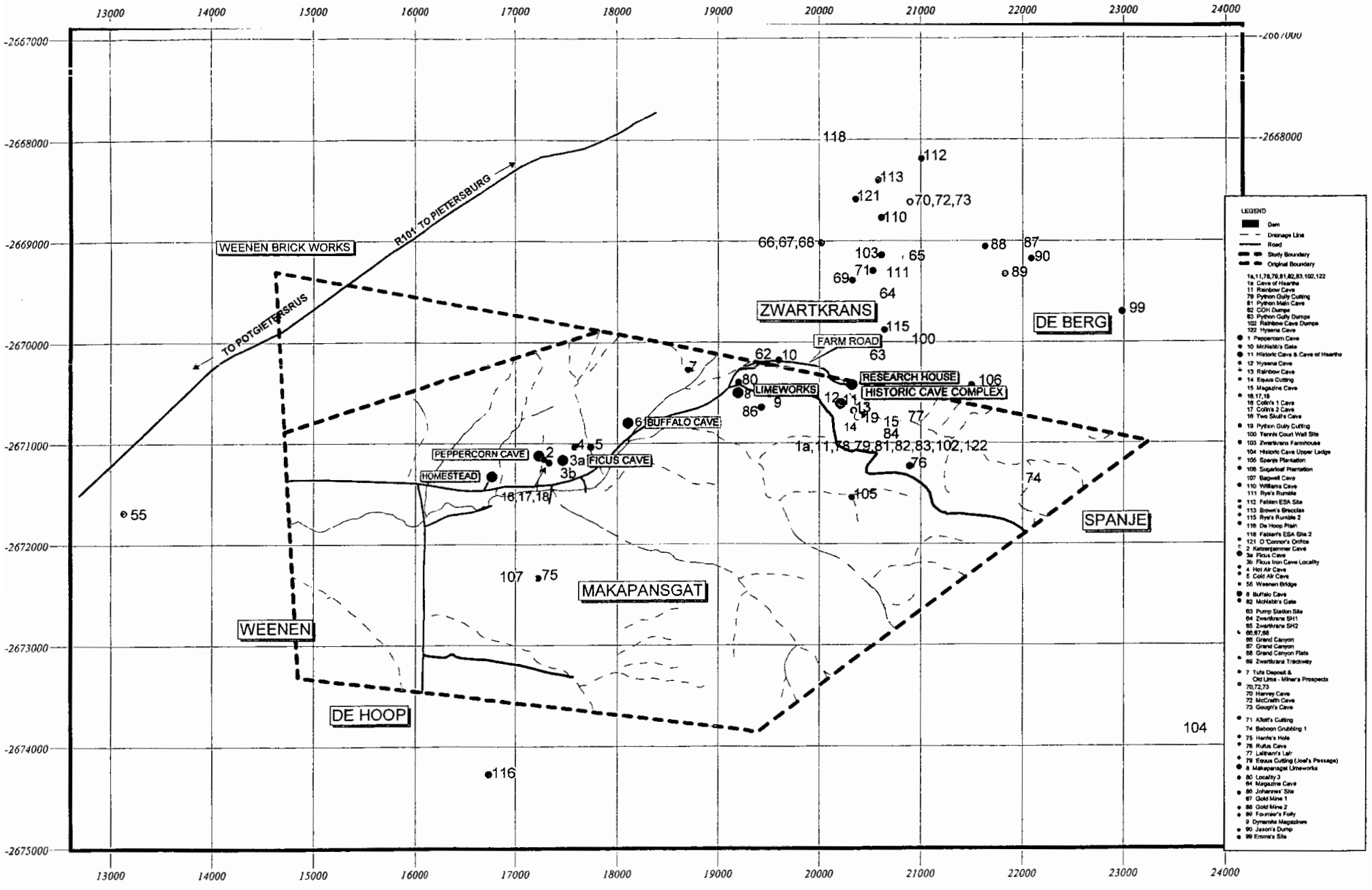
SCALE 1: 30 000

500 0 500 1000 1500 Meters

FIGURE 9.3



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EnviroMap

Tel: (033) 3423 881
Fax: (033) 3423 896
Email: envimap@iafrica.com

TEL: (012) 362-4684
FAX: (012) 362-0394
E-Mail: cka@cis.co.za

Makapansgat Valley Cultural Landscape
HISTORY, ARCHEOLOGY AND PALAEONTOLOGY MAP

FIGURE 9.4

SCALE 1: 36 000

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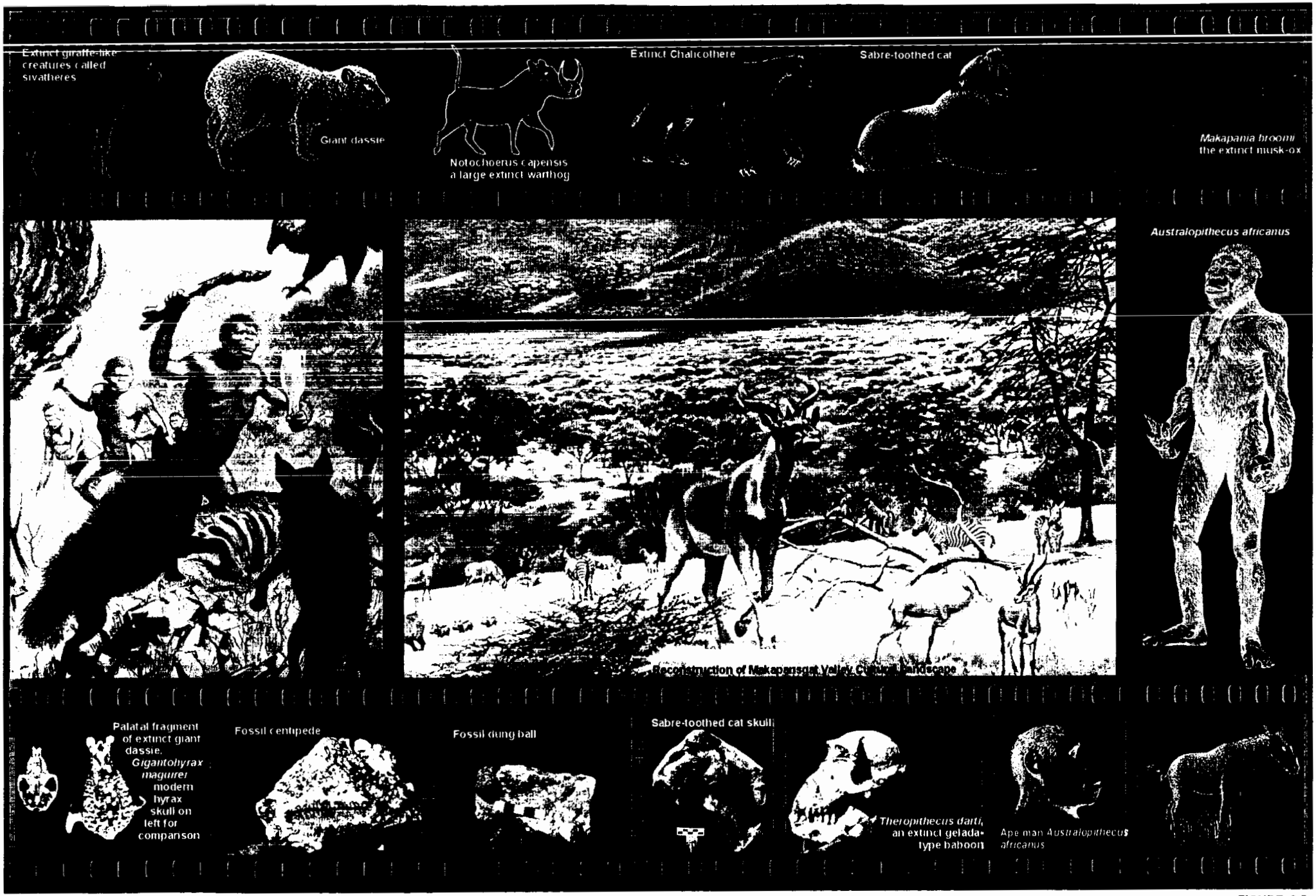


PHOTOGRAPHIC COLLECTION AND RECONSTRUCTIONS OF MAKAPANSGAT VALLEY CULTURAL LANDSCAPE

FIGURE 9.5

MAKAPANSGAT VALLEY CULTURAL LANDSCAPE MASTER PLAN

CHAPTER 10 VISUAL SURVEY

10.1 DESCRIPTION OF THE VISUAL ENVIRONMENT

10.1.1 Landform

The Makapansgat Valley (Figure 10.1) itself is situated on the western flank of the Highlands Mountains. The Makapansgat Valley Cultural Landscape, better known as the Makapansgat 39KS Farm, is characterised by three distinct landforms, namely:

- the Makapansgat Valley landform, a flat-bottomed valley covered in alluvium sub-divided into by three land systems, namely:
  i. Lower Mwaridzi land system,
  ii. De Hoop land system and
  iii. Cultivated Land

- the Malmani Dolomite landform sub-divided into two land systems, namely:
  i. Buffelshoek land system on the east of the valley and
  ii. Sukses land system on the west of the valley

- the Makapan Cave Valley Landform as part of the Buttonskop land system.

The broad flat-bottomed Makapansgat valley covered with alluvium traverses the farm diagonally from northeast swinging to the west. This valley is the only arable portion of the farm Makapansgat and was previously used for the cultivation of crops. The valley broadens westwards where Makapansgat becomes contiguous with the farm Weenen. The Makapansgat Valley is flanked by the Sukses land system to the east and the Buffelshoek land system to the west (Figure10.3). The landform through the Makapansgat Valley is a predominantly low-lying, bush-covered and featureless landscape interrupted only by minor drainage ways.

Both the Buffelshoek and Sukses land systems are monotonous in appearance, texture and visual character. The topographic expression of the underlying Malmani Dolomites takes the form of low but steep rugged hills, showing characteristic lines of discontinuous cliffs.

The Makapan Cave Valley is characterised by an undulating densely forested landscape and is terminated by a rugged cliff 90m high, exposing the resistant Black Reef Quartzite cliffs which form a nick point at the head of the valley. The Mwaridzi stream plunges down a 55m waterfall at the lowest part of the cliff into the Makapan Cave Valley.

Photo1: Looking West onto the flat-bottomed Makapan Valley.

Photo2: Looking East showing the Black Reef Quartzite cliffs at the head of the Makapan Cave Valley.

Photo3: Looking south towards the distant Maribashoek Montana showing the uniform landscape formed by the dolomites.

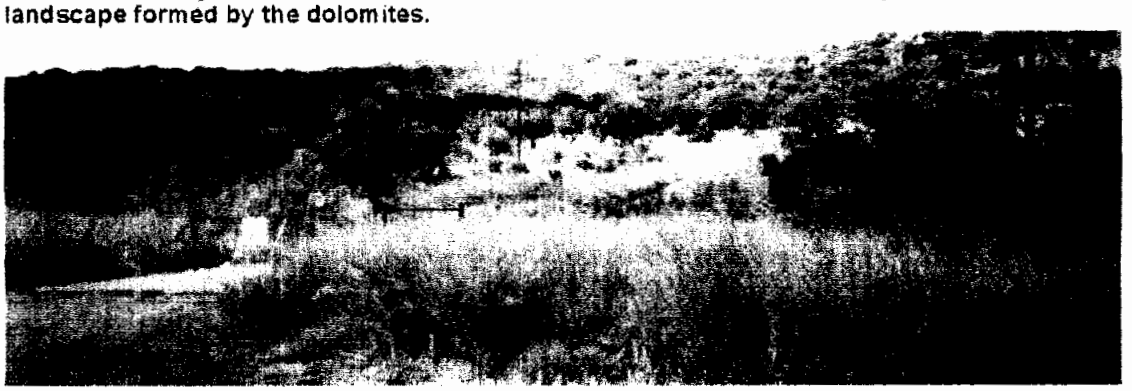


Photo4: Looking east showing visual degrading elements in landscape.

Figure 10.1: Photographs of the Makapansgat Valley Cultural Landscape

10.1.2 Vegetation

The vegetation of the Makpansgat Valley, as with most of the Makapansgat Valley Cultural Lanscape, consists of grasslands, abandoned old agricultural lands, some exotic plant species and indigenous relict sub-tropical evergreen forest species in the Makapan Cave Valley.

10.1.3 Views / Visibility

The views within the flat valley bottom landscape are restricted by the lack of elevated viewpoints. Views from within the Makapansgat Valley and Makapansgat Cave Valley are tempered by localised landforms. The backdrop of the mountains limit the silhouette effect. The landscape creates an uninterrupted viewshed that extends to the edge of the hills and mountains on the visual periphery. Any vertical object on the ridgeline within this viewshed is readily visible depending on its size and distance from the views. The views are dramatised by the scale of the Buffelshoek mountain range to the west and by the highlands of Makapansgat Valley to the east.

10.1.4 Visual Quality and Character

A visitor to the Makapansgat Valley Cultural Landscape is welcomed by an open valley area within a rural agricultural setting. The spirit of place is provided by the dramatic and protective background of rising hills and associated distant views. The occurrence of surrounding informal settlements along the Mwardzi River on the Makapansgat Valley plain distracts the viewer from and the seemingly rural atmosphere. In contrast the Makapan Cave Valley with its' "relic" forests creates the feeling of an unspoilt and undisturbed wilderness.

The visual quality of the low flat areas on the plains of the Makapansgat Valley landscape is considered low due to the relative featureless nature of the landscape attributes, the open plain, informal settlements and human habitation. The expanse and flatness of the landscape without any major unifying elements does not lead to a sense of vividness resulting in a low visual interest.

The Makapan Cave Valley landscape offers a high visual quality due to the pristine wilderness landscape. Views within the valley are dramatic and provides the viewer with extremely scenic viewing opportunities.

The horizontal scale of the highlands opens to the south. This scale is periodically interrupted by minor valleys that flow from the west. Structures placed within this landscape and which do not protrude above the horizon, nor are placed on prominent positions, can blend in with the landscape if fitted to the contour rather than across the contour or on the skyline. The vertical scale of the highlands mountains are massive.

10.2 IDENTIFICATION OF RISK SOURCES

Various risk sources for the visual impact have been identified for the construction and operation phases of various development options of the master plan implementation and can be classified as both negative and positive.

10.2.1 Construction Phase of Development Options

It is anticipated that the major risk source during construction would be:

Negative Risk Sources:

- cut and fill slopes become highly visible if not re-vegetated and shaped to blend in with the existing topography;
- excessive cleaning and stripping of topsoil for buildings, parking areas and access roads;
- the relatively random and disorganised lay down of building materials, vehicles and offices;
- the extent and intensity of security lighting at night;
- dust from construction activities;
- open and unrehabilitated landscape scarring; and
- uncontrolled exploitation of borrow pits without compliance to environmental controls related to aesthetic rehabilitation.

Positive Risk Sources:

- image of activity could lead to a perceived view of progress and benefit to the community.

10.2.2 Operational Phase

Negative Risk Sources:

- site engineering such as cuts and fills, could remain aesthetically incompatible with surrounding landscape. Edges may not blend in with the landscape or cut slopes may be too steep to be adequately re-vegetated; and
- areas and / or specific sites of high aesthetic value may be disfigured by the introduction of a project component resulting in a permanent change to the existing visual quality of visually sensitive areas.
- Visual modification by the informal settlers by the removal of vegetation cover.

Positive Risk Sources:

- The upgrading of existing routes could present and promote existing high quality visual attributes of an area not normally exposed to the general public.
- the visual image of activities and development within a scenic area may attract allied eco-tourism activities to the area;
- the Makapansgat Valley Cultural Landscape could be the visual affirmation of progress and prosperity for the region.

10.3 THE VISUAL ABSORPTION CAPACITY (VAC)

The visual absorption capacity is a measure of the landscape's ability to visually accept /accommodate or embrace a development. Areas which have a high visual absorption capacity are able to easily accept objects so that their visual impact is less noticeable. Conversely areas with low visual absorption capacity will suffer a higher visual impact from structures imposed on them. In this case the VAC has been defined as a function of three factors.

- Slope (Figure 10.4)
- Visual pattern (landscape texture) with regard to vegetation and structures (Figure 10.5)
- Vegetation height (Figure 10.6)

Three ranked categories are defined within each factor and each category has been assigned a numerical value to enable an arithmetic calculation of the VAC of different zones. The VAC factors, categories and their values are shown in Table 10.1.

The slope, vegetation and visual pattern were mapped and overlaid to define facets (areas) of particular visual quality (Figure 10.2). Numerical values (Table 10.1) of the three VAC factors were added to give an overall value to each landscape facet (Figure 10.7).

Table 10.1: VAC Factors and their Numerical Values

VAC Factor		Categories		
Slope	Range Numerical Value VAC	0-3 % 3 Low	3-7 % 2 Moderate	> 7 % 1 High
Vegetation Height	Range Numerical Value VAC	< 1 m 3 Low	1-5 m 2 Moderate	5 m 1 High
Visual Pattern	Description Numerical Value VAC	Uniform 3 Low	Moderate 2 Moderate	Diverse 1 High

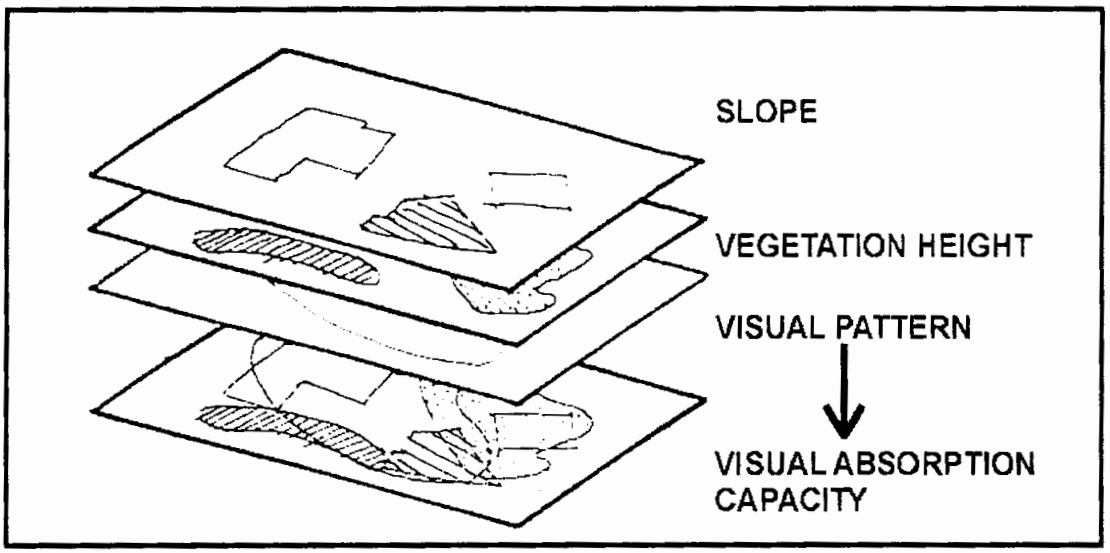


Figure 10.2: Overlay methodology to define landscape facets

10.4 VISUAL IMPACTS

The existing infrastructure on the Makapansgat Valley Cultural Landscape site includes communication base stations, power lines, telephone lines, roads, signage and fences.

10.4.1 Communication and transmission masts

Communication structures were noted to the northeastern high point of the site on Buttonskop. In order to transmit signals to areas requiring digital communication services, base stations, comprising masts and equipment rooms, are constructed on high points in the landscape where they have line of sight with the coverage area. This tends to maximise the visibility of the masts and mitigation is often limited to colour and design as opposed to height alternatives. The visual impact of the base station and associated infrastructure is mitigated by the distance between the viewer and the structures. It therefore limits the visual intrusion. There is, however, an impact on genius loci caused by the incompatibility between the advanced technology represented by these structures and the archaeological / palaeontological theme of the Makapansgat Valley Cultural Landscape.

10.4.2 Telephone poles

Telephone poles and associated telephone wires within the boundaries of the Makapansgat Valley Cultural Landscape are mostly situated adjacent to the existing roads. The poles affect foreground views of the landscape for visitors. An important mitigating circumstance relating to these features is the fact that telephone poles are an accepted feature of both rural and urban landscapes and viewers are generally not sensitised to their presence along road verges.

10.4.3 Roads and paths

There are currently few access roads to the Makapansgat Valley Cultural Landscape and existing routes are generally un-surfaced and posing minimal visual impact on the surrounding landscape. With the introduction of new developments, view sites, hiking trails etc requiring access routes, there is potential for new roads and paths to affect the visual quality of the landscape. The rolling topography and lack of dense vegetation in the more accessible parts of the Makapansgat Valley Cultural Landscape, makes the landscape particularly susceptible to indiscriminate routing of paths and roads.

10.4.4 Fences

A marked feature of the Makapansgat Valley Cultural Landscape is the number of fences internally and securing conservancy areas. It is recognised that fencing is a requirement to demarcate land ownership, control movement of domestic stock and manage wildlife. The fences however, have a visual and psychological effect on the viewer as they are seen as barriers and divisional boundaries. Much of the fencing is also poorly maintained and this adds to the visual deterioration.

10.4.5 Signage

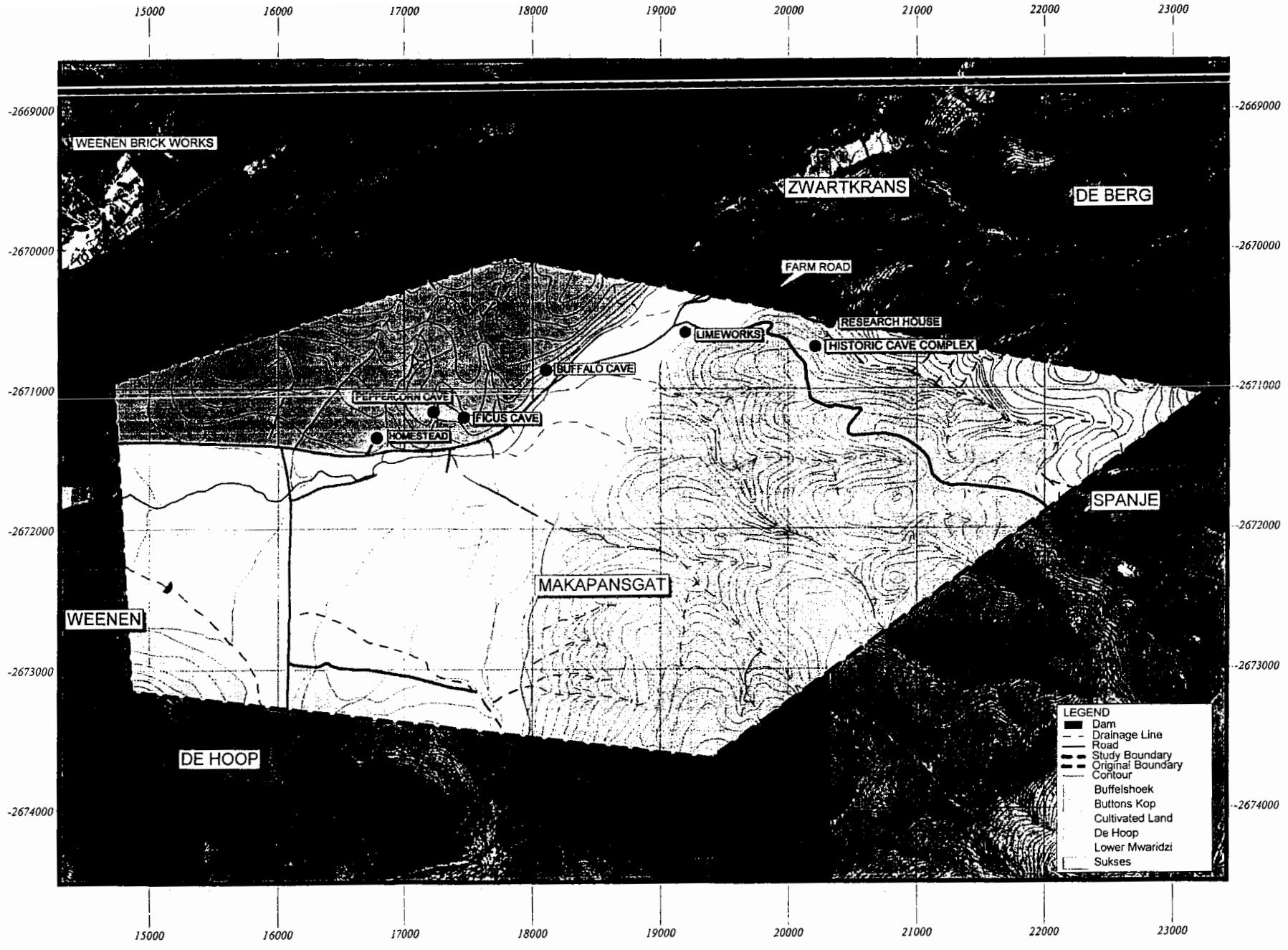
The visual clutter caused by signage is particularly apparent at road intersections. Information boards indicating the location of the Makapansgat Valley Cultural Landscape is non-existent. Care should be taken to design signage that is visually compatible with the theme of the Makapansgat Valley Cultural Landscape (MVCL). Abundant signage has a negative effect on sense of place and distracts visitors from their enjoyment of the natural landscape (Figure and Photo 4).

10.5 RECOMENDATIONS

It is recommended that:

- development of a general and varied nature aimed at attracting large numbers of tourists will be inappropriate;
- future developments must conform to a theme in terms of architectural design and colour schemes;
- restrictions should be placed on the height and style of new structures and buildings to make sure that the sense of place is maintained;
- future developments should be limited to ecotourism initiatives;
- areas of low VAC should not be used for building construction, but can accommodate activities with a low visual impact like horse and hiking trails;
- visible infrastructures, such as pump stations and reservoirs, be located where they will not be visually prominent or where they are constantly viewed against the skyline in silhouette;

- as many trees within the working servitude as possible be retained to break the visually linear scar especially on the slopes;
- excavations take place as close as possible to the edge of access roads so as to minimise the adjacent landscape scarring;
- all stream crossing be treated in such a way as to minimise the visual disturbance to the river banks. The excavation crossing the river should be limited to as narrow a strip as possible;
- all newly exposed rock that contrasts with the existing landscape be oxidised-stained to age / weather the surface;
- the Contractor be contained within the servitude working width to minimise disturbance to the surrounding landscape;
- the edges to cleared servitudes should not follow a 'knife-edge' line but follow a random line that could blend in with the existing visual pattern;
- all visible infrastructure such as reservoirs, pump stations and valve chambers should blend in with the surrounding landscape through berming, painting and staining;
- no natural feature may be defaced through painting or any other form of permanent marking;
- branches and tree stumps removed during clearing and excavations should be placed or spread on the backfilled trench to promote vegetation growth; and
- the routes through natural vegetation be grass seeded as soon as possible to reduce the visual scarring.



Maps Produced & Compiled By:

EnviroMap

Tel: (033) 3423 681
Fax: (033) 3423 696
Email: enviromap@intrica.com

cka

TEL: (012) 362-4684
FAX: (012) 362-0394
E-Mail: cka@cis.co.za

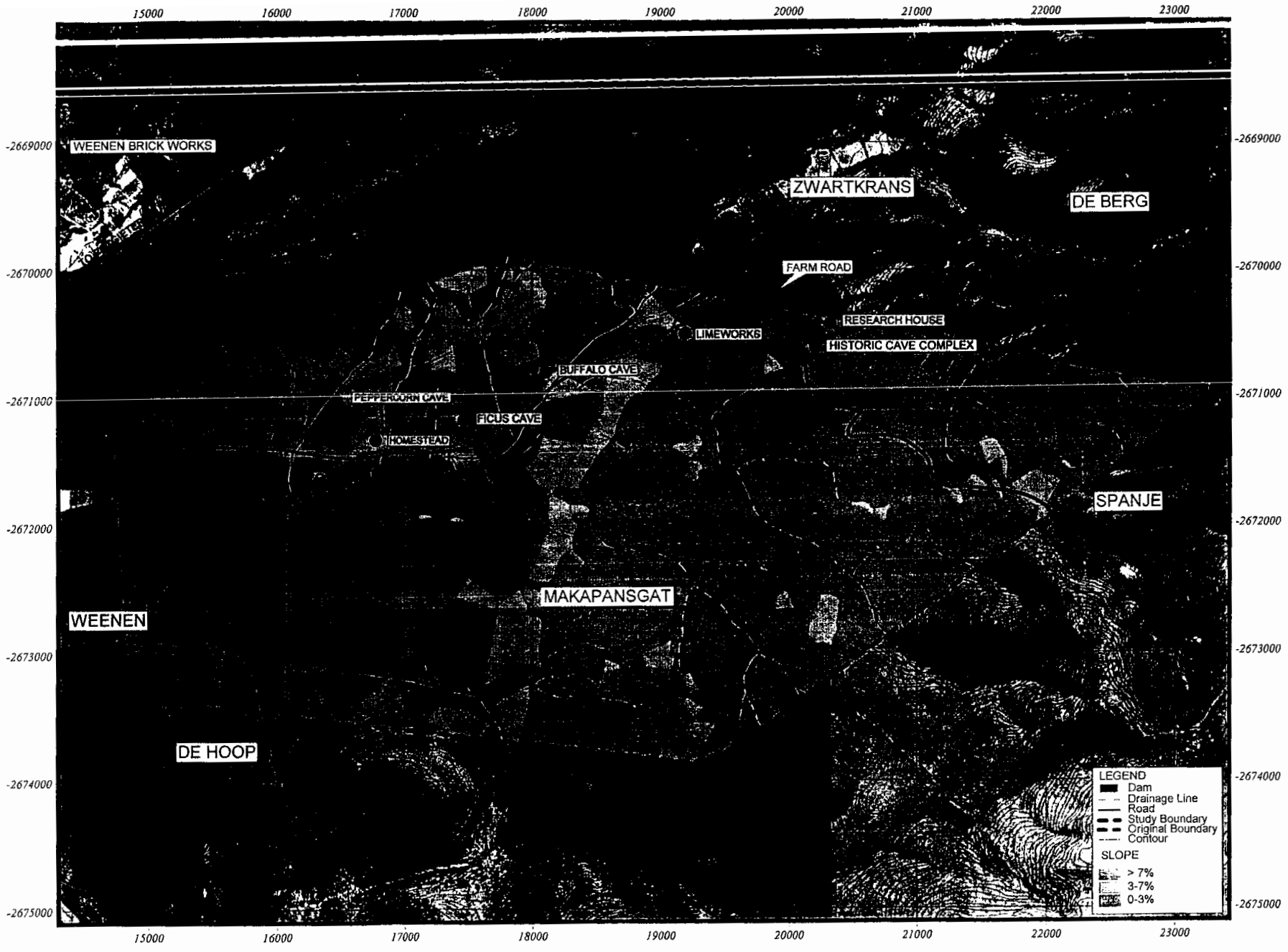
Makapansgat Valley Cultural Landscape
LAND SYSTEMS MAP

N

SCALE 1: 30 000

500 0 500 1000 1500 Meters

FIGURE 10.3



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EnviroMap

Tel: (033) 3423 681
Fax: (033) 3423 696
Email: enviromap@telkra.com

cka

TEL: (012) 362-4684
FAX: (012) 362-0394
E-Mail: cka@cls.co.za

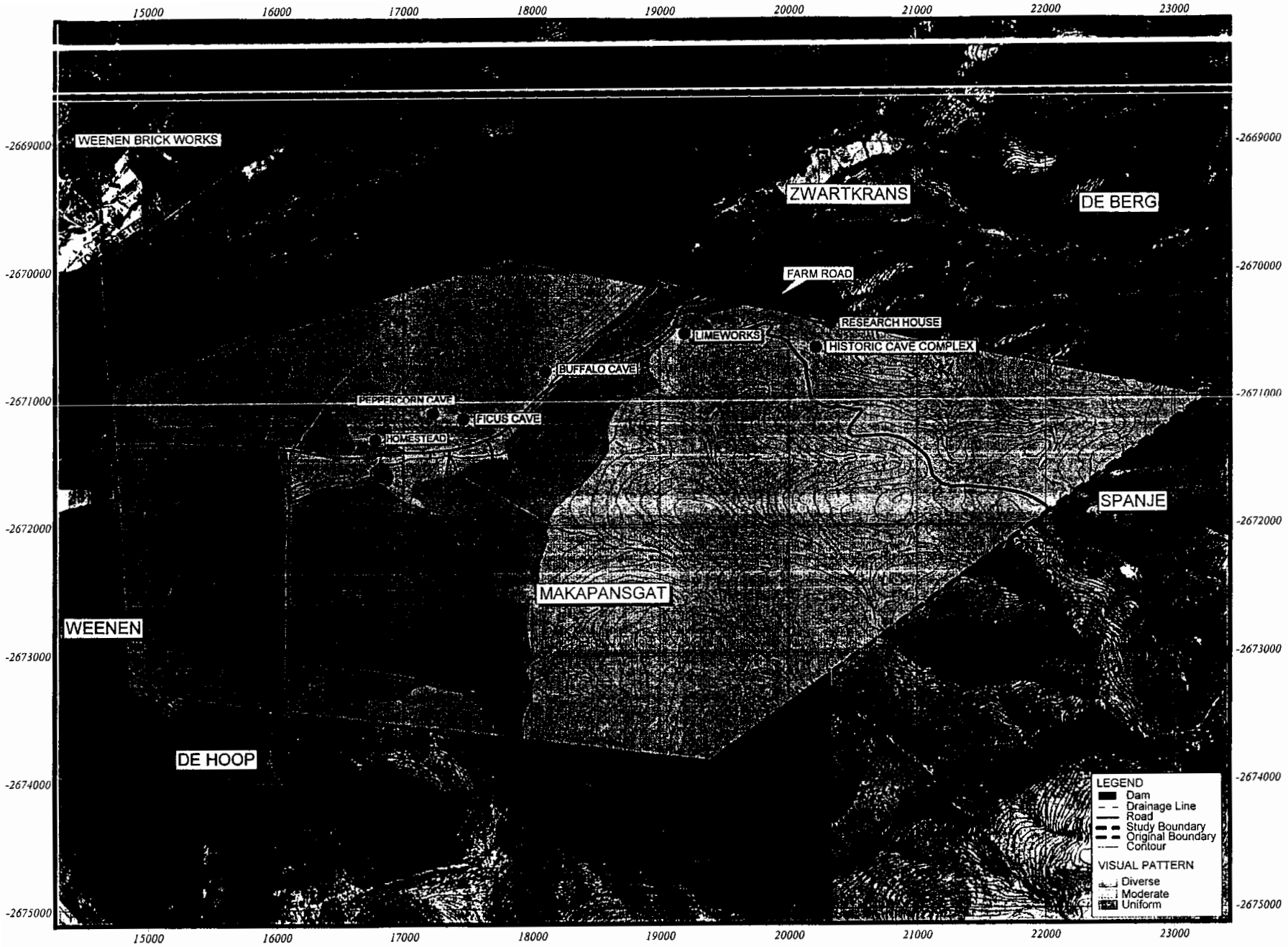
Makapansgat Valley Cultural Landscape
SLOPE ANALYSIS MAP

N

SCALE 1: 30 000

500 0 500 1000 1500 Meters

FIGURE 10.4



Maps Produced & Compiled By:

EnviroMap

Tel: (033) 3423 881
Fax: (033) 3423 696
Email: envimap@iafrica.com

cka

TEL: (012) 362-4684
FAX: (012) 362-0394
E-Mail: cka@cls.co.za

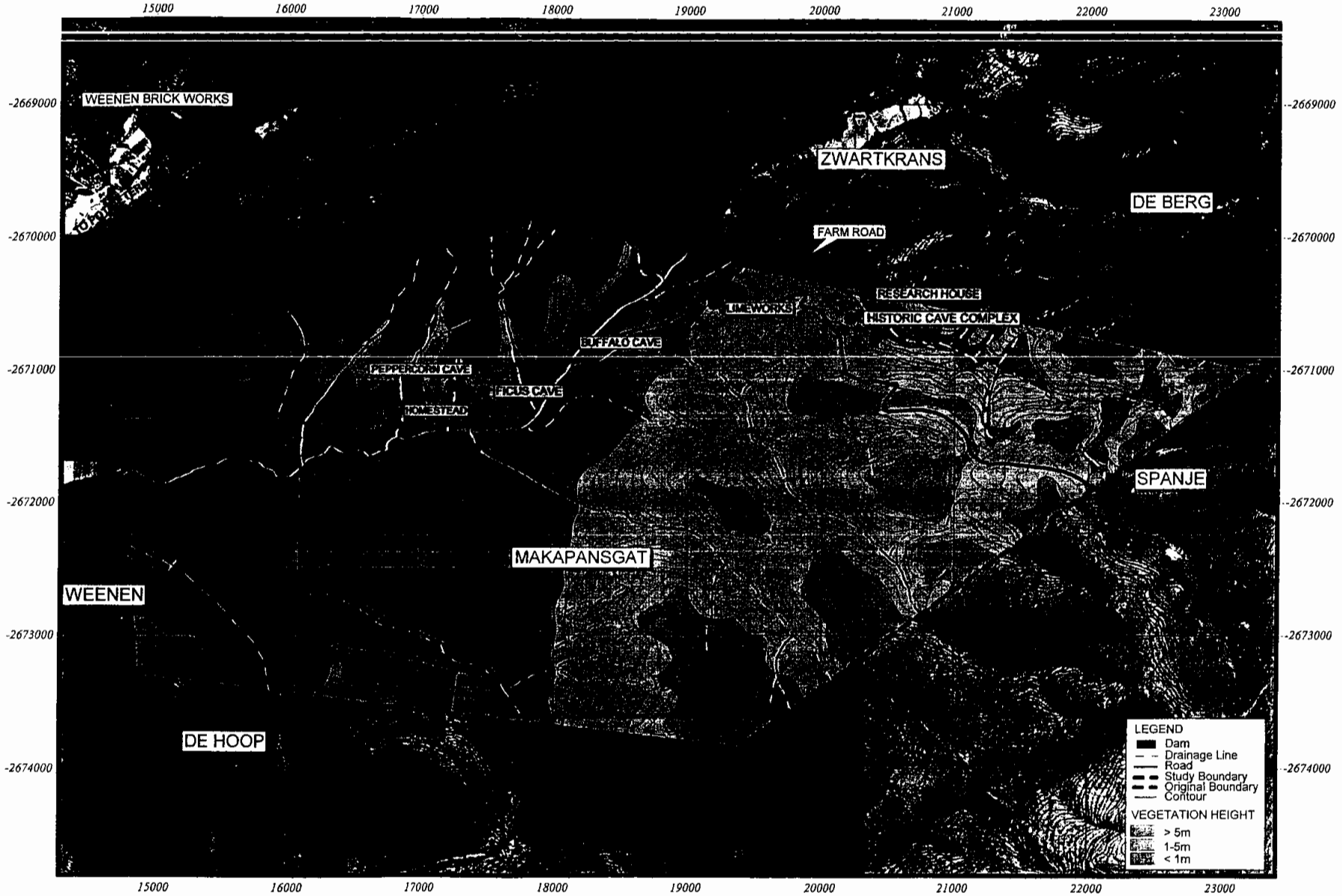
Makapansgat Valley Cultural Landscape
VISUAL PATTERN MAP

N

SCALE 1: 30 000

500 0 500 1000 1500 Meters

FIGURE 10.5



Makapansgat Valley Cultural Landscape
VEGETATION HEIGHT MAP

FIGURE 10.6

SCALE 1: 30 000

500 0 500 1000 1500 Meters

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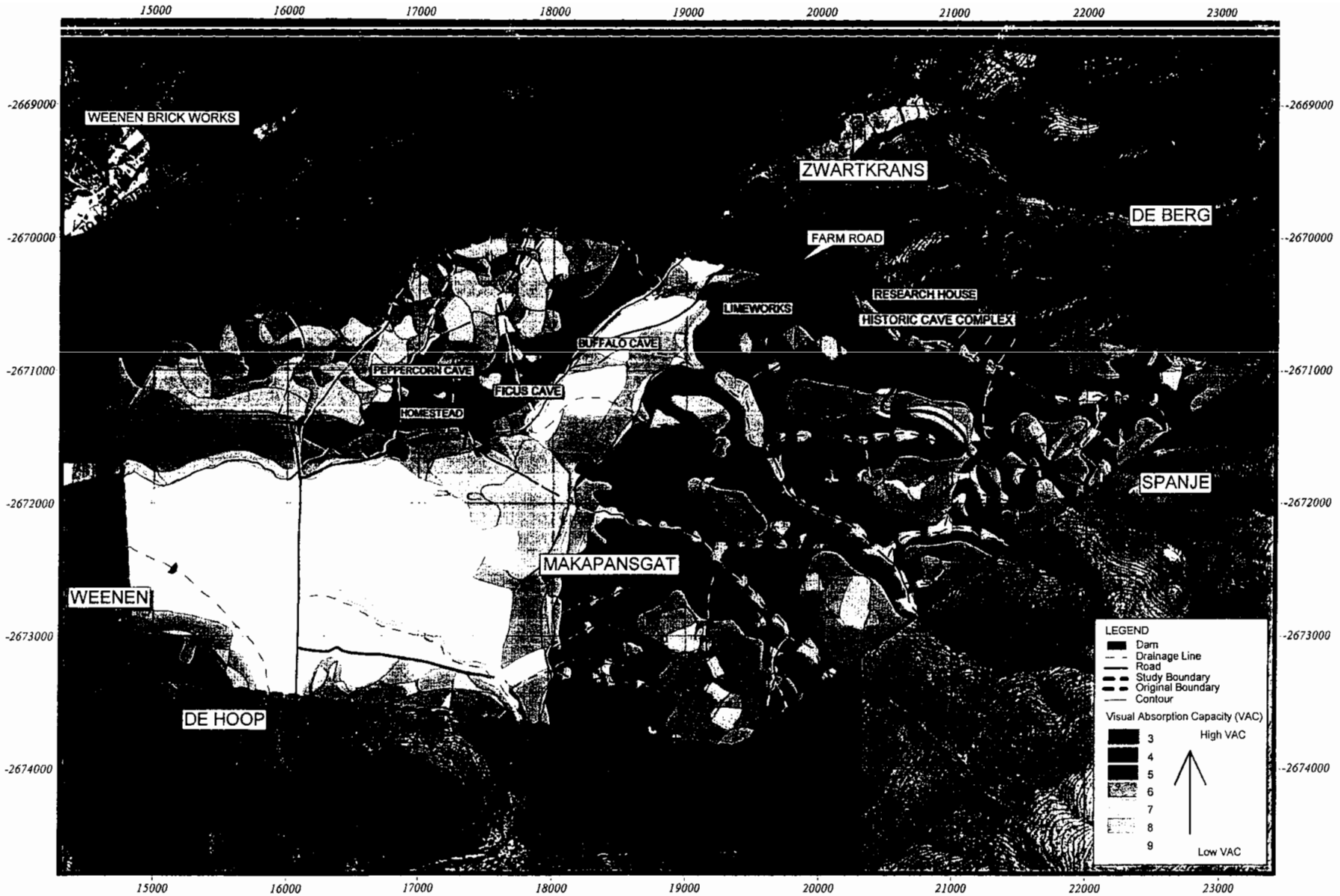
EnviroMap
Tel. (033) 3423 661
Fax: (033) 3423 666
Email: enviromap@telkica.com

cka
TEL: (012) 362-4684
FAX: (012) 362-0394
E-Mail: cka@cis.co.za



Makapansgat Valley Cultural Landscape
VISUAL ABSORPTION CAPACITY MAP

FIGURE 10.7

SCALE 1: 30 000

500 0 500 1000 1500 Meters

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EnviroMap

Tel: (033) 3423 661
Fax: (033) 3423 696
Email: enviromap@iafrica.com

cka

TEL: (012) 362-4684
FAX: (012) 362-0394
E-Mail: cka@cls.co.za

MAKAPANSGAT VALLEY CULTURAL LANDSCAPE MASTER PLAN

CHAPTER 11 TOURISM

11.1 TOURISM AT THE MAKAPANSGAT VALLEY CULTURAL LANDSCAPE

11.1.1 Categories of tourism anticipated

- International and National tourism: "en passant" visitors en route to tourist destinations elsewhere
- Local inhabitants: residents of the surrounding district within an approximate 60km radius
- Special interest tourism: local and overseas visitors
- Scholars and students: mainly from local schools and institutions of learning
- Makapansgat integrated into "package deal" tourism; e.g. as a stopover venue for steamtrain tours such as Rovos Rail
- Academics and students as the serious interest tourists
- Adventure tourism with mountaineering, mountain-biking, hiking and other activities

Different tourists and site users have differing foci of interest and expectations of the locality.

11.1.2 Possibilities for Tourism Options which would meet the requirements and expectations of most tourists (Figure 11.1)

Recreation facilities:
Recreation facilities can include facilities like picnic areas, braai areas, camping sites, caravan sites and children's playground. All of these facilities can be centred around the Pepercorn Homestead. Provision can also be made for entertainment and reception for social events. Support infrastructure such as reservoirs, water reticultation, sewage treatment etc. will be necessary.

Educational facilities:
Educational facilities can mean a visitor reception area, museum with two and three dimensional displays, agricultural museum and a "living farm". An African village with traditional agriculture and food production, indigenous restaurant, local dance and music, crafts (basketry and beadwork), sales point for educational booklets and pamphlets and casts of fossils, postcards and other collectables.

Archaeo-tourism:
Archaeo-tourism would be the key tourism feature of the Makapansgat Valley Cultural Landscape. Guided tours around the palaeontological, archeological and historical sites can take place. This would be along boardwalks with various viewing sites and points of special interest along the way. Explanatory notices and field museums need to be installed, as do strategically-placed three dimensional models of extinct animals such as sabre-toothed cats, ape men, giant dassies, and giant porcupines.

Special interest guided tours:
Special interest guided tours which focus on themes such as:
- Vegetation: plant ecology
- Edible plant trail: "Veldkos Trail"
- Muti-plant trail
- Forest bird trail
- High altitude bird trail
- Geology and geomorphology trail

- Night hike: "Sounds of the African night" and
- South African Skies trail

Special interest self-guided hikes:
These can be planned around similar themes as those above.

Adventure tourism: cross-country mountain-biking:
If access through the Zebediela water farms would be obtained, they could be incorporated in a cross-country circular mountain-biking, portage and hiking trail which will incorporate the escarpment, the Mogoto dam and all the magnificent views and experiences from the Makapansgat Highlands. A usable mountain-biking track does exist all the way from the Peppercorn Farmhouse, up to the top of the escarpment and along its crest all the way down to Zebediela farm. The mountain crest section is about 21 kms long. Overnight facilities can be constructed near Mogoto dam or make use of existing farm houses along the route.

"Living heritage" tours:
These could provide a showcase for surviving aspects of traditional culture such as Pedi dancing, demonstrations of traditional building technology, traditional agriculture, production skills, food preparation techniques, and traditional crafts such as murals (Ndebele) beadworking and basketry with live demonstrations of crafts. Tours could be called "Material Culture of the Pedi" or "Ndebele Culture Tour". These might be particularly interesting if they were embedded in the night setting.

Makapansgat as part of a "package deal":
The following themes lend themselves to incorporation of Makapansgat Valley Cultural Landscape as part of the packages on offer:

- Rovos Rail (Pretoria-Victoria Falls Run)
- African Cradle of Mankind
- Aecheology of Southern Africa
- History of Mining
- In the footsteps of Baines
- "Op die spoor van die Voortrekkers"
- Historical South African tour

The possibilities of celebrating the numerous facets of the options that the Makapansgat Valley Cultural Landscape has to offer is endless.

11.1.3 Options for Educational experiences at Makapansgat Valley Cultural Landscape and the surrounding area: a unique outdoor classroom (Figure 11.1)

The Makapansgat Valley Cultural Landscape and the immediately surrounding area lends itself admirably to be used as an enriching Outdoor Classroom, with an astonishing range of hands-on educational experiences on offer. Educational opportunities within the Makapansgat Valley Cultural Landscape would be enhanced by the construction of a filed museum, with explanatory displays 2 and 3 dimensional models of palaeontological, archaeological, ecological and historical themes. Teachers and pupils educational resource and worksheets could be designed to maximise the educational potential of scholars.

11.2 PLACES OF PALAEONTOLOGICAL, ARCHAEOLOGICAL AND HISTORICAL INTEREST IN THE POTGIETERSRUS AREA

LIST OF PLACES OF INTEREST IN AND AROUND POTGIETERSRUS	
Palaeontological Sites	**FARM**
The Makapansgat Limeworks	Makapansgat
Cave of the Horse's Mandible	
The Hyaena Cave	
Buffalo Cave	
Peppercorn's Cave	
Archaeological Sites	
Early Stone Age:	
Skoonheid Donga	Skoonheid
Potgietersrus Town Lands	Oorlogsfontein, portion
'Maguire's Donga' (Van Riet Lowe)	24 Rivers
'Flint Creek' (C.D. Maguire's name)	24 Rivers
Cave of Hearths	Makapansgat
River Terraces at Makapansgat	Makapansgat
Middle Stone Age:	
Cave of Hearths	Makapansgat
Rainbow Cave	Makapansgat
Mwulu's Cave	Portugal
Maguire's Donga	24 Rivers
Mr Lepehne's Uitloop Site	Uitloop
Rose Smith Site	Uitloop
Kalkbank	(Pietersburg District)
Later Stone Age:	
Cave of Hearths	Makapansgat
Maguire's Donga	24 Rivers
Magazine Cave	Makapansgat
Rock Art Sites	Holmesleigh
Iron Age Sites:	
Appelkoos' Old Stad	Town Lands, PPRust
Ancient Specularite Workings	Town Lands/and Oorlogsfontein
Planknek Stone Wallings	Planknek
Specularite Workings on Twenty Four Rivers	Twenty Four Rivers
Iron Age stone walling on Twenty Four Rivers	Twenty Four Rivers
Iron Age smelting site	Maribashoek

LIST OF PLACES OF INTEREST IN AND AROUND POTGIETERSRUS	
Iron Age Sites:	**FARM**
De Hoop Caves Iron Age Site	De Hoop
Buffelshoek Caves	Buffelshoek
Ficus Cave	Makapansgat
Ficus Iron Age Site	Makapansgat
Peppercorn's Cave	Makapansgat
Iron Age Stone Walling on Hollandsdrift	Hollandsdrift
Historic Cave/"Makapan Cave"	Makapansgat
Historical Sites:	
The ann trees	Marken Road
Louis Trichardt Trek 1836: Strydpoort Monument	Strydpoort
Moorddrift Monument 1854	Moorddrift
Historic Cave/"Makapan Cave"	Makapansgat
Grave of Cmdt. Piet Potgieter 1854	Potgietersrus
Monument on Piet Potgieter Square	Potgietersrus
Bust of Piet Potgieter	Potgietersrus
Makapan's stad and grave	Twenty Four Rivers/Pruizen
Eersteling: First gold ore-crushing site 1871	Eersteling, Button's Kop
Malaria Monument, Voortrekker Cemetery	Potgietersrus
Marabastad Fort	Off N1 to Potgietersrus
Places of General Interest:	
Abandoned gold mine at Amatava	Amatava
Waterfall on Schietfontein	Schietfontein
The Camelthorn Stump	Moorddrift
Zebediela Citrus Estate	Zebediela
Game Breeding Centre, Gert Combrink Dam	Potgietersrus
Percy Ffyfe Nature Reserve	North of Potgietersrus
Hangklip	Hangklip
Arend Dieperink Museum	Potgietersrus
Platinum Mine	Off Roedtan Road
Thabaphaswa Hiking Trail	Off road to Percy Ffyfe

11.3 GUIDE TRAINING

The Makapansgat Tour Guide Training Programme will comprise a number of components, all of which will have to be studied for, examined and signed off. Certification will not take place until the final written and oral examinations have been passed. Minimum requirement for Course Participation is a valid Matriculation Certificate or its equivalent, or a higher qualification. In exceptional cases, age, experience or other circumstances may be taken into consideration. A reasonable level of fitness is also required. Matric assumes basic literacy, numeracy and fluency in one or more languages. In addition, a short 'entrance examination' will be written. (The purpose of this is to assist the lecturers to assess background level of understanding of the terminology of the subject area.)

Components of the programme could consist of the following:

11.3.1 General components

- PERSONAL HYGIENE AND APPEARANCE
- DRESS CODE, UNIFORM
- DEPORTMENT
- ETIQUETTE, GOOD AND BAD MANNERS (English standards because of tourists)(includes punctuality, reliability, sober behaviour)

11.3.2 Communication skills

- SPEECH
- ELOCUTION
- PUBLIC SPEAKING
- LISTENING SKILLS
- MODE OF INTERPERSONAL ADDRESS
- COMMANDING ATTENTION

11.3.3 First aid component

11.3.4 Academic and technical course components

- GEOGRAPHICAL AND GEOLOGICAL SETTING OF MAKAPANSGAT
- TOPOGRAHY: HOW THIS INFLUENCES ECOLOGY
- HOW THE CAVES WERE FORMED AND FILLED
- HOW BONES GET INTO CAVES: TAPHONOMY
- FOSSILIZATION AND FOSSILS
- RECOVERY OF FOSSILS, PREPARATON TECHNIQUES (AT WITS)
- DATING THE PAST (AT C.S.I.R. AND WITS)
- THE GEOLOGICAL AND ARCHAEOLOGICAL TIMESCALES WITH PARTICULAR REFERENCE TO SOUTH AFRICA
- THE HISTORY OF DISCOVERIES IN THE MAKAPAN VALLEY
- THE FOSSIL EVIDENCE FOR HUMAN EVOLUTION AND HOW THE DISCOVERIES AT MAKAPANSGAT ADD TO THIS KNOWLEDGE
- THE CAVE OF HEARTHS AND ITS SIGNIFICANCE
- THE HISTORY OF THE HISTORIC CAVE/MAKAPAN'S CAVE
  - Oral Traditions
  - Written Histories
  - Written Evidence
- THE VEGETATION OF MAKAPANSGAT
  - General
  - Food Plant
  - Muti Plants
- THE FAUNA OF MAKAPANSGAT
  - Mammals and their ecology
  - Birds and their ecology

11.3.5 Heritage sites

- Significance of Heritage
- Heritage Laws
- Heritage Sites and Conservation
- Living Heritage

11.3.6 Environment conservation and mangement

- Alien and invasive plants and their control
- Rare and endangered species: plants
- Endangered animals
- Water pollution and conservation
- Soil erosion, conservation and sollutions
- Fire

11.3.7 Practical compoments

- Demonstrate his/her competence as a public speaker by presenting a 10-minute talk-slide show to the class on a topic of choice taken from 1-16. Teaching aids such as slides, overheads, blackboards etc will be provided.

- Describe and demonstrate how a stone tool is made and used (do not actually have to make one. This is a test of explanatory skills).

- Pass on-site test in the Valley during which candidates will have to demonstrate to the testers their thorough knowledge for all sites on offer to tourists (the valley itself, Limeworks, Cave of Hearths, Historic Cave. Later, Peppercorn's Cave, Ficus Iron Age site can be added).

- Be able to demonstrate basic knowledge of primate and hominid skulls.

- Be able to demonstrate stone tools of different ages.

- Pass the practical First Aid Test.

HISTORICAL, PALAEON TOLOGICAL AND ARCHEOLOGICAL SITES

FIGURE 11.1

MAKAPANSGAT VALLEY CULTURAL LANDSCAPE MASTER PLAN

CHAPTER 12 LEGAL CONSIDERATIONS

12.1 GENERAL

- The aim of this chapter is to draw the attention to those aspects of the country's legislation that will affect planing and development at Makapansgat.
- The Makapansgat Valley contains a dense clustering of proclaimed National Monuments (now known as Heritage Sites). Together these are of National importance, qualifying for Grade I rating in terms of the National Heritage Resources Act.
- The archaeological and palaeontological record preserved within the Makpansgat Valley makes it unique among world sites. Application for World Heritage Status for the Valley has been initiated.
- World Heritage Site status will have far-reaching positive financial and tourism-related implications.
- The National Heritage Resources Act provides legal protection for all declared Heritage Sites. Landowners will be held accountable for their ongoing protection, presentation and management.
- The Heritage Sites are contextualised within a 'cultural landscape' which is also worthy of conservation. Application has been made to the SAHRA to provide provisional protection for the entire property, i.e. the whole of Makapansgat 39KS (July 2000).
- Because much of the legislation is binding on the landowner, it is imperative that the legalities regarding ownership of the sites be finalised.

12.2 LAND OWNERSHIP

- The land ownership issue remains unresolved. In the mid-1990's two separate portions of Makapansgat, one situated around the Cave of Hearths-Makapan Cave complex and including Wits University's Research House (55 ha) and the other focused around the Ficus Iron Age Site and Peppercorn Cave (± 21ha) were formally offered to the University of the Witwatersrand by the current landowners. The Potgietersrus TLC's Gift of Land was gratefully accepted by the University of the Witwatersrand but registration of the two portions has not yet been effected. A legally binding contract has thus been created between the Potgietersrus TLC and Wits University.
- Over and above the legal requirement to transfer the land to Wits University, for practical reasons it is strongly recommended that the issues be finalized in Wits Universities' favour. Wits University has a proven track record of continuity and has the necessary professional expertise to comply with the requirements of the National Heritage Resources Act.
- In the interim, it would appear that the Potgietersrus TLC are under pressure to reconsider the Gift of Land. The legality of withdrawing a gift once offered and accepted is debatable.
- It was suggested in a Potgietersrus TLC Council Meeting that the land (i.e. the entire farm Makapansgat 30KS) be given instead to the Northern Province Tourism Board. This organisation is not interested in the farm if the Heritage Sites (i.e. the two portions on offer to Wits) are excluded from the gift.

- If the two Heritage areas ultimately come to Wits, there would be two landowners involved at Makapansgat: Wits would own the Heritage Sites and the Potgietersrus TLC the remainder of the property.

- Third parties like developers, tour operators or persons/authorities in control who promote tourism in the valley must comply with the applicable legislation.

- The successful long-term establishment of sustainable tourism will have to rest on amicable three-way co-operation between Wits, the landowner and the developer.

- Regardless of whom the owner of the Heritage Sites is, protective legislation will apply.

- Cabinet Decision No 54/97 of the Northern Province Government endorses the use of Makapansgat for eco-tourism and supports its inclusion in the Makapans-Strydpoort Conservancy. Other land-use options should therefore not be considered.

12.3 MAKAPANSGAT: INFORMAL SETTLERS (Figure 12.1, 12.2 & 12.3)

Figure 12.1: "Grey Water" is a potential source of pollution. The large yellow and black plastic containers are for transporting water to households (Photo: F. Berg-Mattiassen)

- There are at present 250 informal settlers on Makapansgat. This number is unlikely to stabilize.

- The presence of informal settlers is contrary to conservation goals and does not accord with the Cabinet Decision No 54/97.

- The presence of informal settlers creates a number of intractable environmental problems.

Figure 12.2: **Increasing numbers of livestock are being introduced onto Makapansgat, making increasing demands on the available water supply, and wreaking havoc with the vegetation (Photo: J.M. Maguire)**

Figure 12.3: **Typical "hut cluster" constructed by informal settlers. Each group of dwellings houses up to 15 persons (Photo: F. Berg-Mattiassen)**

- Aspects of the environmental problems created by the informal settlers create liabilities for the landowner in terms of the Environment Conservation Act.
- The unaddressed sanitation problem poses a pollution risk, particularly for the groundwater which is earmarked for domestic water supply for Potgietersrus.
- Aspects of this situation create liabilities for the landowner in terms of the National Water Act.
- It should be borne in mind that the expropriation of Makapansgat 39KS was undertaken with access to the groundwater as a top priority.
- There is a Restitution Claim, Reference No 12019 by the Ga-ahamane Community (no gazetting) against Makapansgat.

12.4 SERVITUDES AND OPTIONS

- Various right of way servitudes cut across Makapansgat. These all compound the surveillance and security problem.
- A road servitude in favour of Makapansgat (and the University of the Witwatersrand) exists over portion of Farm Zwartkrans.
- A water pipeline servitude has been registered in favour of Makapansgat.
- An outspan servitude comprising 1/75 of original size of Makapansgat exists.
- Mineral exploration and prospecting option over Makapansgat exists. Details concerning the holder, termination/forfeiture date etc. can be obtained from Mr. Bembridge via the Wits. Legal Officer, Ms. Dawn Taylor (Tel: 011 – 716 3590). Legal enquiry in this regard was still pending at the time of submission.
- The landowners, the Potgietersrus TLC, will have to prove that it has sufficient capacity to perform the functions inherent in heritage resources management.

12.5 THE NATIONAL HERITAGE RESOURCES ACT AND LIABILITIES

- Whoever owns the Heritage Sites will be liable to comply with the fairly onerous terms of the National Heritage Act.

12.6 OTHER

- It would be worthwhile to investigate the advantages and disadvantages of declaring the farm Makapansgat 39KS as well as the Zebediela and Potgietersrus TLC 'Water farms' a large Protected Natural Environment in terms of Part III Clauses 16, 17 and 18 of the Environmental Management Act.

MAKAPANSGAT VALLEY CULTURAL LANDSCAPE MASTER PLAN

CHAPTER 13 MAKAPANSGAT SPATIAL ANALYSIS

13.1 ECOLOGICAL PLANNING PROCESS

13.1.1 Statement of the problem (Step 1)

Open space planning (Figure 13.1 & 13.2) in a rural area can be difficult because of the need to weigh up the material needs of a growing population (and the increased demand placed on limited natural resources) against the natural environment. There is, therefore, continuous conflict between development and conservation.

The Makanpansgat Valley's cultural landscape has been recognised as a valuable area (with natural and cultural assets), but is under threat by improper management and exploitation of the natural resources. There is thus a great need to develop the Makapansgat Valley Cultural Landscape in an environmentally and ecologically sound manner.

13.1.2 Natural Resources (Step 2)

Natural systems contain processes that are of benefit to man. Knowledge of these processes will enable optimal use of natural resources. The ecosystem must be divided and studied in easily understood categories (as in done in other scientific study methods). Isolating systems allows them to be more easily studied and understood as separate units as well as the interaction between them. This is what separates the ecological approach from other planning approaches. It is the basis of an holistic approach where all factors interact and are recognised.

The following sequence of study of landscape categories were identified and used:

- Study Boundary
- Geology and Geomorphology
- Hydrology
- Soils
- History, Archaeology and Palaeontology
- Soils/Pedology
- Hydrology & Water Quality
- Flora/Vegetation
- Fauna/Animals
- Slope orientation and gradient
- Vegetation height
- Visual pattern
- Visual absorption capacity
- Ecological sensitivity
- Development potential

The benefits of natural resources cannot be acknowledged without some form of constraint because of the limited production capacity of natural resources. A general description of landscape analysis will, therefore, involve the terms 'opportunity' and 'constraints'.Similarly, the section on landscape facets and landscape features can be viewed as the "supply"

component, a term normally used in economics. The act of looking for the opportunity that the ecological resources supply can be called human demand.

13.1.3 Values of Natural Resources (Step 3)

This stage involves listing the human requirements for the use of the land. It also includes the establishment of the demand on natural features for each of these land uses. This indicates the optimal requirements of a landscape unit that should accommodate a specific land use category.

The various benefits of nature to the various stages of cultural development must be identified for use in ecological planning. These benefits of nature usually fulfill the social requirements, which are:

- Life-support features and economical impact
- Aesthetic, unique and rare features
- Ecologically sensitive, vulnerable or hazardous features.

13.1.4 Evaluation of Features and Facets (Step 4)

This stage involves the evaluation of the natural features of the landscape units in terms of the proposed land use categories. The landscape features could be either positive or negative in relation to development proposals. Each feature could be ranked and rated in terms of its appropriateness to the requirements of each of the land use categories. This maximises the benefits obtained from natural features and avoids inappropriate changes to the environment.

The general zoning classes used for the Makapansgat Valley Cultural Landscape Master Plan are conservation and recreation.

Makapansgat Valley Cultural Landscape
SENSITIVITY ANALYSIS MAP

FIGURE 13.1

SCALE 1: 30 000

500 0 500 1000 1500 Meters

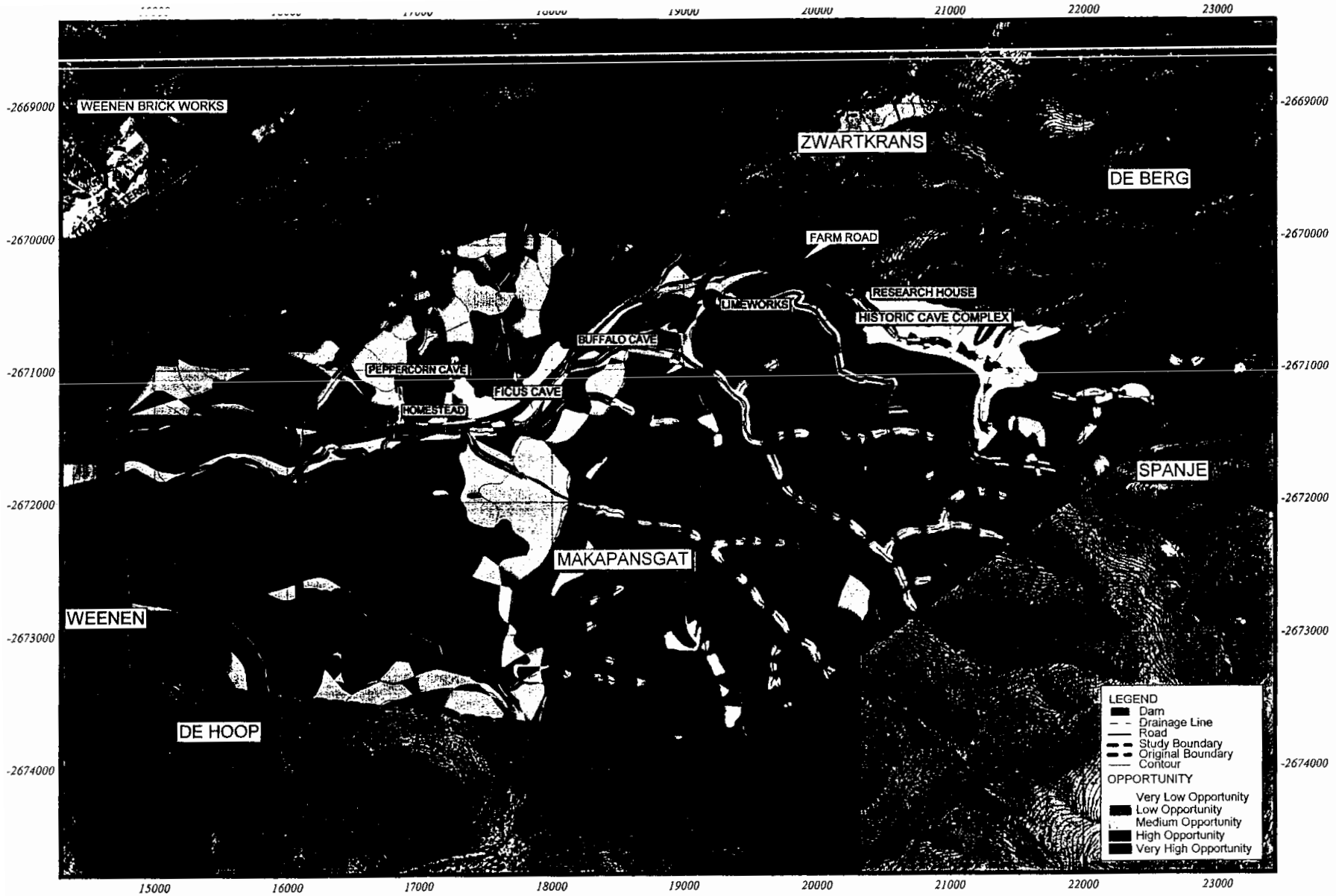
Maps Produced & Compiled By:

EnviroMap

Tel. (033) 3423 881
Fax. (033) 3423 899
Email: envirom@vertex.com

cka

TEL: (012) 362-4664
FAX: (012) 362-0394
E-Mail: cka@cis.co.za



Makapansgat Valley Cultural Landscape
OPPORTUNITY ANALYSIS MAP

FIGURE 13.2

Maps Produced & Compiled By:
EnviroMap
Tel: (033) 3423 661
Fax: (033) 3423 686
E-mail: enviromap@iafrica.com

cka
TEL: (012) 362-4684
FAX: (012) 362-0394
E-Mail: cka@cis.co.za

SCALE 1: 30 000

500 0 500 1000 1500 Meters

MAKAPANSGAT VALLEY CULTURAL LANDSCAPE MASTER PLAN

CHAPTER 14 ZONING

14.1 INTRODUCTION

"The most important recent advance in conservation thinking in the African context has been the realization that the active and economic participation by local human populations is essential to the long term planning of any national park." (Huntley, 1978).

For more than a century certain areas have been set aside (i.e. nature reserves and national parks) to preserve flora and fauna.

As a population grows, development requirements increase. There is resulting economic pressure to utilize undeveloped land and natural resources. The idea of conservation areas excluding any development is giving way to new perspectives which unite conservation and development in a vital balance.

14.2 CONSERVATION APPROACHES

14.2.1 World heritage conservation strategy

In 1980 the International Union for the Conservation of Nature and Natural Resources (IUCN) published the World Conservation Strategy (IUCN, 1980) which set forth a new philosophy for nature conservation. It defined conservation as follows:

"The management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations."

The Strategy essentially stated that conservation should aim to promote human survival and sustainable development – a philosophy far removed from the 'aesthetic-ethical' label previously attached to the word 'conservation' (Hanks 1983).

This approach integrates human resource conservation with animal, vegetal and physical resource conservation. Together, all of these comprise a "living resource system", the conservation goals for which should be as follows:

- to maintain essential ecological processes and life-support systems;
- to preserve genetic diversity; and
- to ensure the sustainable utilisation of species and ecosystems.

This calls for a comprehensive resource conservation planning, and management programme. It must be noted, however, that such a programme is impossible without the incorporation of local representatives into the conservation decision-making structure.

Multiple land-use areas, which surround protected areas and are occupied by the local people, should be integral to the conservation programme. In this way the strategy aims can be brought to life, with the local communities receiving direct benefit from the resource area.

14.2.2 Canadian National and Historic Park Branch System

A similar approach to conservation planning is the five-part zoning system (Fig. 14.1 & 14.2) adopted by the Canadian National and Historic parks Branch. Fuggle (1976) describes these as follows:

Intensive Use Zones
Zones where human activities, services and facilities are paramount. Areas should be capable of supporting such activity without undermining the natural landscape."

General Outdoor Recreation Zones
Located close to zones of intensive use, these areas support a lower level of human use (e.g. campsites or planted forests).

Natural Areas
Where human impact on the natural landscape is slight (e.g. sustainable farming activities, minor access roads, or hiking trails), these areas surround and interlace with the human use zones.

Wilderness Zones
Essentially roadless areas where the effects of human activities are transitory. Zones of this type need not be sited in areas of prime scenic attraction unless these areas are also high stress environments with fragile associations of soils, plants and animals that would be irrevocably disrupted by intense human use.

Special Features
This is related to features of special historical, cultural educational or natural history value. Appropriate status (monument or nature reserve) is accorded to such areas which may fall within any of the other four activity zones."
Zones must be planned within an area's capacity to support the level of activity envisaged without causing environmental deterioration. It must therefore be accepted that certain zones may be absent.

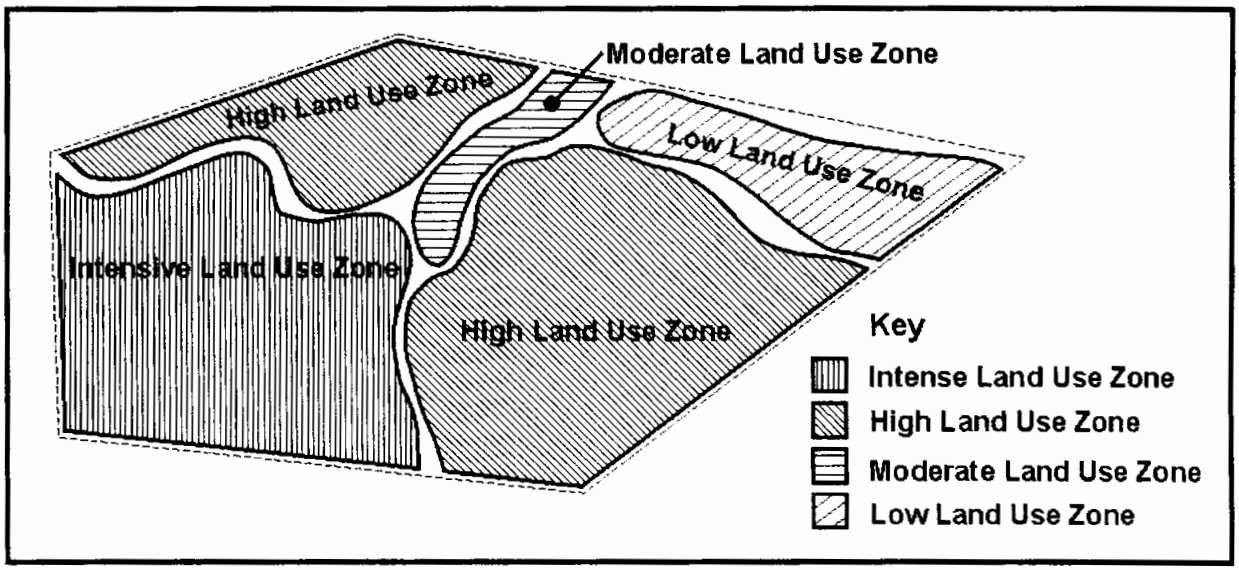


Figure 14.1: **Conceptual Zoning System**

14.3 MULTIPLE-USE MANAGEMENT AREAS

In 1978 the IUCN developed a classification system for natural areas that takes into account environmental, social, and cultural differences between nations areas to developed outdoor recreation areas. Natural ecosystems are afforded varying degrees of protection according to type and importance. The emphasis regarding social, environmental and cultural needs differs from system to system and the management objectives constitute the basis for classification.

14.3.1 Management Objectives

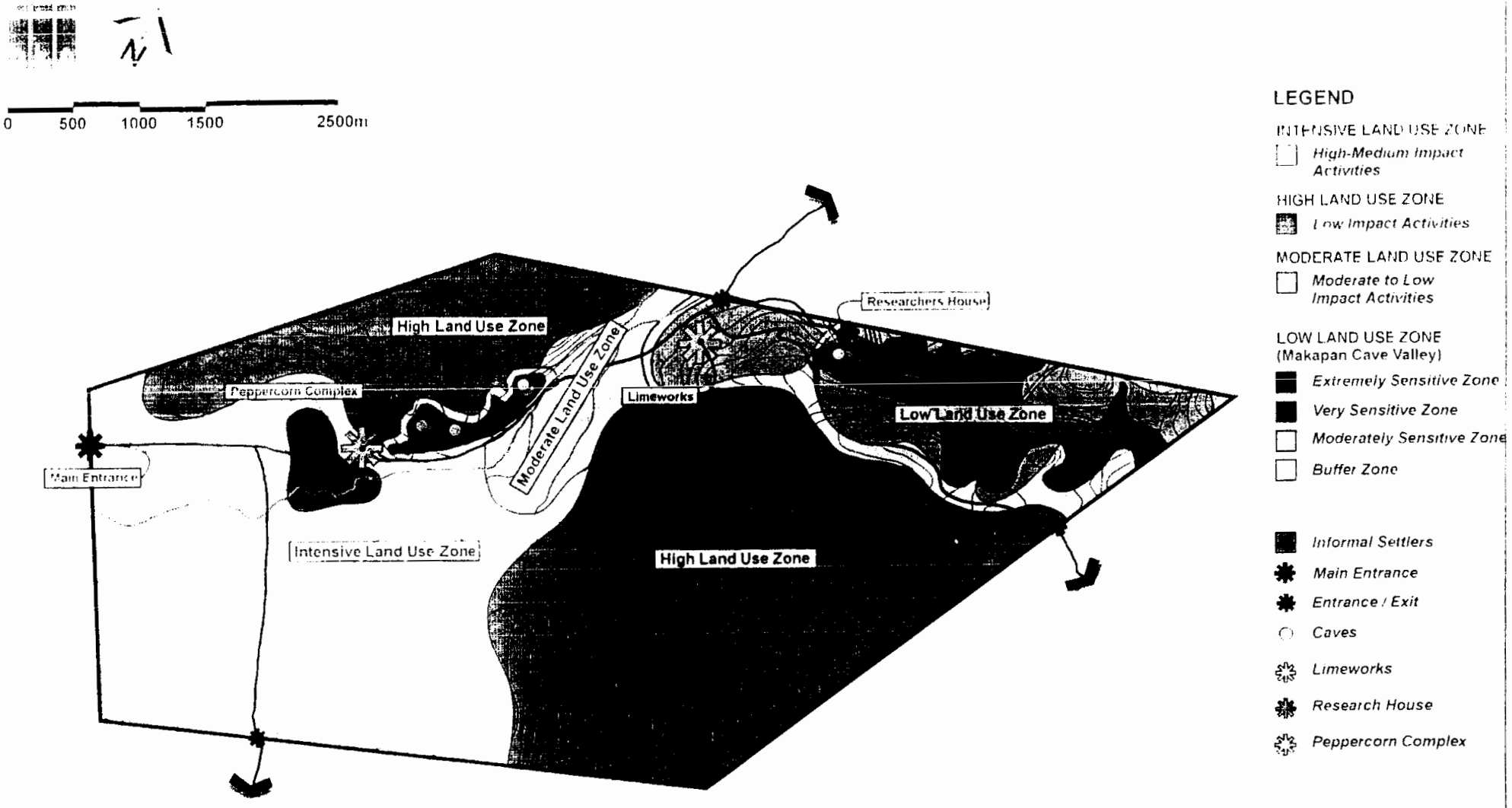
"To provide for the sustained production of water, timber, wildlife, pasture and outdoor recreation and at the same time provide for economic, social and cultural needs over a long term. The conservation of nature is also an objective of this category primarily oriented to the support of the economic activities although specific zones may also be designated within these areas to achieve specific conservation objectives."

14.3.2 Management

"Planning to ensure the area is managed on a sustained yield basis would be a prerequisite. Land ownership would be under government control. Through proper zoning, significant areas could be given specific additional protection. Multiple use is considered to be the management of all renewable surface resources, utilized in some combination to best meet the needs of the country. The major premise in the management of these lands is that they will be managed to maintain the overall productivity of the land and its resources in perpetuity."

14.4 WILDLIFE CONSERVATION UNIT

This management system, described by McNeely and Miller (1984), calls for a Wildlife Conservation Unit. The entire unit would be managed as a single entity, but would accommodate distinctive land uses such as national parks, protected areas, and multiple-use areas.



MAKAPANSGAT VALLEY CULTURAL LANDSCAPE ZONING PLAN

FIGURE 14.2

MAKAPANSGAT VALLEY CULTURAL LANDSCAPE MASTER PLAN

CHAPTER 15 MANAGEMENT AND DESIGN GUIDELINES

15.1 MANAGEMENT GUIDELINES

Management guidelines are practical recommendations that assist in the sound management of the Makapansgat Valley Cultural Landscape (MVCL). Since the area is very rich in scientific (archaeological and palaeontological) resources and has a unique combination of natural resources, guidelines are necessary to aid design, development and usage of the MVCL to simultaneously promote optimal functioning of the site (e.g. tourist potential) and to protect the site's resources (natural and scientific).

The full report deals with management guidelines under the following sections:

- Scientific environment
- Protection of the scientific environment
- Recreational trails
- Recreational and educational facilities
- Disturbed land control
- Aesthetics and visual aspects
- Geology – Dolomites
- Vegetation
- Fauna
- Water resources
- Good environmental practice
- Risk management
- Land use management
- Infrastructure
- Visitor management
- Communication management
- Resources development

15.2 DESIGN GUIDELINES

Design guidelines are provided to form the basis for design. They assist in the decision making process at design stage and can help provide the best possible facilities in the optimal position for minimal environmental impact.

The full report deals with design guidelines under the following sections:

- Access control
- New structures
- Roads
- Recreational trails
- Recreational and educational facilities
- Landscape detailing
- Aesthetics and visual aspects

MAKAPANSGAT VALLEY CULTURAL LANDSCAPE MASTER PLAN

CHAPTER 16 MASTER AND SKETCH PLAN DEVELOPMENT

16.1 INTRODUCTION

This chapter describes the physical developments proposed for the Makapansgat Valley Cultural Landscape.

It is not intended to be all-inclusive as many of the proposals need to be field tested, after being subjected to an environmental impact assessment, to determine the success of the plan. Should some of these prove to be successful or not, it is possible that the focus of this master plan may have to change or adapt in future. It must therefore be accepted that this master plan is flexible and adaptable.

16.2 VEHICULAR CIRCULATION AND PEDESTRIAN ACCESS

Access to the MVCL would be controlled at each of the four vehicular entry/exit points. The main entrance will be located at the start of the access road where it meets the R101 at the site boundary. The main entrance will be unmanned and for entrance definition and welcoming purposes only. Control to the sites will be regulated at a boom access control point shortly after the Peppercorn Complex (Figure 16.5).

Vehicular circulation throughout the Makapansgat Valley Cultural Landscape (MVCL) is proposed along existing circulation routes. No new roads are advocated. It is also proposed that the main road through the Valley be of a dust free material with intermittent speed control devices.

Free visitor vehicle access will terminate at the Peppercorn Visitor Centre. From here all visitors will be accompanied by a trained guide. Customised vehicles will ferry visitors to and from the main sites such as the Makapansgat Limeworks and the Historic Cave Complex.

16.3 VISITOR CENTRE

The visitor arrival and recreation facilities such as the Education Centre, Curio Shop, Picnic Area and Research Facilities, referred to as the Peppercorn Complex, are proposed in the high or intensive land use zone, centred mainly around the Peppercorn Homestead (Figure 16.1 & 16.6) as thus the area has been identified as being able to accommodate the anticipated heavy public use.

The venue is well-situated with regard to the main road and the access road (Figure 16.5), although gravel, is in fair condition up to this point. The homestead has an excellent view of the Buffelshoek and Maribashoek mountains.

The Peppercorn Farmhouse (Figure 16.1 &16.6) offers a wonderful opportunity to create an actualistic functional agricultural museum, and to form the focus for the Visitor's Complex. Many interesting historical agricultural artefacts from a byegone era exist at the Arend Dieperink Museum. Some of these could be transferred to the buildings at Peppercorn Farmhouse at Makapansgat where they could be displayed in a far more appropriate manner and with convincing ambience. Roofed sheds still exist (but not for much longer; they are in the process of being stripped for their corrugated iron by informal settlers) to house exhibits of agricultural machinery.

The main focus would be on past agricultural production methods and on the numerous skills and crafts (such as bread baking, mampoer-brewing, and leatherworking) that belong to the recent agricultural past, but which are in danger of becoming lost. The museum should include African agricultural techniques and aspects of "Living Heritage" such as Pedi dancing, basketry, wall-painting etc. The local informal settlement is ideally situated should local residents wish to participate. African farming methods could be demonstrated and traditional crops could be grown and served in traditional utensils in an all-African restaurant with an indigenous menu.

Figure 16.1: The abandoned Peppercorn Farmhouse

A small Nguni cattle herd could also be established. As far as can be ascertained, no such development exists in one place anywhere else in South Africa; the closest would be the Willem Prinsloo Open Air Agricultural Museum outside Pretoria.

Shady areas nearby, within easy reach of water and the Tea-Garden/Restaurant facility could be used to establish a picnic area with braai facilities, park facilities (swings, slides etc.) and a small campsite.

Some farm animals such as chickens, turkeys, lambs etc could be housed in the existing pens as an additional attraction; this part of the project could involve the local residents although facilities of this kind might be more appealing to urbanized children. The existing house is an attractive, sturdy, stone-built and thatch-roofed building , with a fair amount of utilizable flat ground nearby. The infrastructure around the Peppercorn's Farmhouse provides an ideal situation to test tourism-oriented ideas without much extra expense, provided that subsistence plunder on the part of the informal settlers is strictly controlled.

Old skills, such as baking and brewing, carried out with excellent success by the ladies at the Arend Dieperink Museum could be re-located to Makapansgat. The House and its once magnificent front garden could be re-established to function as a Tea Garden and Restaurant with very little additional expense.

Facilities for public education and recreation as well as support infrastructure for ongoing scientific research should be included. Ongoing scientific research programme requires additional infrastructure as the facilities at the Research House are becoming inadequate. Facilities for public education should include a Visitor Centre with two- and three-dimensional displays and a museum. Displays and notice boards should be erected at the sites themselves. Three-dimensional reconstructions could be constructed at selected areas.

Infrastructure will be provided to the High Intensity Use Zone according to development priorities as an initiative to stimulate growth by opening up selected areas to private sector development such as the Peppercorn Complex at the Peppercorn Homestead (Figure 16.1 & 16.6).

The Peppercorn's Cave complex of caves is not visited as often as are the Makapansgat Limeworks and the Historic Cave. Many people are not aware of their existence and without some background in African archaeology, the site has little to offer. Furthermore access to these sites are difficult. It is therefore proposed that, in the form of two- and three-dimensional interpretative displays, the trio of sites in the Peppercorn's Cave area might together form an interesting educational experience, featuring the Iron Age segment of the Archaeological Timescale. This could include an exhibit on Iron Age metalworking. The same type of displays can be used to explain any of the other sites in an imaginative manner.

16.4 HISTORIC CAVE COMPLEX

At the Historic Cave (Makapan Cave) (Figure 16.2 & 16.3), the old abandoned car park and access road should be re-instated. This will entail re-designing or upgrading the car park and the lime-surfaced access track. The tar road up to the turn-off to the Historic Cave will have to be widened to allow for two directional traffic. The same is true for the 150m long track from the tar road to the car park. The access road is too steep for buses, with many sharp curves and blind corners. The car park at the Historic cave should not encroach too close to the undermined covetous areas as vibrations could cause further roof collapse.

Figure 16.2: **View of the pillar-supported remnant of the breccial infill of the Cave of Hearths (July 1970)**

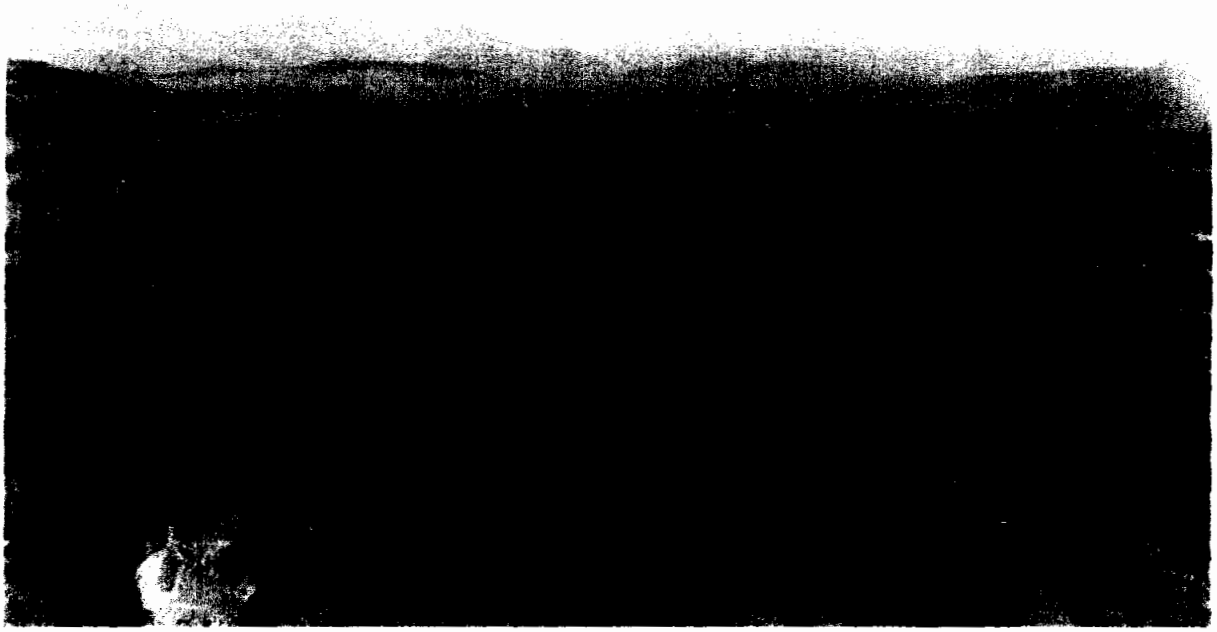


Figure 16.3: **The Cave of Hearths and Historic Cave hillside as seen from the opposite slopes of the valley and looking south westwards (June 1969) (Photo B. Maguire)**

16.5 MAKAPANSGAT LIMEWORKS

The hope is that at some future date a special-interest tour featuring the long history of mining in the district could be developed. Ancient specularite mines occur near Potgietersrus and the Ficus Iron Age area preserves many relics of local Iron Age traditions. The idea would be to link known mining and/or metalworking localities in an "Early Mining Trail", with its terminus at the Limeworks as the most recent local mining venue. The historic Eersteling Mine and possibly even the active diamond mines in the area could be incorporated.

Mining installations (such as the cocopan tracks and cocopans) could be re-established in a route across and through parts of the Limeworks in such areas that would not interfere with scientific priorities. It might be possible to create a replica of a lime-burning kiln.

The development focus of the Limeworks (Figure 16.4 & 16.7) is to present the Geological and Palaeontological context of this world-famous ape-man locality in a fascinating way without compromising the scientific integrity, visual aesthetics or mood of the locale in any way.

Access and infrastructure at the Limeworks are shown on Figure 16.7. Parking off the SANTEC road must be provided. Interpretation and facilities should be implemented at this point. A living "Mining Village" can be accommodated at the Limeworks.

Parking to be constructed on the east of the tar road up to the Cave of Hearths, as shown on the Sketch Plan, will have several advantages:

- It would not impair the visual aesthetics of the heritage site as there is a natural depression in the topography. The parking area would somewhat be sunken in an area which is amenable to concealment by using well-sited vegetation / screen planting.
- The pedestrian access to the Limeworks would be on an easy gradient – virtually along the contour.
- This would make the site accessible to the unfit, elderly and disabled as they would not have to climb up the rubble slope of the dumps or walk up the hill.
- Visitors would access the site without needing to pass the "academic" area with the existing shed and the vulnerable breccia camp; which could be fenced off if needed.
- No private vehicles will be allowed in the surveyed "declared" area of the Heritage Site.
- No private vehicles will be allowed in to drive over or park over undermined areas.
- An entrance gate need to be constructed, as indicated on the Sketch Plan (Figure 16.7) – to control access to the site.
- Access will be constructed along the existing flat usable rail track. Rocks need to be cleared and the pathway clearly demarcated.
- It is proposed to relay sections of redundant cocopan track from the entrance gate into the main quarry alongside conveyor-belting / boardwalks with the turning circles re-installed at the junctions for the cocopans.
- Two and three dimensional constructions of the sabre-toothed cat, giant dassie, giant porcupine, giant hyena, giant warthog and *Australopithecus africanus* family can be displayed in the area.

There are several points of interest (Figure 16.4 & 16.7) within the Makapansgat Limeworks area which can be incorporated into the proposed tour. These are:

Viewpoint 1 – Fig Tree

- The large Fig Tree constitutes a natural "boma" or "lapa" where groups can be addressed in the shade.
- The Fig Tree Viewpoint can be used to point out general landform and geographical features. It is an ideal orientations spot. The tufa deposit can also be seen from here as well as several faults

Viewpoint 2

Introduction to geology

Viewpoint 3

Mining information, statigraphy and the blackened bone

Viewpoint 4

Classic section and stratigraphy with a discussion of grey breccia and fossil bat guano

Viewpoint 5
Remainder of the stratigraphy and the collapsed cone

Viewpoint 6
Fossil blow-fly pupae

Viewpoint 7
Summary with an explanation board

Viewpoint 8
Cave of the Horse's Mandible

Viewpoint 9
Rodent corner

Viewpoint 10
Rodent archway and cave pearls

Viewpoint 11
Owl and palaeo-environments, red muds and cave ecology

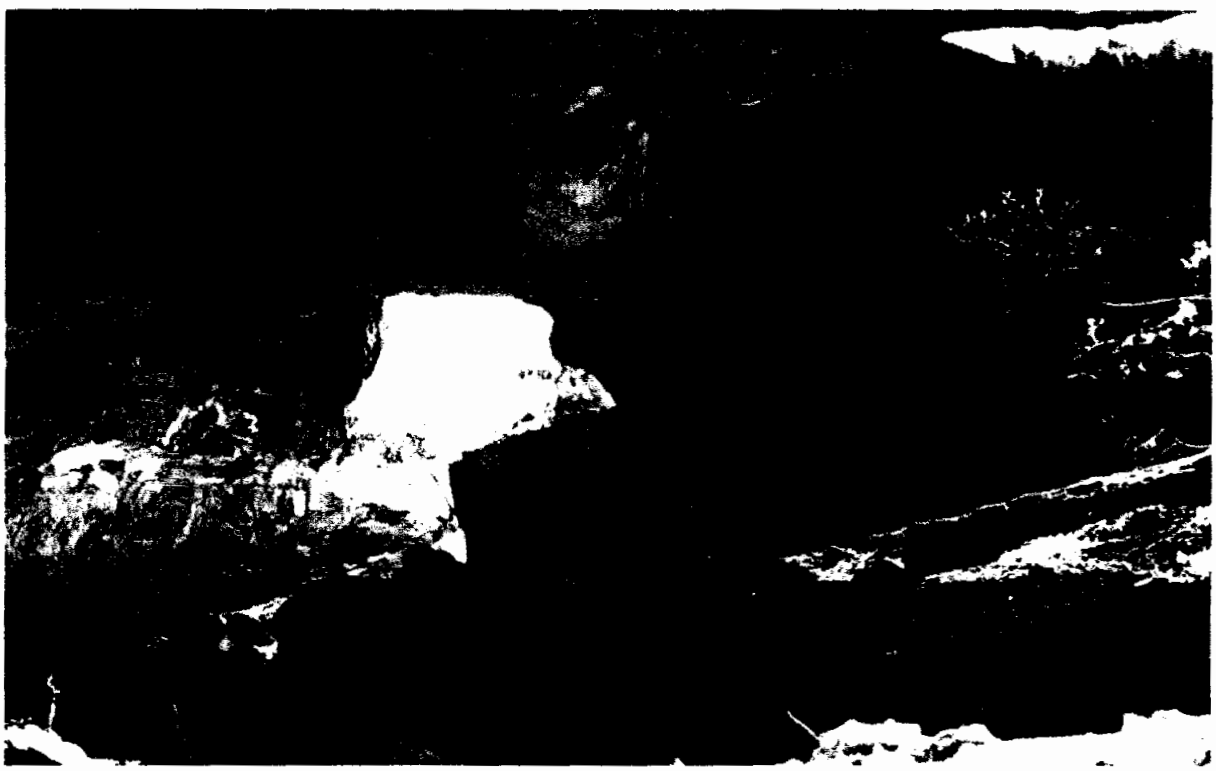


Figure 16.4: **View of the interior of the Makapansgat Limeworks 'cave'. Note the collapsed rubble (right) and the huge fallen roof block. The perimeter of the cone is highly unstable and unsafe (Photo: J. Maguire)**

16.6 "MINING VILLAGE" CAMP

To capitalise on the region's lime mining history, it is proposed that the theme of this camp be that of a turn-of-the-century mining camp. Although the use of such as theme does not dictate unusual management programmes, wherever possible in the day-to-day routines every opportunity should be made to carry out this theme.

16.7 TRAILS

Trails are used where they can enhance public enjoyment of the environment and utilize the wildlife, scientific (archaeological and palaeontological) and other natural (e.g. geological) resources. Trails are proposed in the moderate and low land use zones (Figure 16.5) which include lower impact recreation facilities, such as hiking trails and overnight shelters.

16.7.1 Hiking trails

There will be two kinds of trails; one is primarily for trail activities (hiking, experiencing the bird life) and the other is to provide access to and between areas of tourist interest. Environmental considerations for both types will be the same in most instances.

The trails can be planned to include points of geological, palaeontological and archaeological, faunal and floral importance.

16.7.2 Bridal trails

The bridal trails can either accommodate trips within the MVCL or longer overnight trails that will include parts of the Highlands Water Conservancy (HWC). The stables for the horses will be accommodated in one of the old kraals at the Peppercorn Complex (Figure 16.6).

16.7.3 Mountain Bike trails

The mountain bike trails can also either accommodate trips within the MVCL or longer overnight trails that will include parts of the HWC. The mountain bike trails will start and end at the Peppercorn Complex. Rustic overnight facilities can be provided within and outside the boundaries of the MVCL.

16.8 THE HIGHLANDS WATER CONCERCANCY

By negotiating with the owner of Spanje, a reserve/conservancy, known as the Highlands Water Conservancy (HWC), could be created with the 11 Zebediela "water farms". The additional territory could increase the tourism options (e.g. mountain biking trails, overnight hiking trails and special interest trails). The fauna still present in the Makapansgat Valley Cultural Landscape provides numerous educational opportunities for school age children that could be used as an extension of the school syllabus.

It is important to note that the developments mooted for the Makapansgat Valley Cultural Landscape will ultimately form part of a broader more ambitious concept: Makapansgat, with its various important sites is seen as the 'Crown Jewel' of a large 17,000 ha "Makapansgat Highlands Conservancy Project". This, in turn, will form the core of the "Makapan Strijdpoort Conservancy" which will ultimately encompass some 55,000 ha and include not only the seven TLC "Water Farms" and the farms controlled by the Zebediela Citrus Estates, but the land once controlled by the Lebowa Agricultural Corporation as well as some 21 privately owned farms with at least 30 land owners. This would include all the land bounded by and east of the R101, the road linking the R101 with Zebediela which passes east of the Makapansgat Highlands and the Zebediela-Potgietersrus road.

The seven Potgietersrus TLC "Water Farms" and the farms controlled by the Zebediela Citrus Estates creates the opportunity to be incorporated into a water conservancy, the Highlands Water Conservancy (HWC). The HWC would afford protection for the unique mountain flora and fauna, and high-altitude bird life, and could expand on the tourist options on offer at Makapansgat Valley Cultural Landscape such as mountain biking trails, hiking trails, tree- and bird identification trails and other low-impact tourism.

The possibility of harvesting Highlands Spring Water (but not on the farm Makapansgat; there is insufficient Spring water) could be investigated. Profits form the sale of bottled water could be ploughed back into developing the Conservancy and tourist options within it.

16.9 MEDICINAL PLANT CULTIVATION

A further development is the recent and increasing interest in South African medicinal plants by international pharmaceutical companies. Cape Aloes (*Aloe ferox*) has long been an ingredient of commercially available "Lewensessens" and "Schweden Bitters", as has *Agathosma betulina* ("buchu"), but new products include "Devils' Claw" (*Harpagophyton procumbens*), now a medicinal plant of international importance with approximately 500 tons traded annually. This output is almost solely harvested from wild materials (op. cit.),

With the increasing interest in the ability of the iridoids present in Devils' Claw to alleviate gout and arthritic pain, there is a danger of over-exploitation of wild resources in all southern African countries where the pant occurs. Botswanan exports to Germany have resulted in a scarcity of wild plants (Roodt, 1998). This is exacerbated by the fact that it is the roots of the plant that are targeted, resulting in eradication (literally pulling out by the roots). Sustainable harvests can be achieved by leaving the substantial thick tap root and harvesting only the thick, fleshy secondary roots which spread out from the perennial tap root.

Veld harvesting (on a sustainable basis) can be incorporated with the development of a medicinal plant nursery located in the high impact zone on the alluvial soils.

16.10 UTILITY SERVICES

16.10.1 Electrical supply

Electrical supply to the Peppercorn Complex will make use of the existing ESCOM power to the homestead. This principal will apply to any other developments in this zone of intensive

development. The overnight shelters can make use of solar power for the limited heating of water and lighting.

16.10.2 Water supply

Water supply to the proposed infrastructure in the Valley will make use of the existing water reticulation system. Water can be supplied to the overnight facilities by means of water pumps and tanks.

16.10.3 Refuse disposal

Refuse and waste generated at the Makapansgat Valley Cultural Landscape will be collected in steel containers and disposed of when necessary at the Potgietersrus municipal waste dump.

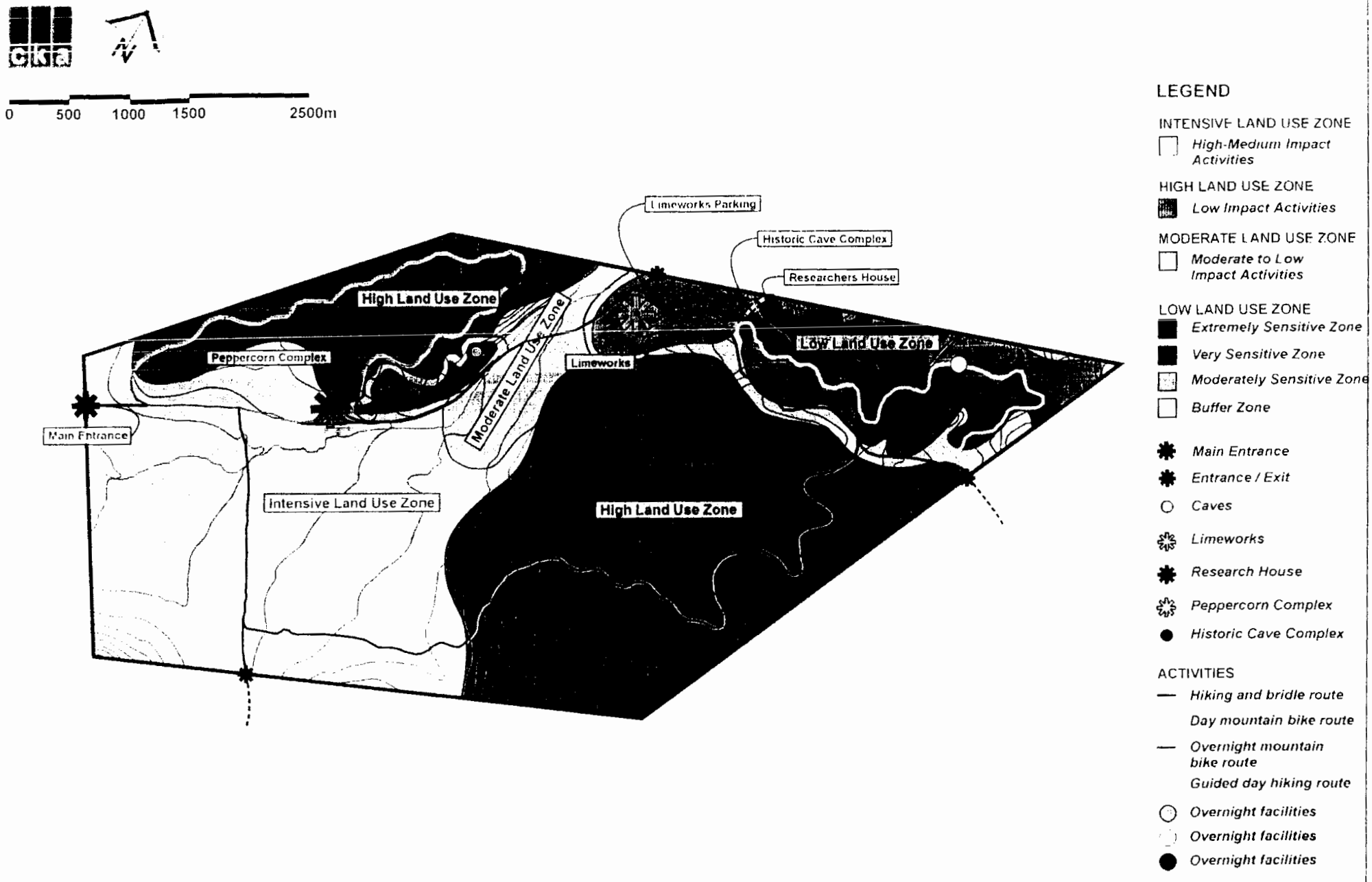
16.10.4 Sewage treatment

The Peppercorn Complex and associated activities will necessitate the collection of sewage in holding tanks and transported to the Potgietersrus sewage treatment plant when and if necessary.

At overnight facilities and sites of importance, sewage can possibly be treated by means of the Enviro Loo System. The Enviro Loo utilises ambient heat and natural ventilation for the drying and composting process. The unit is a sealed system, which does limit the number of users per toilet per day, to ensure the efficiency of the drying process. It is recommended that not more than twelve (12) users per toilet per day for the Enviro Loo 2010 Model. For optimum results the toilet should be positioned in the sun facing aspect of the dwelling. The Enviro Loo is available from Enviro Options (Pty) Ltd. (011) 708-2245.

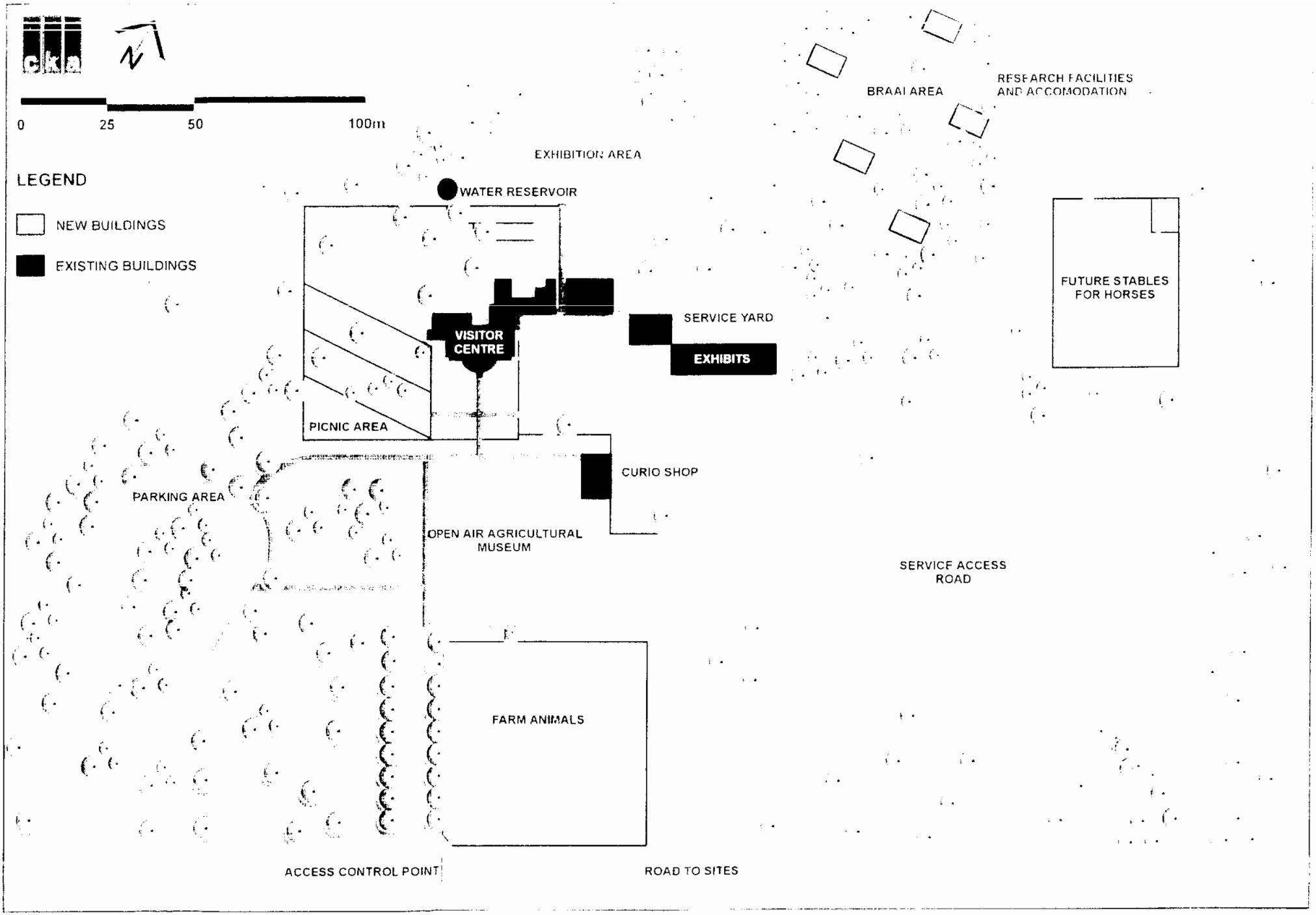
16.11 STAFF HOUSING

The staff of the Makapansgat Valley Cultural Landscape will be housed in the vicinity of the Peppercorn Complex, thus centralising all the high impact activities in one area. Staff can also be housed in Potgietersrus.



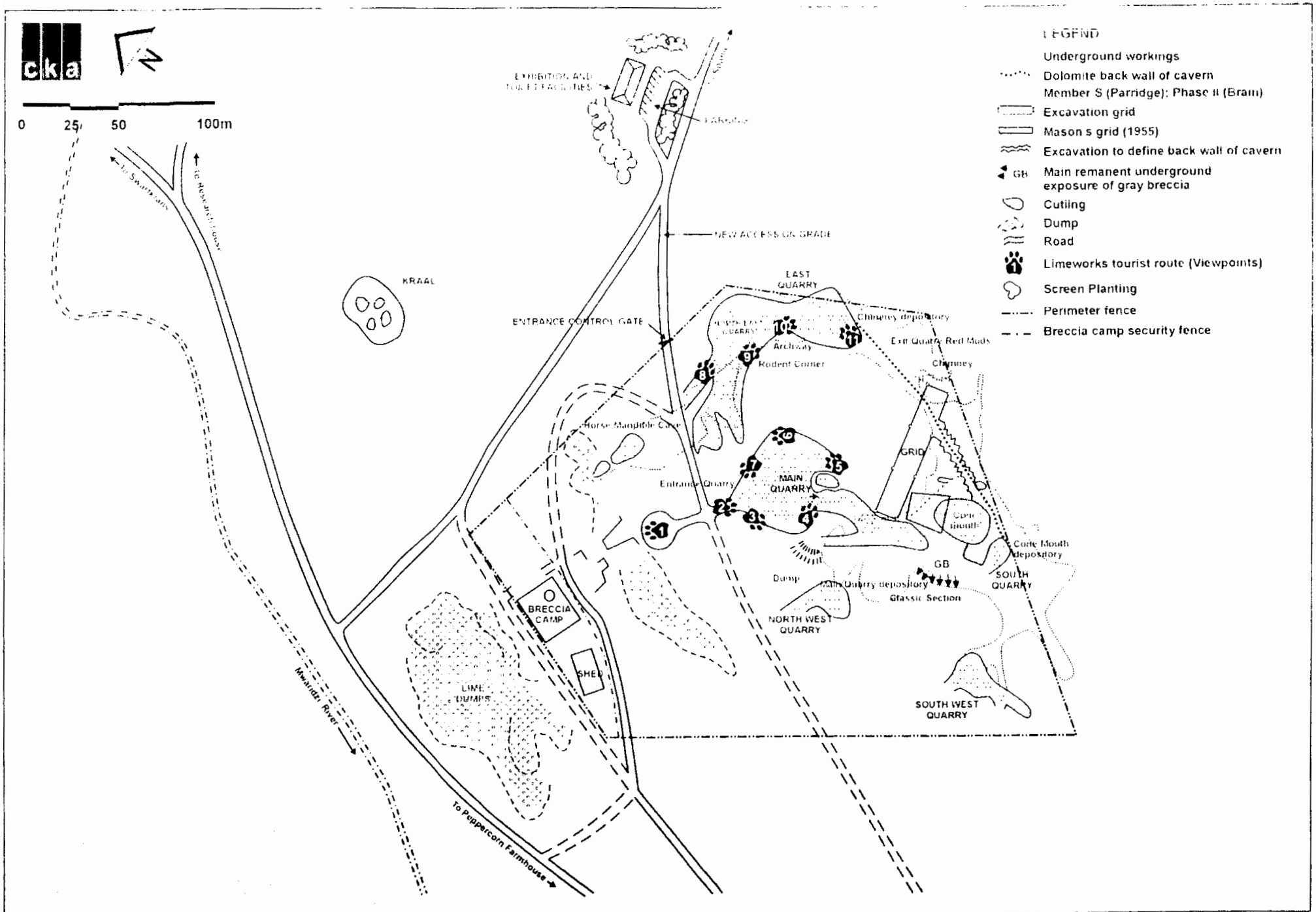
MAKAPANSGAT VALLEY CULTURAL LANDSCAPE MASTER PLAN

FIGURE 16.5



PEPPERCORN COMPLEX SKETCH PLAN

FIGURE 16.6



LIMEWORKS SKETCH PLAN

FIGURE 16.7

MAKAPANSGAT VALLEY CULTURAL LANDSCAPE MASTER PLAN

CHAPTER 17 FURTHER WORK REQUIRED

17.1 INTRODUCTION

Several aspects and issues not addressed in the Client's brief to the Consultants emerged during the course of this study. These issues require attention and action to ensure the successful implementation of this Master Plan.

The fact that the informal settlers still reside on the property and that their numbers have grown significantly during the planning stage despite the fact that the planners were led to believe that they would be moved has highlighted the need to undertake a specific social impact assessment. Without a practical solution to the informal settlement problem, the Master Plan as proposed cannot succeed.

17.2 ENVIRONMENTAL ASSESSMENT

A detailed examination of the environmental impact of proposed developments and of their associated human impacts should be undertaken as part of future developments not covered by the Makapansgat Valley Cultural Landscape Master Plan.

17.3 SOCIAL IMPACT ASSESSMENT

It must be noted that the Makapansgat Valley Cultural Landscape Master Plan Development did not include a social analysis at the level of a Social Impact Assessment (SIA). This has become necessary due to the fact that informal are still resident despite an order to have them relocated.

17.4 FAESIBILITY STUDY

Long-term economic viability of proposed developments, staffing requirements, job opportunities, maintenance costs was not covered by the Makapansgat Valley Cultural Landscape Master Plan Development.

17.5 MARKETING STRATEGY

Potential users (local, national, and international) need to be targeted. This and was not covered by the Makapansgat Valley Cultural Landscape Master Plan Development.

17.6 FUNDING

A plan for funding must be secured for the following activities:

- development and implementation of the proposed Makapansgat Valley Cultural Landscape Master Plan
- for further planning, EIA's, SIA's and tourism developments

- for the guide training programme
- for ongoing research

17.7 NATURAL FEATURES

17.7.1 Climate

In view of the paucity of the climatic data from within the MVCL two meteorological stations should be established: one in the highland zone (Makapansgat Highlands) and one in the lowland zone (Makapansgat Valley). Particular attention should be given to the collection of rainfall (hydrometeorological) data.

17.7.2 Water quality

To monitor water quality, periodic water samples should be taken at agreed points in the MVCL. It would be desirable to take these samples shortly after heavy rainfall events, with particular attention given to determination of the suspended sediment load. A research programme must be implemented to determine the impact of pollution from the waste of the informal settlers, especially the impact on the ground water reserves.

17.7.3 Flora / Vegetation

It is recommended that a research programme be aimed particularly at fire management. This programme should meet the following requirements:

- Detail the occurrence of natural fire
- Predict fire behaviour under various conditions
- Detail and predict the ways in which different types of fire affect the major components and communities of the MVCL, under different climatic cycles.
- Integrate the foregoing information into a fire management model, to facilitate decision-making among management staff concerned with fire application and control.

17.7.4 Fauna / Animals

Further research into avifauna, reptiles, amphibians and invertebrate fauna of the study area.

17.7.5 Environmental Management Plan (EMP)

A detailed plan still needs to be developed which sets out the management and monitoring parameters to ensure environmental soundness during the implementation and operational phases.

17.8 COMMUNICATION AND TECHNOLOGY

17.8.1 Identity / branding

To ensure that all communication activities are cohesive and that there is a strong corporate identity. One of the first activities will be to develop a logo that strongly links with printed and visual material. The activities completed and to be completed under branding are: logo, poster, kiosks, billboards/signage and notice boards.

17.8.2 Printed material / educational material

To promote the area and provide details to various stakeholders, a range of printed material needs to be produced. This material could include an information booklet, a map (for both directional and educational use), a folder (for media and other use), a newsletter and a poster. The newsletter will have, as its core objective, to keep the immediate community updated on the WHS status.

17.8.3 Promotional material

T-shirts and banners can form part of the promotional material. T-shirts will promote the logo and can also be used in some of the media activities planned.

17.8.4 Media campaign

An ongoing media must be initialised.

17.8.5 Public support and commitment

To highlight the significance of the area and encourage support for the bid, a pledge campaign could be introduced which will run throughout the nomination period. Pledge books can be placed at strategic points throughout the country.

A conference can be an ideal opportunity for key stakeholders and the scientific community to highlight the significance of the area and provide context to the strong cultural links and the heritage of Southern Africa.

17.8.6 Web Site

A web site, providing details of all the finds, as well as copies of relevant material from the scientific community, will provide additional promotion for the site - this needs to be developed. There are various links that can be investigated that would add value to the web site.

17.8.7 Information system

Development of a high quality information display system of international standard for the purposes of orientation and interpretation.

17.9 TRAINING AND CAPACITY BUILDING

17.9.1 Objectives

The objectives of the capacity building and training plan are identified as follows:

- To mitigate for unintended consequences of the WHS listing;
- To conserve the area and build capacity;
- To promote sustainable development by way of empowering people, creating jobs, and shifting attitudes;
- To build knowledge and respect for our diverse heritage and the World Heritage Convention.

A training and capacity building plan needs to be developed to meet the above objectives.

17.9.2 Training of guides

This is an essential management component that will have to be addressed early on in the implementation phase. It will entail intensive training in order to project a positive image, and ensure and enhance the tourist value of the MVCL. The Makapansgat Valley Cultural Landscape Master Plan proposed a draft guide training programme in Chapter 15 Tourism.

17.10 FINANCIAL MANAGEMENT PLAN

It is essential to develop a financial management plan. Sustainable conservation management relies on a comprehensive yet practical financial plan. This plan sets forth capital expenditures and annual operating costs and provides a pro-active strategy for filling anticipated gaps in funding. The Financial Plan also tests the feasibility of a variety of development options, generated to create additional revenues or to recover certain costs. Having a Financial Plan will allow for better overall management and conservation planning. By anticipating expenditure requirements, managers are better able to prioritise and allocate resources accordingly. Financial planning allows more time to react on behalf of conservation efforts, in the face of changing government funding priorities or economic conditions. The economic benefits of conservation in the area will also be communicated, ensuring long-term local and national support.

Sources of funding and capital financing must be identified. The Financial Plan will assess investment and donor funding opportunities. Potential funding opportunities will be summarised in a pro-active strategy.

NOMINATION DOSSIER FOR INCLUSION ON THE WORLD HERITAGE LIST

THE TAUNG SKULL FOSSIL SITE

AN EXTENSION OF THE FOSSIL HOMINID SITES OF STERKFONTEIN, SWARTKRANS, KROMDRAAI AND ENVIRONS

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NOMINATION DOSSIER FOR INCLUSION ON THE WORLD HERITAGE LIST

THE TAUNG SKULL FOSSIL SITE

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Menno Klapwijk	Project co-leader Site assessment and planning
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Clive Bapela	Community liaison
Peter Beaumont	Archaeology
Vincent Carruthers	Tourism assessment and Planning History
Kobus Geldenhuys	GIS Mapping
Lisa Hopkinson	Legal issues
Murray MacGregor	Pre-cambrian palaeontology Tourism training
Andy Manson	Post Iron Age History
Jeff McKee	Palaeontology
Elsabe Olivier	Administration Report preparation
Louis Scott	Palynology

NOMINATION DOSSIER FOR INCLUSION ON THE WORLD HERITAGE LIST

THE TAUNG SKULL FOSSIL SITE

SECTION 1: IDENTIFICATION OF THE PROPERTY

a. Country

The Republic of South Africa.

b. State, Province or Region

North West Province.

c. Name of property

The Taung Skull Fossil Site, an extension to "The Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai and Environs" (FHSSSKE).

Name proposed for the extended World Heritage property: "The Fossil Hominid-bearing Sites of South Africa".

d. Exact location on map and indication of geographical coordinates to the nearest second

Coordinates for the Taung Skull Fossil locality itself:

S: 27° 37' 10"
E 24° 37' 59"

Component of Serial Cluster	Province	Nearest Town	Coordinates of Central Point	Area of Core and Buffer Zone
The Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai and Environs	Gauteng Province, South Africa	Krugersdorp	S 25° 55' 45" E 27° 47' 20"	Core Area: 25 000 hectares approx Buffer Zone: 28 000 hectares approx
Taung Skull Fossil Site	North West province, South Africa	Taung	S 27° 37' 10" E 24°37' 59"	Core Area: 158.7429 hectares Buffer Zone: (proposed)
Makapan Valley	Limpopo Province, South Africa	Mokopane (Potgietersrus)	S 24° 08' 29" E 29° 12' 05"	Core Area: 2220 hectares Buffer Zone: 55 000 hectares approx

e. Maps and plans, showing boundary area proposed for inscription and proposed buffer zone:

All maps are appended in Annexure 1 - MAPS AND PLANS.

Maps have been provided in A4 reductions as well as in digital format.

Fig 1: Taung Skull Fossil Site Locality Map
Source: BCK November 2003
Scale: 1:13 200 000
(an orientation map showing South Africa on the African continent)

Fig 2: Taung Skull Fossil Site: Provincial Locality Map
Source: ENPAT Environmental Potential and Tourism Atlas
Scale: 1:2 5000 000
(a map showing the location of North West Province in South Africa)

Fig 3: Taung Skull Fossil Site: Regional Locality Map
Source: BCK November 2003
Scale: 1:1 500 000
(a map showing the Taung Site in relation to regional towns)

Fig 4: Taung Skull Fossil Site: Site Boundary
Source: Surveyor General Map Sheet 2724 DA and 2724 DB
Scale: 1:100 000
(a map showing the site in relation to the official topocadastral map of the area)

Fig 5a: Taung Skull Fossil Site: Buffer Zone
Source: BCK November 2003
Scale: 1:60 000
(a map showing the site, with boundary marked, in relation to the proposed buffer zone)

Fig 5b: Taung Skull Fossil Site: Buffer Zone with farm boundaries
Source: BCK November 2003
ENPAT Environmental Potential and Tourism Atlas
Scale: 1:200 000
(a map showing the buffer zone in relation to existing farm boundaries)

Fig 6: Taung Skull Fossil Site: Existing Site Plan showing heritage sites
Source: BCK November 2003
Scale: 1:7 500
(a map showing the numerous palaeontological and archaeological sites within the Taung Skull Fossil Site)

Fig 7: Taung Skull Fossil Site: Proclaimed boundaries
Source: SAHRA North West Province
Scale: 1:15 000
Date: June 2002
Projection: Standard Surveyor-General's Map
Area: 158.7429 hectares
(a map representing proclamation area over the remainder of the Farm Taung No. 894 – HN)

f. Area of property proposed for inscription (ha) and proposed buffer zone

Core Area: 158.7429 hectares
Buffer Zone: Approximately 3 387 hectares

SECTION 2: JUSTIFICATION FOR INSCRIPTION

"The Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai and Environs" (FHSSSKE) was inscribed on the World Heritage List in 1999. The World Heritage Committee determined that "the Sterkfontein area contains an exceptionally large and scientifically significant group of sites which throw light on the earliest ancestors of humankind. They contain vast reserves of scientific information, the potential of which is enormous". For the reasons stated below, the Taung Skull Fossil Site, which exhibits many of the same characteristics, should be included in the same World Heritage property as a serial extension to this property.

Taken as a whole, the sites contained within the Taung Skull Fossil Site property extend and enrich the information that has been extracted from the Sterkfontein area in a way that expands the information available on the process of human evolution and hominization in this southernmost of all Australopithecine localities

a. Statement of significance

As the name suggests, the Taung Skull Fossil Site derives the greater part of its significance from the partial skull and associated endocranial cast of a juvenile ape-man or *Australopithecus africanus,* which was recovered from a cavity within a limestone tufa in the course of commercial mining operations. The discovery and recognition of the significance of the Taung child and the remarkable insights and revolutionary claims of Raymond Dart created not only a new genus and species of hominid, but a series of new fields of scientific endeavour, including African palaeo-anthropology. The discoveries at Taung wrought ground-breaking changes in scientific thought in several scientific fields, and set in motion a chain of events which would lead,

ultimately, to the discovery of the important hominid sites of the Sterkfontein Valley in Gauteng as well as the Makapan Valley in the Limpopo Province.

Taung, as the type locality of *Australopithecus africanus* - the first place on earth where this species was found - occupies pride of place as the starting point for studies of human evolution on the African continent. The Taung site records an important stage in the emergence and evolution of humans and their close relatives, and as such, it has universal significance.

However, the Taung Skull National Heritage Site includes much more than just the site of the skull find itself. It has a fascinating geological and geomorphological history that predates the skull site and contains several deposits that encapsulate evidence of sporadic occupation by emerging man and animals for over three million years. It thus chronicles a broad time-spectrum of events from the Precambrian to the present, including sites of palaeontological, archaeological, historical, economic, mining and natural heritage significance.

The seminal discovery and recognition of the evolutionary significance of the Taung Skull established Taung as the starting point for the study of palaeo-anthropology on the African continent, and re-focussed the spotlight from Asia, where early researches had begun, the Africa, where it remains, now established as the undisputed Cradle of Humankind.

Associated with and possibly contemporaneous with the fossil skull were found numerous fossilised mammalian, avian and reptilian remains from an extraordinarily broad spectrum of animals, but particularly those of extinct baboons. These have allowed taphonomic interpretations of the mode of accumulation of the tufa fissure deposits to be undertaken, which differ significantly from those interpreted for the FHSSSKE sites.

The justification for universal value resides in the fact that the Taung Skull Fossil Site has Type Locality status, while the fossil skull itself is the type specimen of the genus and species *Australopithecus africanus*, as well as defining the characters of the subfamily Australopithecinae.

b. Comparative analysis

The Taung Skull Fossil Site can be compared to a number of World Heritage sites that are of palaeontological and palaeo-anthropological importance. These include the following:

- The Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai and environs
- The Cradle of Humankind, Gauteng, South Africa (inscribed 1999)
- The Sangiran Early Man Site in Java, Indonesia (listed 1996)
- The Peking Man Site at Zhoukoudian, People’s Republic if China (1987)

- Australian Fossil Mammal Sites: Riversleigh/Narcoorte (1994)
- The Lower Valley of the Awash, Ethiopia (1980)
- The Lower Valley of the Omo, Ethiopia (1980)
- Olduvai Gorge (1981)

Six of the above listed sites have yielded the remains of ancient hominids together with those of other fossil mammals and non-mammal vertebrates (Cradle of Humankind, Sangiran, Zhoukoudian, Olduvai, Awash and Omo). In this respect, they may be likened to the Taung Skull Fossil Site. The Sangiran, Awash and Omo sites are "open" sites, accumulated in the sediments on the shores of lakes or on river banks. In this respect, the sites are most extensive, especially the river valleys of the Awash and Omo. On the other hand, the conditions for the protection and preservation of bones and teeth are not as satisfactory, in general, as those obtaining in cave or limestone tufa deposits, such as those of the Taung Skull Fossil Site. Of the comparative sites listed here, those of the Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai and Environs and Zhoukoudian are the most similar to the Taung Skull Fossil Site in that they comprise a series of fissures and caves in a karstic formation. The Taung site is unique in that the fossils have been preserved in breccia-filled fissures contained within a limestone tufa deposit. Within the Zhoukoudian cave deposit, the preservation of the remains of *Homo erectus* is excellent and comparable in quality with those of the South African Australopithecine deposits, although much younger in geological age (0.5 million years and younger) than the Plio-Pleistocene fossil deposits of South Africa.

While the Zhoukoudian caves are the world's richest source of fossil remains of Homo erectus, the Sterkfontein Valley sites are the richest sources of two different species of early hominids, namely *Australopithecus africanus* and Australopithecus (Paranthropus) robustus. The Taung Skull Fossil Site not only preserves remains of the hominid *Australopithecus africanus* and other as yet unidentified fossil hominids, but also many thousands of the fossil bones of a wide variety of taxa of mammals as well as fossil invertebrates, ostrich eggshell, and plant material in the form of fossil pollens and phytoliths.

It is clear that, if the Cradle of Humankind, Zhoukoudian, Sangiran, Omo, and Awash have been deemed worthy of listing by the World Heritage Committee, then a very strong case exists for the listing of the Taung Skull Fossil Site and its dense clustering of palaeontological and archaeological sites. The Dart Pinnacle deposit and Hrdlicka's Pinnacle deposits are especially rich for their time levels, particularly in diversity of species represented and in baboon fossils, as compared with other sites.

The Taung Skull Fossil Site is the only limestone tufa deposit which has yielded hominid remains to date. Other hominid-bearing sites on the African continent and elsewhere are either cavern deposits or open sites close to

fluvial or lacustrine systems, where bones are often dispersed. There is thus no comparable hominid locality on the African continent or elsewhere.

The site is also the southernmost of all known australopithecine-bearing fossil deposits as well as representing a depositional environment that was indicative of a savanna rather than a woodland.

As an extension of the "FHSSSKE", the Taung Skull Fossil Site complements the original nomination in the following aspects:

- It has particular significance as the Type Locality of the important hominid genus *Australopithecus*; also found in the FHSSSKE hominid-bearing cavern deposits.

- It has particular significance in that the fossil remains have been recovered from a tufa carapace rather than from cavern deposits.

- The site is well to the south of the FHSSSKE, being the southernmost of all australopithecine-bearing fossil deposits, and its geographical location and elevation represent an environment now and in the past that was different from hominid sites elsewhere.

- The taphonomic agents that were active in the vicinity of the Taung fissure deposits appear to have differed in some respects to those of the Sterkfontein area.

Several factors link the Taung Skull Fossil Site to "The Fossil Hominid Sites of Sterkfontein, etc"

- The Taung Fossil Site contains at least one extinct fossil hominid in common with the FHSSKE: namely *Australopithecus africanus.*

- The Taung Fossil Site is in part contemporaneous with the Sterkfontein Site, such that its oldest deposits overlap with part of the Sterkfontein stratigraphic column.

- The fossil fauna preserved at Taung both duplicates and extends that present in the FHSSSKE. Certain fossil faunal elements characteristic of the Taung savanna biome are unique.

- Taung is not only of historical significance in human evolutionary research and palaeontology, but is unique in other important respects:

    - Taung is the southernmost early hominid fossil site, and of the greatest latitude of any hominid fossil site of the Pliocene.

- Taung is the only early hominid to have been discovered in the infills of tufa caves.

- Taung is one of the few early hominid sites for which the associated fauna suggest an open savannah environment for an australopithecine.

- In all other respects, the criteria given for "The Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai and Environs" pertain.

c. Authenticity

Nearly 80 years of research has proven high levels of authenticity and integrity. The fact that the specimen is a type, will ensure a permanent universal significance for itself and the discovery site, and the specimen will always remain a standard of comparison in taxonomic publications.

Although, as indeed is the case with all excavated fossils and artefacts, the original connection of the Taung Skull with its host breccial fill has been destroyed by mining, enough of the original deposit remains in the close vicinity of the find to provide site authenticity. Fossil fragments in situ in the remaining fissure breccias can be demonstrated. Associated fossils of a wide range of animals, particularly those of fossil baboons, provide intriguing insights into the palaeo-environment and mode of accumulation of the fossil deposits.

The evocative ambience of the vast abandoned quarry, throughout the length and breadth of which not a single other Australopithecine has been found, provides an impressive sense of the uniqueness of the find, as well as a special kind of site authenticity.

Although, as the type, the original skull cannot be stored or displayed on site, excellent casts of it exist which can be returned to the site, as a form of restoring site significance. In this way, the features which render the site of universal significance may be represented in their entirety on the property.

The quarry was abandoned in 1977, and since that time, no further destruction of fossiliferous deposits has occurred. Mined faces provide interesting insights into the mode of formation of the series of tufas, and have exposed several other breccial deposits, some of which remain unexplored

d. Criteria under which inscription is proposed

(As a proposed serial site, the nomination needs to be consistent with the original FHSSSKE nomination, which was inscribed only under criteria (iii) and (vi).).

The Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai and Environs was inscribed on the World Heritage List in 1999 under Cultural criteria (iii) and (vi). In justifying these criteria, the World heritage Committee noted that "the Sterkfontein area contains an exceptionally large and scientifically significant group of sites which throw light on the earliest ancestors of humankind. They constitute a vast reserve of scientific information, the potential of which is enormous". The Taung Skull Fossil Site is justified under the same criteria:

i)	ii)	iii)v	iv)	v)	vi)v	vii)	viii)	ix)	x)

- ***Cultural criterion (iii)***

  The site bears a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared.

  The Taung Skull Fossil Site encapsulates remains not only from proto-human Australopithecine times over three million years ago, but from various segments of the Earlier, Middle and Late Stone Ages to the present. Alongside a rich testimony of stone artefacts is a well preserved record of animal and some human remains together with an interesting record, in the form of fossil phytoliths and pollens, which document a long history of climatic change in the subcontinent.

- ***Cultural criterion (vi)***

  The site should be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance.

  The Taung Skull site has a firmly -established niche in the history of scientific thought on humankind's distant origins.

  The discovery and recognition of the significance of the Taung child and the remarkable insights and revolutionary claims of Raymond Dart created not only a new genus and species of hominid, but a series of new fields of scientific endeavour, including African palaeo-anthropology. The discoveries at Taung wrought ground-breaking changes in scientific thought in several scientific fields, and set in motion a chain of events which would lead, ultimately, to the discovery of the important hominid sites of the Sterkfontein Valley in Gauteng as well as the Makapan Valley in the Limpopo Province.

  Studies of the fossil remains associated with the Taung Skull allowed Raymond Dart to develop his seminal ideas on the nature of proto-human behaviour and subsistence ecology. His claims generated many

of the central hypotheses directing and guiding subsequent work in cognate fields, and in this sense Taung came to occupy a central place in the history of palaeo-anthropological thought and ideas.

In addition to the above criteria, the Taung Skull Fossil site also qualifies under the following criterion:

- ***Cultural criterion (iv)***

Taung Skull Fossil Site is an outstanding example of a site which encapsulates a significant stage in the unfolding pattern of human evolution.

This is embodied in the Taung Skull itself, in which anatomically both ape-like and human-like characteristics are present. The skull embodies an early stage in anatomical hominization, and established Africa as the locus of the earliest beginnings of this process.

SECTION 3: DESCRIPTION

a. Description of property

I. General description of the property and the Buffer Zone

The Taung Skull Fossil Site is situated within a vast abandoned limestone quarry (the Buxton Limeworks) excavated into a series of ancient tufa deposits which have formed along the flank of the Ghaap Escarpment, just west of the Harts River, 17 km south west the town of Taung in the North West Province of South Africa (Maps 1-7 (Annexure1), Figs.1 - 8). The famous Taung Skull, Type Specimen of the Genus and Species *Australopithecus africanus* , was blasted by Limeworkers from a pink stony breccia fissure filling in the oldest of the tufa deposits, the Thabaseek Tufa, in 1924 (Figs. 9, 10).

The proposed World Heritage Site boundary includes the entire Buxton Limeworks area (Fig 4) because there remain numerous other fossiliferous deposits, some of them as yet unexplored, within the fenced area defining the quarry. This has a rather complex outline, necessitating co-ordinates for over 40 survey points. The diagram of the Proclamation Area and the 41 beacons defining its outline are provided in Map/Fig 7 Annexure 1.

The area of the National Heritage Site is 158.7429 ha (Fig 7) which includes the full extent of the former limeworks together with the associated lime-burning kilns, industrial buildings and mine compound. The entire Heritage Site falls within "the remainder of the property

Taung 894 HN" and is on state-owned land which falls under the sphere of influence of the Greater Taung Municipality and the local Batlapeng Tribal Authority.

A Buffer Zone (see Figs 5a and b) has been proposed to include those archaeological sites which fall outside the proposed boundary of the World Heritage Site. It has also been proposed with a view to preserving the rural ambience and setting of the Taung Skull Fossil Site and to prevent undesirable land use which may impact on site integrity. All activities which do not impact on the heritage values of the property will be allowed to continue. The buffer zone documentation and application has still to be finalised.

The map Fig 5a shows the buffer zone proposed. There is a problem in that it does not conform to the adjacent property boundaries, shown in Fig 5b. The reason for this is that the property adjacent to the heritage site is tribal land, the legal boundaries of which enclose a very large portion of land. There is simply no point in including the whole of such large pieces of property, as the imposing of buffer zone status will bring in its wake restrictions that will be difficult to impose on tribal territory. The smaller area is in any case is sufficient, and the necessary portions can be surveyed off and declared.

A buffer zone or protected area is allowed for in terms of the National Heritage Resources Act (NHRA, Section 28). The benefit of doing this would be to ensure some sort of control by the South African Heritage Resources Agency (SAHRA) over the type of development that can occur within the protected area as well as the type of activities that can take place. This process entails obtaining the permission of the landowner for SAHRA to publish a notice to this effect in the Government Gazette, that the area so designated is a “protected area”. Once such a protected area is proclaimed, any development that needs to take place must obtain the approval of SAHRA and the overall management agent still to be appointed. The proclamation of a protected area does not affect ownership of the property.

A buffer zone is needed to:

- Provide some protection for those archaeological sites which fall outside the proclaimed Heritage Site Boundary.

- To prevent undesirable land use which will impact on the sense of wilderness by allowing township development right up to the heritage site boundary. The uncontrolled spread of dispersed informal settlements has been deemed undesirable in the Integrated Spatial Development Framework Plan for the Greater Taung Municipality.

- To prevent the situation that the Taung Site becomes a small island in a sea of environmental degradation to the point that it becomes unpleasant to visit the site.

- To preserve ecological interactions which exist within the natural habitat inside the Heritage Site by preventing impacts in the surrounding territory which might jeopardise such interactions. An example is the continued existence of the resident troop of baboons and the nesting black eagles.

- To protect the visual integrity of the escarpment horizon.

- To protect relict patches of Kalahari Thornveld vegetation still present along the escarpment margin from destruction by restricting grazing to sustainable limits so that the site does not become surrounded by an overgrazed desert.

- To preserve Red Data Species habitats.

- To prevent the construction of structures which will affect visual aesthetics.

- To preserve the rural, traditional tribal ambience of the approach to establish an attractive approach to the site itself.

- To protect the buffer zone from undesirable categories of development which come in the wake of enhanced tourism.

The criteria governing the designation of the buffer zone boundaries are as follows:

- Generally, to include all those significant archaeological sites that have been excluded from the Heritage Site Boundary.

- Also, care was taken not to propose that too much or unnecessary land be included.

- On the west: Include the Ghaap Escarpment because it forms the strong visual backdrop to the heritage site and the visual integrity of the horizon needs protection from disfiguring elements such as the construction of reservoirs, communication towers, power pylons and power lines, housing that transgresses the skyline and roads. A strip of territory west of the escarpment is required to preserve the vegetation and plant communities that include several Red Data species' habitats.

- On the East: The old road and railbed of the Thomeng-Buxton connection, as these are significant cultural imprints.

- On the north, the road to the Thamasikwa Village, then following the ridge line down to the Taung-Buxton tar road. This has been done to preserve the natural appearance of the “first impression” approach to the site. A small informal settlement in the northeast corner of the buffer zone has had to be included.

- On the south, the southern extremity of the Thomeng Quarry. The Thomeng Quarry has been included not only as a cultural imprint but because it encapsulates several significant geological features.

It will be difficult for the buffer zone to strictly follow existing property boundaries as the Taung Skull Heritage Site borders on state-owned tribal land, so that at least one of the contiguous properties is huge. A more sensible suggestion would be to get the landowner to agree to a smaller portion of the property to be demarcated as part of a buffer zone (See Figures 5a and 5b).

II. Detailed descriptions of the Taung Skull Fossil Site and other sites of heritage significance within the proposed WHS boundary

- **The Dart Pinnacle, Hrdlika's Pinnacle and other sites of palaeontological importance**

  The Taung skull fossil site at the Buxton Limeworks is best known for the 1924 discovery of the type specimen of *Australopithecus africanus* (Dart, 1925). The remains of the facial skeleton and endocranial cast of this early hominid child were the first fossils to confirm Darwin’s (1859) assertions that human ancestry probably could be traced to Africa. The discovery inspired 80 years of exploration and excavation in Africa, yielding hundreds of fossils from southern, eastern, and central Africa that trace the evolution of humans and their ancestors for as much as 6 million years.

  The tufa accretions of the Buxton limeworks are riddled with fossil sites sampling the Pliocene and Pleistocene fauna. Most of these sites have not been excavated, and thus have potential for future research to investigate long term ecological changes in an area at the edge of the Ghaap Escarpment.

  The Taung skull discovery site comprises two localities near the monument cairn, each of which has multiple deposits. The Hrdlicka deposits have yielded primarily cercopithecid fossils, along with a sampling of numerous other species. The Dart

deposits are somewhat older, and have been postulated to be the remains of the cave infill from which the Australopithecus fossil came.

The fossil localities, GPS coordinates (accurate within 6 metres, except as noted), and site vulnerability of the main palaeontological sites are as follows:

Hrdlicka deposits	S 27º 37.165' E 024º 38.021' Elevation 1147 m	Fossils exposed, but secure in rock
Dart Deposits	S 27º 37.171' E 024º 37.990' Elevation 1145 m	Secure site, no exposed fossils
Tobias Pinnacle deposit	S 27º 37.215' E 024º 37.906' Elevation 1164 m	Secure site, barely visible
Berger Cave complex	S 27º 37.155' E 024º 37.841' Elevation 1172 m	Secure site, barely visible
Lucky Moon Cave	S 27º 37.068' E 024º 37.818' Elevation 1158 m	Secure site, barely visible
LSN Cave	S 27º 37.085' E 024º 37.812' Elevation 1148 m	Secure site, barely visible
Innominate Cave	S 27º 37.056' E 024º 37.823' Elevation 1153 m	Secure site, barely visible
Quinney Cave	S 27º 37.032' E 024º 37.855' Elevation 1151 m	Vulnerable if noticed
Cut-through alley	S 27º 37.030' E 024º 37.868' Elevation 1147 m	Secure site, barely visible
Black Earth Cave	S 27º 37.025' E 024º 37.950' Elevation 1158 m	Vulnerable if found
Peabody's Equus site	S 27º 36.954' E 024º 37.800' Elevation 1146 m	Secure site, barely visible
Equus Cave	S 27º 36.936' E 024º 37.775' Elevation 1147 m	Highly vulnerable, loose fossils everywhere

Blom Cave	S 27º 36.939' E 024º 37.815' Elevation 1149 m	Secure site, barely visible
Satan Cave	S 27º 36.845' E 024º 37.779' Elevation 1158 m	Vulnerable site, if noticed, loose fossils exposed
Alcove Cave *Coordinates only accurate to 20 m, due to rock-enclosed location	S 27º 36.762' E 024º 37.718' Elevation 1150 m	Secure site, barely visible
Oxland large mammal site	S 27º 36.782' E 024º 37.588' Elevation 1179 m	Large *ex situ* fossils visible in rock, secure except for the most adventurous visitor.
Acacia Cave	S 27º 37.155' E 024º 37.843' Elevation 1162 m	Secure site, barely visible

- **Sites of archaeological importance**

  Intermittent fieldwork over the past six decades at the Taung Skull site has shown that it was occupied by Stone Age peoples for a fair portion of the past hundred or more millenia, with arguably the four most important of the dozen known localities there being as follows:

  - Witkrans Cave where Layer C yielded Middle Stone Age artefacts and associated large mammal bones including two to three undescribed modern human molars, all dated to the last 89 000 years ago. This site falls outside the Heritage Boundary of the Taung Skull Fossil Site. It should be protected by being included in a Buffer Zone.

  - Black Earth Cave where one of the three strata in Gallery A yielded a large fossil mammal fauna including two modern human fragments that may be as old as or even earlier than those of the Witkrans.

  - Equus Cave where the deposits produced a vast large mammal sample (30 000 items) Identifications (representing 48 species), including modern humans pieces, reflect its use for over 30 millenia as a brown hyaena maternity den.

  - Power House Cave, where Later Stone Age artefacts and associated large mammal bones relate to an occupation

between 3700 and 2000 years ago which may therefore be the age of some schematic paintings on its walls

- **Sites of mining, historical or other cultural heritage importance**

  The Norlim Quarry at Buxton preserves a number of significant mining cultural imprints, in the form of a mining village "ghost town", relics of lime-burning kilns and other mining infrastructure. These all add to site ambience and can be used to demonstrate the significance of mining activities in the history of liberating the fossil story from its entombment in the limestone tufas.

b. History and development of the Taung Skull Fossil Site

- ***Early history of the Taung Site: Mining history***

  The commercial and scientific potential of the limestone deposits at Buxton was not recognised until early in the 20th century.

  The man who claimed to be the actual discoverer of the carapaces of limestone tufas at Buxton was a Mr M G Nolan, although the Batlapeng of the Taung area must long have known of Buxton's white rocks and the pools on the Thabasikwa River where cattle could be watered.

  The controversial press announcement of the discovery of the Taung Skull and its naming as *Australopithecus africanus* in February 1925 prompted Mr Nolan to voice his claim as the discoverer of the deposit in an interview with the Natal Advertiser (6 February 1925, p.7):

  "My brother is the owner of the Nolan Lime Works in Sterkfontein, near Krugersdorp. [The role of H. G. Nolan in the uncovering of the Sterkfontein caves about 1896-7 has been described by the late Professor C. van Riet Lowe, 1947, and by Tobia, 1979, 1983a]. He commissioned me, in my wanderings about the country, to keep my eyes open for any considerable deposits of limestone.

  Eventually I landed at Taungs, and while looking towards the east [sic] along the Kaap Plateau I noticed a white formation at about seven miles distance. Inquiries among the people living round about revealed the fact that this was dolomite. Knowing of course that dolomite is the mother of all limestone, I came to the conclusion that this white mass in the distance would probably turn out to be the sort of thing I was looking for.

  Following a ride on my bicycle, which I left in the charge of friendly natives at a neighbouring kraal, I made my way through dense bush to my goal, and found what I verily believe to be the largest deposit of limestone in the world. I lost no time in procuring a claim licence at Vryburg, entitling me to take over 1,000

acres. Then hastening back to the scene of my find, a spot known to the natives as Thaba Sige (Black Mountain) I found from rough measurements that the area under limestone was approximately the area allowed me under my licence.*

It was in this vast bed of limestone, at about 50 feet below the surface, that the now famous Taung skull was found.

While that unique relic is of enormous interest to the world of science, the great limestone is of more material value, and especially to the gold mining industry of the Rand, limestone being a substance essential to the process of gold extraction."

The name 'Nolan' remained attached to the limeworks at Buxton until 1919. Thereafter, the Northern Lime Company, having previously become associated with the Nolan Lime Company following a merger in about 1917 finally took over. It held the reigns until 1967 after which the mining was undertaken under the name of Pretoria Portland Cement (PPC). The kilns stopped burning and the mine closed in 1977.

The site preserves remains and relics of almost the whole of the commercial and industrial part of the mining village as well as some of the lime beneficiation infrastructure such as the bases of the lime-burning kilns. Unfortunately, "metal harvesting" after mining operations stopped has resulted in the total removal of the narrow gauge railway track as well as everything else that was made of metal including crushers and other mining installations. The result is that little sense can be made of the remnant dumps, kilns, ore passes, etc., and the visitor will gain little insight into the processing of lime. However, the entire history of the skull find is tied up with the story of lime exploitation on a massive scale and the visitor needs to understand this if the fact that the find site itself is not there any more is to be accepted and understood.

The history of the exploitation of the site as a large lime-quarry is therefore one of the first things that the visitor should be exposed to.

Entrance to the site should therefore be via the old mining infrastructure at the foot of the hill. Another element supporting this suggestion is the "sense of arrival" the visitor experiences after rounding the crest of the hill overlooking the Thabasikwa gorge, particularly after traversing the rather bland landscape on the approach to the site from the Mmabatho-Kimberley road.

- ***History of the Taung Skull Fossil Site: Events leading up to the discovery of the Taung Skull***

  Taung (formerly known as Taungs) was the site of the first discovery of the early hominid, *Australopithecus africanus.*

  At many places within the various limestone tufas at Taung, cavitous areas occur or occurred in the past. Some of these became filled with sediment and bones and other surface-derived materials such as ostrich eggshell. In time, the pinkish or reddish patches of sediment became calcified to form rich bone breccias: what the limeworkers were inclined to call “impure limestone”. It was from one such deposit that the Taung fossil skull was discovered.

  The first recorded discovery of fossilised bones at the Taung site was in 1919, when seven or eight small monkey or baboon skulls were sent to the South African Museum, Cape Town. On 20 May 1920 a paper on these fossils – very rare on the African continent – was read before the Royal Society of South African by S. H. Haughton. Even at this early stage, Haughton suggested that these extinct baboons “may extend back in point of time to a level contemporaneous with the early and possibly pre-Pleistocene of Europe” (Haughton 1925;68).

  Then, in November 1924, M. de Bruyn, a quarry man employed at the Buxton Limeworks blasted out of one of the pinkish “impure limestone” deposits a petrified skull and associated endocranial cast, which seemed to him to be much larger than those of the fossil baboons, of which he had previously recovered a number. The limeworks manager, A.E, Spiers, saved the specimen along with additional fossil baboon skulls.

  A week or two later, R.B. Young, professor of Geology at the University of the Witwatersrand, visited the Taung quarry as a consultant to the Northern Lime Company, and arrived in Spiers’ office, where the fossil in question was serving as a paper weight, according to one version of the story. Young had been alerted to the presence of fossilised monkeys and baboons at Taung by Professor Raymond. A. Dart, professor of Anatomy at the same university, and a specialist in skulls and brain morphology. Dart, in turn, had had his enthusiasm ignited by his only female medical student, Miss Josephine Salmons, who had shown him a well-preserved fossil Taung baboon skull from the Taung quarry which she had obtained from Mr. Pat Izod, son of Mr. E.G. Izod, at the time a director of the Northern Lime Company.

  Professor Young made a selection of fossils to take back to Professor Dart, fortunately choosing the endocranial cast and the related piece of breccia which enclosed part of a skull and mandible. These he brought

back to Johannesburg, handing them to Dart on 28 November 1924. The large endocast and skull fragments embedded in the pinkish breccia proved to be part of the hominid *Australopithecus africanus*.

Dart set to work on the embedded skull with unconventional tools such as sharpened knitting needles and dental picks. After about a month's work, Dart managed to extract the precious fossil from the cement-hard encasing breccia which enclosed it. He was been able to recognise that the brain cast, skull and jaw embodied an unprecedented blend of manlike and apelike features. Because of this, he was obliged to make the specimen the 'Type' of a new genus and species – and family (later subfamily) – which he named *Australopithecus africanus*. This means "the southern ape of Africa". He asserted that the Taung child (the fossil sported a full set of milk teeth) was an ape-like higher primate with rudimentary human-like anatomical features. It therefore filled the role of a "missing link". Dart claimed that his new species was ancestral to the genus *Homo*, and that it vindicated Darwin's 1871 prediction (in the book "The Ascent of Man") that Africa, and not Asia, was the cradle of humanity. (Source, *in partim*: Tobias: 1984)

In the whole of the huge limestone quarry at Taung, just this single ape-man or hominid fossil has been found. It was sheer fluke that it found its way into the hands of Professor Raymond Dart, who was perhaps one of only two or three people in the whole of South Africa at that time, who were able to appreciate and give expression to its uniqueness.

The universal significance of the Taung Skull Fossil site is vested primarily in this single unique specimen.

- ***Subsequent history: Since 1925***

  Sporadic research since 1925 has revealed a wealth of other palaeontological and archaeological deposits, many of them as yet unexplored. It has become clear that the site was occupied by Stone Age peoples for much of the past hundred thousand years. These sites have been documented in the Table above.

  Although the Taung Skull has an entrenched niche in the history of palaeo-anthropological thought and ideas on humankind's most distant ancestry, for a long time little was done to disseminate this evidence more widely, either locally, amongst local people, or amongst visitors.

c. Form and dates of the most recent records of the property

The most recent records of the fossil site are maintained at the addresses listed. Details of recent records and their repositories are also given in Section 7c (Inventory, Records and Archive addresses).

- ***Palaeo-anthropological records (also repository of some human remains and most of the fossil material)***

  - Department of Anatomical sciences, University of the Witwatersrand. Contact person: Prof. Phillip V. Tobias, Dr. K Kuykendall.

  - Department of Palaeontology, South African Museum, Cape Town.

  - Department of Palaeontology and Palaeo-anthropology, The Ohio State University, Columbus. Contact person: Dr Jeff McKee.

- ***Archaeological records (also the designated repository of archaeological remains)***

  - Macgregor Museum, Kimberley, Northern Cape Contact person: Peter Beaumont, David Hall.

- ***Palynological and phytolith record***

  - Free State University. Contact person: Dr Louis Scott.

- ***Botanical and Zoological data***

  - MacGregor Museum Kimberley. Contact persons: T Anderson (Botany) and C Anderson (Zoology)

Please see Section 7c for addresses.

Other significant records include:

- The Cultural Heritage Resources Survey of the Taung Skull National Heritage Site
- The State of the Environment report for the TS NHS
- The Management and Monitoring Plan for the TS NHS
- The Legal Status of the TS NHS
- Development and Site Plans of the TS NHS

All these documents are available from Mr N September, of the North West province SAHRA office.

Key Publications, Maps and Illustrations have been included in the Bibliography.

d. Present state of conservation

This section deals with an assessment of the present state of preservation of the cultural and natural resources of the site, the threats which are present or which might present themselves should tourism become a factor, and the risks that these threats pose to the sites or to the environment. It also provides an assessment of the research potential of the sites and their educational and tourism potential.

The information is presented in the form of a table below.

Recommendations regarding the future conservation of the heritage sites have been made.

- ***Geological and geomorphological heritage resources***

  None of the geological or geomorphological resources are at risk at present, except perhaps from defacement with graffiti, and the visual impact on views and vistas caused by structures erected outside the site (see section 5.9).

  Good vantage points from which to view the geology and geomorphology should be incorporated into an interpretive hiking trail through the site. This could be conducted by a trained heritage site guide, or as a self-guided trail with interpretation panels at key viewing stations. Good viewpoints over the valley of the Harts and of the Ghaap Escarpment need to be identified.

  Some such stations could include:

  - the Blue Pool Tufa and waterfall (origin of tufas, fossil leaves, algal mats, water-eroded cavities and shelters);
  - the Upper Quarry view site (view over the Harts Valley, down the gorge of the Thabasikwa, changing watercourse);
  - the dolomitic plateau above the Blue Pool Area (stromatolites, rillengraben);
  - the contact of the tufas with the Schmidtsdrift shales (opposite Powerhouse Cave);
  - the contact between the Schmidtsdrift Shales and the overlying dolomite in the south-west part of the quarry excavation;
  - the section through the Oxland Tufa and the relict channel alluvium at the Channel Alluvium Site;
  - the Dart and Hrdlicka's Pinnacles (see Palaeontological and Archaeological Sites).

The latter need to be protected at all costs as the only authentic vestiges of an analogous deposit to the original discovery site which has been mined away.

The “Underground River” and “Old Mine Shaft” should be subjected to inspection and reporting by a professional Mine Safety Officer prior to their use for tourism.

The potential of the geological and geomorphological assets of the Taung Site to provide enriching educational experiences is discussed further in the management plan.

No further removal or re-sculpturing of the mine dumps should be allowed as they form part of the cultural imprint of the site (Figure 27).

- ***Precambrian fossils as a heritage resource***

  Very little coverage has been given to the fascinating Precambrian palaeontology of any of the fossil hominid sites. The dolomites which host the cavern sites or which have provided the limestone from which the travertine deposits of Taung have been accreted, is the source of unimaginably old fossils (over 2224 million years) which provide insights to some of the earliest preserved life forms on earth. They also provide evidence into the evolution of the atmosphere, and its gradual acquisition of all-important oxygen, vital to the existence of life on earth.

  Precambrian resources of the Taung Site require further academic study as well as field study in order to identify good examples to serve as viewing stations. Samples need to be collected both for scientific study and as examples for the heritage museum. Not to include Precambrian heritage resources is to ignore a very significant part of site significance.

  Dolomite slabs have been used as seats in the picnic area. They provide a useful and almost indestructible construction material. Time did not allow to determine whether or not dolomite stripping (such as occurs in the cradle of Humankind) is a problem in the area. This certainly should be monitored in order to determine the risk – it is very often the chert- and stromatolite-rich pieces that are removed because of their interesting surface patterning.

  The State of the Environment of Precambrian fossils has also been reported on in the Table that follows.

- ***Palaeontological and archaeological sites***

  The state of the environment report on these aspects of the Taung Site are included in the Table that follows.

  The issues arising may be summarised as follows:

  1. Some of the archaeological sites fall outside the proposed heritage boundary. Such sites include:

     - The Witkrans Cave (MSA)
     - Norlim 2 (MSA)
     - Norlim 1) (LSA)
     - Little Witkrans Shelter (LSA)
     - Ochre Cave

     It is suggested that these be protected by the declaration of a "Protected area" or Buffer Zone surrounding the proposed Taung Skull World Heritage Site, which would include them all, as serve as a Buffer Zone around the site. There are other strong points to support such a measure. These are discussed in the management plan.

     Although the above sites fall outside the heritage boundary, they nevertheless require occasional but regular inspections by heritage site monitors, who will have to be trained in site monitoring.

  2. Many of the sites (see Table) are stable and secure as long as their whereabouts remains undisclosed. Here, non-disclosure can function as a temporary management tool. Care should be taken as to which sites are located on maps and presented in information panels for site visitors, particularly those where scavenging of artefacts and fossils is possible. Attention should not be drawn to the following caves, because of a risk of scavenging of fossils:

     - Quinney Cave
     - Black Earth Cave
     - Equus Cave – unless protections are put in place
     - Satan Cave
     - Oxland Large Mammal Site
     - Witkrans Cave
     - Norlim 1 – unless visitors accompanied by a guide
     - Little Witkrans Shelter
     - Powerhouse cave – unless protections are put in place
     - Ochre Cave – unless protections are put in place

3. The most vulnerable site by far is the Equus Cave. This is a site of substantial heritage significance and important residual research potential. It is situated on the main access route to the Blue Pool picnic area, and is easily accessible. Loose fossil bones and teeth are eroding out of the deposit everywhere, and the deposits are unstable and cascading. Trampling of the deposit not only damages the fossils, but causes disturbance to the sediments. The witness section is unstable and unroofed, which allows rainwater to seep through the deposits. This affects the reliability of dating results. Bioturbation (burrowing by small mammals and insects, termites, etc) also causes mixing of the deposits.

   Care should be taken to avoid these high-risk areas when planning infrastructure such as camping sites, caravan parks and ablution blocks.

   Management strategies have been noted in the Table, and are discussed more fully in the Management Plan.

4. The Dart Pinnacle and the Hrdlicka's Pinnacle. These must be preserved at all costs, as they provide the only "authentic" element (in the terms of the World Heritage Site Guidelines) to the now non-existent discovery site – see Table.

TABLE: PALAEONTOLOGICAL AND ARCHAEOLOGICAL SITES: STATE OF THE ENVIRONMENT REPORT

PALAEONTOLOGICAL OR ARCHAEOLOGICAL HERITAGE RESOURCE	HERITAGE SIGNIFICANCE, EXCAVATION HISTORY	RESEARCH AND EDUCATIONAL POTENTIAL	STATE OF ENVIRONMENT
PALAEONTOLOGICAL SITES			
Stromatolites	• Heritage significance underexposed • Stromatolites represent some of the oldest preserved forms of life on earth	• Research: Yes. Both field studies and academic research indicated • Education: Significance of stromatolites requires exposure in Interpretative Centre; inclusion in hiking trail through site	• Exposures secure, but dolomitic areas require further field studies to locate good exposures for use in hiking trails
Dart Pinnacle Deposits (multiple deposits) S 27 37. 215' E 24 37. 990'	• Original Taung Skull Fossil discovery site mined away since 1924; remaining deposits in Dart Pinnacle highly significant as an analogue or witness section • Older than 2.6 million years	• Research: Yes • Educational: Yes. Essential to preserve for site significance	• Secure site, stable except for loose material on top of pinnacle, few exposed fossils. • Site vulnerable to vandalism • Open excavation at foot of pinnacle a hazard to pedestrians – uneven substrate

PALAEONTOLOGICAL OR ARCHAEOLOGICAL HERITAGE RESOURCE	HERITAGE SIGNIFICANCE, EXCAVATION HISTORY	RESEARCH AND EDUCATIONAL POTENTIAL	STATE OF ENVIRONMENT
Hrdlicka's deposits S 27 37. 165' E 24 38. 021'	• Multiple deposits present. • The Hrdlicka deposits, dating to 2.4 - 2.6 million years ago, have yielded primarily cercopithecoid fossils among the 43 fossil mammalian species found • Solution led to the formation of a 4m deep solution cavity which filled with black earth in which a small MSA sample similar to Witkrans Cave (see below) was recovered. This part of the site now destroyed	• Research: Yes. Recent excavations have taken place. • Educational: Yes. Essential to conserve the Hrdlicka Pinnacle as a demonstrable analogue and witness section.	• Site stable but steep, not suitable for visitor access, fossils exposed on surface but secure in rock. Vulnerable to vandalism by chipping
Tobias Pinnacle deposits S 27 37.215' E 24 37. 906'	• Untested	• Unknown	• Secure site, barely apparent to the uninitiated
Berger Cave Complex S 27 37.155' E 24 37. 841'	• Untested	• Unknown	• Secure site, barely apparent to the uninitiated
Lucky Moon Cave S 27 37. 068' E 24 37, 818'	• Untested	• Unknown	• Secure site ,barely apparent to the uninitiated
LSN Cave S 27 37. 085' E 24 37. 812'	• Untested	• Unknown	• Secure site, barely apparent to the uninitiated
Innominate cave S 27 37. 056' E 27 37. 823'	• Untested	• Unknown	• Secure site
Quinney Cave S 27 37. 032' E 24 37. 855'	• Heritage potential is moderate to high	• Unknown	• Vulnerable to scavenging of fossils and artefacts if noticed
Cut-through Alley S 27 37.030' E 24 37.868'	• Untested	• Unknown	• Secure site

PALAEONTOLOGICAL OR ARCHAEOLOGICAL HERITAGE RESOURCE	HERITAGE SIGNIFICANCE, EXCAVATION HISTORY	RESEARCH AND EDUCATIONAL POTENTIAL	STATE OF ENVIRONMENT
Black Earth Cave S 27 37.025 E 24 37.950	• Potentially of substantial heritage significance, if any of the original sediments remain	• Research: Yes. Gallery A remains could be of MSA age • Education: Could, with Witkrans, Tobias Cave and Equus Cave finds provide data for an "Out of Africa" panel at a Heritage Site interpretation centre	• Volume of unexcavated, unmined sediments and the stability of this deposit is unknown. Further field scans required to establish. • Vulnerable to scavenging if found
Peabody's Equus Site S 27 36.954' E 24 37.800'	• Untested	• Unknown	• Secure site, barely apparent to the uninitiated
Equus Cave S 27 36.936' (954) E 24 37.775' (800)	• A site of substantial significance with respect to natural history, palaeontological and palaeoclimatic studies	• Research: Yes: The age of Stratum 2B, which contains a vast fossil fauna, requires verification base on the dating of ostrich eggshell • Education: Of educational and tourism potential as part of a hiking trail	• Highly vulnerable, loose artifacts, fossils, teeth everywhere • Sediments unroofed, exposed to percolating rainwater and weathering. This can affect dating results • Site prone to bioturbation • Threatened by uncontrolled access, trampling, subsidence and collapse • Scavenging of artifacts and fossils • Management: Unconsolidated witness section to be stabilized and roofed • Access to be controlled, walkway required to minimize trampling • Fencing • Monitor for bone removal

PALAEONTOLOGICAL OR ARCHAEOLOGICAL HERITAGE RESOURCE	HERITAGE SIGNIFICANCE, EXCAVATION HISTORY	RESEARCH AND EDUCATIONAL POTENTIAL	STATE OF ENVIRONMENT
Blom Cave S 27 36.939' E 24 37.815'	• Untested	• Unknown	• Secure site, barely apparent to the unitiated
Satan Cave S 27 36.845' E 24 37.779'	• Untested	• Unknown	• Vulnerable site if noticed - use non-disclosure as a management tool. Loose fossils exposed
Alcove Cave S 27 36.762' E 24 37.718' *Coordinates only accurate to 20m due to rock-enclosed location	• Untested	• Unknown	• Secure site, barely apparent to the unitiated
Oxland large mammal site S 27 36.782' E 24 37.588'	• Heritage potential good	• Unknown	• Large ex situ fossils visible in rock, some loose, secure except to the most adventurous visitor
Acacia Cave	• Untested	• Unknown	• Secure site, barely noticeable
ARCHAEOLOGICAL SITES			
"Acheulian Hole" (ESA) Located about150m NE of Black Earth Cave	• Untested	• Unknown	• Vulnerability unknown
Witkrans Cave (MSA) Located against escarpment, about 5km S of Buxton	• Excavated by Peabody in 1947/8 • Significant faunal assemblage and MSA lithics comparable to Middle Pietersburg at the Cave of Hearths, Makapan Valley • Human molars recovered, min age 89 000, as yet undescribed	• Research: Yes. Human teeth require description and dating • Educational Value: Use, with Black Earth Cave and Equus Cave, in Out of Africa panel	• Deposits largely removed by Peabody. Remaining sediments heavily calcified and stable • Uncontrolled access problematic • Calcified nature of sediments makes artefact scavenging difficult • Buffer Zone status or "protected area "status recommended

PALAEONTOLOGICAL OR ARCHAEOLOGICAL HERITAGE RESOURCE	HERITAGE SIGNIFICANCE, EXCAVATION HISTORY	RESEARCH AND EDUCATIONAL POTENTIAL	STATE OF ENVIRONMENT
Channel Alluvium Site (MSA) 100m S of Equus Cave	• Uncertain, given only a passing mention by Peabody (1954) • Trenching in 1947/8 revealed rough MSA lithics on the Oxland Tufa surface, therefore postdating ~230kyr BP	• Research : Yes This deep stratified deposit deserves further study • Education: Could form the basis of Field School project	• What remains of the deposit is stable • Threats by weathering, etc., are minimal • Risks due to artefact scavenging are low • No management measures are required • Monitoring criteria are not relevant
NORLIM 2 (MSA) "Visitors House" locality, ~400m ESE of Powerhouse Cave	• Collection of MSA artifacts of Middle Pietersburg affinities housed in the McGregor Museum, collected from soil removed during the construction of a french drain • Modest heritage significance	• Research: Modest • Educational: Modest	• What remains of this site is stable • Threats due to natural weathering negligible • No management required • Monitoring criteria not applicable
NORLIM 1 (LSA) Located in a gully ~100m N of the tar road and ~200m due E of Powerhouse Cave	• Archaeological sampling and mini-excavation made by P Beaumont in 1978 at this fairly rich and extensive site suggest a workshop variant of the KURUMAN (Oakhurst) Industry • By comparison with Wonderwerk Cave, about 12.0 - 8.5 kyr BP • Significance lies in the fact that it is one of the very few excavated factory sites of Oakhurst age	• Research: Yes, good potential • Education: Low value, due to high percentage of, to the novice, unconvincing debitage	• The open site is stable • No threats at present as the area is uninhabited • Scavenging a potential threat, if visited • Recommend that site fall into a buffer zone • Monitoring difficult, not relevant at present
Little Witkrans Shelter (LSA) About 200m N of Witkrans Cave - see above	• Excavated by Peabody in 1947/8 and by P Beaumont in 1978 • Fauna, abundance of lithic and organic artefacts • Ascribable to Wilton(~8.5 - 1.8kyr BP) and to Ceramic LSA from 1.8 to historical times • A long but condensed LSA sequence of modest archaeological interest	• Research: Limit has been reached • Educational : Too remote	• 1978 dig backfilled and therefore stable • No present threats as remote from Buxton • Artefact scavenging would occur, if visited • Site could fall into a southern Buffer Zone • Visitor litter would be an indicator of visitation

PALAEONTOLOGICAL OR ARCHAEOLOGICAL HERITAGE RESOURCE	HERITAGE SIGNIFICANCE, EXCAVATION HISTORY	RESEARCH AND EDUCATIONAL POTENTIAL	STATE OF ENVIRONMENT
Powerhouse Cave (LSA) Located on eastern flank of the Tabasikwa River, a short distance north of the road bridge	• Excavated in 1947/8 by Peabody, and in the mid-1970's by Humphreys. • Fair density of faunal material, including fish • Wilton artefacts (3.7 and ~2.0 kyr BP. • Rock paintings in the form of smudges, finger lines and an asterisk • Heritage significance moderate	• Research : Yes, some. Brief occupational period, if date confirmed, would provide date for rock art • Educational: Include as a feature in a hiking trail	• Deposits are unconsolidated; would require protection from trampling, e.g a walkway • Scavenging is a problem and visitors would have to be accompanied by a guide • Graffiti are a problem as the Schmidsdrift shales provide excellent writing surface • Gated fence probably necessary • Heritage monitor to check the site regularly for unauthorised visitors and visitor debris, litter
Tobias Cave (LSA) The J McKee map lists this site ~50m WSW of Blue Pool, but excavator considered it to correspond in position to Black Earth Cave (Humphreys 1978)	• LSA lithic sample and human remains of San type, as well as a faunal sample, including large mammal bones	• Research: The skull should be dated • Education: Information pertinent to Out of Africa panel should be incorporated	• Amount of material remaining and site stability at present is unknown
NORLIM 5 (LSA) On the hill crest 200m ENE of Equus Cave	• A 60 x 80m area of low rubble-covered stone walls, in the form of arcs or semi-circles, lacking a clear layout. • Excavation revealed an amorphous associated Ceramic LSA assemblage plus faunal remains that include a cow tooth, all dated to 390-400years BP • Modest heritage significance compared with Dithakong • Some evidence, in the form of localized occurrences of ostrich egg-shell beads and ceramics, of site patterning	• Research: Yes. Further excavation could more fully document the link with domestic livestock • Education: Could form part of a trail for visitors to the site	• State of preservation is good • Not susceptible to damage by uncontrolled access • No significant risk as regards artefact scavenging • No management interventions necessary at this stage • No monitor checks are deemed necessary

PALAEONTOLOGICAL OR ARCHAEOLOGICAL HERITAGE RESOURCE	HERITAGE SIGNIFICANCE, EXCAVATION HISTORY	RESEARCH AND EDUCATIONAL POTENTIAL	STATE OF ENVIRONMENT
NORLIM 6 (LSA) On the S slope of the same hill as described above, 100m SSE of NORLIM 5	• Somewhat larger complex of structures similar to the above, as yet unexcavated • Heritage significance as for above	• Research: Yes. Could be used as a Field School project (university students) • Educational: As for above	• As for above
Ochre Cave (LSA) Located on the western flank of the Thabasikwa Gorge, just S of the road bridge and Powerhouse Cave	• Excavated in 1947/8 by Peabody • Yielded sparse faunal remains with LSA assemblages which may relate to the finger paintings • Limited heritage significance apart from the finger paintings	• Research: The paintings should be traced and recorded before deterioration occurs • Education: Only of interest to rock art specialists - could incorporate in a trail	• The rock paintings are in a poor state of preservation • Weathering and uncontrolled access are both threats • Risks include graffiti, defacement and littering • A gated fence may be warranted • Paintings should be traced and recorded before further deterioration occurs • Monitor by checking against a photographic record
HYAENA RELATED ASSEMBLAGES			
Black Earth Cave Located ~300m NNW of the A africanus find site.	• Discontinuous galleries, largely destroyed by mining, but richly fossiliferous. • The fossils are probably the result of hyaena feeding and denning behaviour in the galleries • The presence of *E capensis* suggests a pre-Holocene age • Two types of Homo are present • Potentially of high heritage significance if any deposits remain	• Research The dating of the human remains requires to be done • Educational: Use the info to provide data for an Out of Africa panel at a potential heritage site display	• State of preservation uncertain and a field scan is necessary
Equus Cave – see above			

PALAEONTOLOGICAL OR ARCHAEOLOGICAL HERITAGE RESOURCE	HERITAGE SIGNIFICANCE, EXCAVATION HISTORY	RESEARCH AND EDUCATIONAL POTENTIAL	STATE OF ENVIRONMENT
PALYNOLOGY			
Tufa deposits and Equus Cave, hyracium deposits along escarpment fossil pollens and phytoliths.	• Provides valuable information about long-term environmental change • New fields of phytolith studies can reveal info regarding vegetation and climatic change	• Research: Much still remains to be done. Imperative that the Equus Cave deposits receive the necessary protections • Education: Panel in Interpretative Centre required	• Equus Cave site vulnerable – see above

- ***Palynology***

  Palynology is the study of the fossil pollens, which in the case of the Taung Site are preserved in a small portion of the Equus Cave deposit, where both the sediment itself and fossil coprolites yielded significant results. This, and the potential for further study, make site protection for this locality a top priority.

  The field of Palynology has recently been expanded by the study of "phytoliths" – microscopically small resistant silica particles that provide support to the leaves of certain species of plant, notably grasses. These may become incorporated into deposits and fossilised. It has been established that the breccias of the Taung Skull Site contain abundant phytoliths, and most of the Tufas and sediments of important sites like Equus cave are expected to have excellent potential for phytolith analysis. Scientific reportage on this exciting new aspect of palaeontology is eagerly awaited.

  Deposits of Hyrax dung – "hyracium" – because such deposits can build up over a period of thousands of years, trapping pollens and phytoliths as they accrete – are very valuable, and steps should be taken to establish whether or not any are present within the Hyrax habitats that exist along the escarpment edge and within the quarry itself.

  Speleothems, i.e. stalagmites and stalactites can provide fossil pollen as well as isotopic information used in dating deposits, and no further destruction of these potential sources of information should be allowed to be removed, such as has happened (and still occurs) at the "underground river".

  The protection of the remaining undisturbed landscapes and patches of vegetation is an essential comparative element in studies such as these, and as such, they should be conserved.

- ***Historical resources***

  Attention should be drawn to the fact that the original inhabitants of the Taung Skull Site and environs were the Khoi, as attested by the Ceramic Later Stone Age archaeological remains at Norlim 5 and Norlim 6 within the site and the even more impressive stone ruins near Dithakong a short distance to the north. The existence of residual original Khoi toponyms – for example, "Ghaap" and !Xabasiqua should be flagged. This could be done by providing a panel in the interpretative museum and by incorporating the ruins in an interpretation hiking trail. The local community have requested the recognition of traditional Khoi Khoi geographical toponyms, and this should be done as far as possible.

Little is documented about the former presence of the San and the Khoi, and this gap needs to be filled.

No full history of the Tlhaping has been produced yet. This is another gap which requires addressing.

There is an urgent need to tap local Oral Traditions in order to preserve the history of the 20th century before it disappears. There is a need to collect such stories as soon as possible. The public participation exercise revealed that two former limeworkers are still resident in the area who have vital information on the early history of the Limeworks.

There is an early limeworkers' graveyard within the property that is still regularly visited.

An important element of recent history is to record the significant role that local communities played in the Liberation struggle. In this regard, the history of the nearby Tigerkloof Mission School needs documentation, as it was here that many of today's prominent politicians received their training.

As far as the on site mining history is concerned, many of the original mining buildings are still intact, although falling into a state of disrepair. Research should be undertaken to establish what they were originally used for. Unfortunately, metal harvesting after the mine closed caused almost all of the mining technology to be removed from site – including the private branch railway line laid in 1936 from Taung to Buxton, and on to the smaller lime quarry at Thomeng. Even the lime-burning kilns were destroyed, probably in order to recover the refractory brick (made by the Cullinan Brick Factory near Olifantsfontein).

- ***Architectural resources***

The Buxton Village adjacent to the Norlim Quarry preserves several noteworthy architectural features, including an attractive stone church, rural "fossil" post office, and several stone-built miners' cottages which are worthy of restoration. This attractive townscape is worthy of being incorporated into a broader-based tourism product and offers economic opportunities to local residents (tea shop, general dealers to supply caravaners and campers, bed and breakfast accommodation) – see Figure 22.

The mine site and environs likewise preserves interesting industrial buildings and infrastructure. Of note are the stone-built Power House, the old steel girder rail bridge over the Thabasikwa, and several interesting mine buildings (Figures 24, 25 and 26).

These structures all form part of the cultural imprints on the Taung Heritage Site and should not be allowed to decay to the point that they are non-restorable. Many of the buildings form part of the history of Taung and should be stabilised, with a view to possible future restoration.

Theft of usable building material is a problem.

- ***Living culture***

The meetings undertaken as part of the Public Participation programme revealed that there is a considerable residual ethnobotanical knowledge in the local communities. There is a local Traditional healer who operates in the Buxton-Thabasikwa area, who occasionally utilises the resources of the Taung Skull Site. Such Traditional Knowledge Systems need to be recorded as soon as possible, as usually the full knowledge dies, in time, along with the practitioners.

The Blue Pools are used for baptisms and other traditional ritual purposes.

A Craft Centre operates within some of the old Mine Management buildings near the old entrance to the mine, and here is a traditional dance group. Living cultural practices need to be incorporated into the tourist experience. The Conservation Management Plan provides greater detail concerning local community initiatives and concerns.

- ***Botanical resources***

The site is on the edge of the Griqualand West Centre of Endemism, and this fact should be promoted in the hiking trails and in panels in the interpretative museum. Named species of plants should be a feature of the hiking trails.

The site inspection to ascertain the state of the environment revealed several management problems:

- the lack of a fence permits free-ranging grazing of the site by numerous cattle, donkeys, goats and sheep.

- this has given rise to overgrazing, and grazing-induced bush encroachment is occurring.

- overgrazed areas are prone to rapid soil erosion.

- a livestock grazing plan needs to be negotiated with the communities, to limit grazing to a sustainable level, and on areas of veld that have the carrying capacity.

- harvesting of fuelwoods from the site is becoming problematic. Sustainable levels of wood harvesting must be determined and a system of regulation developed before uncontrolled harvesting destroys reserves.

- the best shade tree within the quarry, the lime-loving pepper tree, is a potential alien invasive. Pending its declaration, the management plan will have to consider its control or possible replacement.

- ***Zoological resources***

  A total of 13 mammal, 74 bird 8 reptile and 4 amphibian species occur. There is a need for further research into the bat species present.

  The cliffs above the Blue Pool supports a breeding pair of Black Eagles

  There is a looming problem with baboon-human interactions – baboon-proof rubbish bins will be required, and prohibitions placed on feeding.

  The consequences and impact of a fence on the local animal communities will require consideration – e.g. how will a fence affect the baboon troop?

- ***Aesthetic resources: View sites and scenic spots***

  A buffer zone around the Heritage Site should be considered in order to place controls on the erection of structures which might impinge on the visual appreciation of geological, geomorphological and other scenic views, such as TV towers, power lines, cell phone towers and the like.

  Any densification of the Mokassa rural residential area will destroy the sense of travelling through a traditional rural district, which, because of the distance from the tarred road, automatically becomes part of the tourist experience. The route could be used to showcase traditional vernacular architectural styles and traditional farming practices, although it is understood that most people would prefer an RDP type of house.

  A buffer zone incorporating a small portion of Mokassa (as the main approach direction) would go a long way to promote appropriate and sustainable land use options.

It is significant to note that the original discoverer of the Buxton limestone tufas had to struggle his way through thick bush all the way from Taung to the escarpment – an area which today is almost totally devoid of trees and shrubs.

- ***The way forward***

  - The way forward is to incorporate the findings of the State of the Environment report into the management plan, in order to inform its management strategies for the site itself and the immediate surrounds.

  - A further step will be to devise an interpretation trail which maximises exposure to and provides information on the cultural heritage resources of the site.

  - The local communities need to be informed about the requirements for a World Heritage Site, and consulted on issues such as the consequences (for them) of fencing the site, the control of grazing and wood collection, etc. It is important to gather local knowledge and concerns regarding these issues, for without their full knowledge, discussion and consent, management strategies around such matters will not be successful. Community concerns and aspirations need to be incorporated into the planning process.

  - The need for a Buffer Zone, its definition and boundaries, function and the motivation for such a protection need to be addressed, The declaration of temporary 'Protected areas" is possible under the existing SAHRA legislation (Section 27). This matter is fully discussed in the Management Plan.

  - Funding needs to be sought for the creation not only of the hiking trail, but stopping stations interpretive panels and a heritage museum – not a cheap item.

  - Funding needs to be sought for the training of site guides and heritage monitors from the surrounding communities.

  - Further field studies and basic research need to be promoted in the various cultural heritage resource areas outlined above, the most urgent being in the area of Traditional Knowledge Systems and Oral traditions, especially modern and mining history.

  - The most important thing is to secure the heritage resources that are at risk within the site itself – notably the Equus Cave site.

e. Policies and programmes related to the presentation and promotion of the property

Although the Taung Skull site has a firmly established academic niche in the history of scientific thought on Humankind's most distant origins, little has been done as yet to disseminate this evidence more widely, either locally amongst resident people or amongst indigenous and foreign tourists and visitors. The site is almost unknown and is certainly under-marketed, due to the lack of infrastructure and staffing to support tourism.

The promotion and presentation of the property at present, is extremely low-key. There are no interpretative facilities, information boards, tourist guides or pamphlets, and even the commemorative plaque marking the discovery site of the Taung Skull has been removed. Facilities erected some years ago to support tourism to the site (an ablution block) have been vandalised way past use. As a result, visitation to the site has deteriorated to recreation (picnics with ghetto-blasters) with no reference to the considerable but at present not very evident heritage content of the site. There has been a drop-off in tourist numbers, and for some time, no visitor records have been kept.

There have been several development proposals commissioned, but none of these have reached fruition. The Conservation Management Plan documents all former initiatives, many of which contain sound proposals that could be put into practice. In particular, the value of the document presented by "Site Solutions" should be mentioned. Deployment of the allocated funding elsewhere prevented implementation of these very sound proposals.

At present, there seems to be a more vigorous political will to do something at the site, and changes are expected in the near future. The present efforts to secure both National Heritage Site status and World Heritage status form part of a co-operative effort by several government departments to prevent further loss of significance of the site, and to create the infrastructure and management structures necessary to achieve responsible promotion and presentation.

Considerable funding has been ear-marked to improve site conditions. A Cultural Heritage Resources Survey and State of the Environment report has been called for, funded and obtained. A Management and Monitoring Plan for the site has been commissioned and drawn up.

The Management Plan (November 2003) includes a comprehensive review of the tourism potential of the site and surrounding district. The Taung site is, however, rather off the beaten track. Tourism will have to be built up from base levels once the necessary infrastructure, both managerial and developmental, has been put in place

Part of the management planning process was a public participation exercise, not only to assess the impact of the proposed heritage site on the lives of local inhabitants, but to acquire a list of their concerns and hopes, and to disseminate basic information concerning the heritage values of the site, of which most local people seem unaware. This basic local awareness, and the participation of local people in the development programme planned, is a necessary ingredient to achieve the stipulation that the site must be given a meaning in the lives of the average South African.

The Integrated Development Plan (IDP) and Spatial Development Framework (SDF) for the Greater Taung Municipality (Feb 2002) provides guidelines for the future development of the Greater Taung Municipality. The planning includes the Taung site, which has had well over R16 600 000 set aside for various upgrading projects, including a visitor interpretative centre (museum). Funding specifically for water-related projects has been budgeted by the Department of Water Affairs and Forestry (R750 000).This emphasises the urgent need for a representative overall management authority to drive and co-ordinate the development process, and to implement the recommendations of the management Plan. The nature and origin of the existing and promised funding and seed-money has been detailed in the Management Plan.

SECTION 4: MANAGEMENT

A copy of the provisional Management Plan accompanies this dossier. As a serial nomination, it is realised that this section should be common to all components of the serial nomination. However, the three component sites, which it is hoped, will form the ensemble, are situated in three widely separated provinces in South Africa, each with a different combination of government structures relating to culture and heritage. Management issues that prevail at the three component sites differ widely. There is as yet no common management regime for all parts of the serial nomination, but it is something of which the provinces are becoming aware, and actively working towards. The formalisation of the new name for the serial cluster is also being attended to.

The following management comments, therefore, refer specifically to the Taung Skull Fossil Site although of course the legislation itself pertains to the entire country.

a. Ownership

- The Taung Skull National Heritage Site (“the TS NHS”) is situated on a portion of the immovable property described as the remainder of the farm TAUNG No. 894-HN, district of Taung, Province of the North West (“the Main Property”).

- The Main Property currently measures 132 522,3445 hectares in extent and predominantly falls within the municipal area of the Greater Taung Local Municipality.

- The Proclamation Diagram for the proposed National Heritage site encloses an area of 158.7429 ha. (the "Heritage Site").

- The Main Property was originally registered in the name of the Republic of South Africa in terms of a Certificate of Registered State Title No.T 7/ 1969 issued to the Republic of South Africa on 31 January 1969.

- On the same date, the Certificate was endorsed to the effect that the Main Property thereafter vested in the South African Development Trust in terms of the provisions of the Development Trust and Land Act No. 18 of 1936.

- The next endorsement that appears was made on 20 December 1983 to the effect that on 2 December 1977, the State President published a Proclamation (No. R347/1977 published in Government Gazette No. 5820 dated 2 December 1977) to the effect that all land situated in certain specified districts, and all rights to minerals found in, on or under such land , were transferred to the Government of Bophuthatswana.

The Main Property was land to which this Proclamation applied with the result that the Title Deed of the Main Property was endorsed by the Mmabatho Deeds Office to the effect that, as from 2 December 1977, ownership vested in the Republic of Bophuthatswana.

The South African Development Trust was finally disbanded in 1992.

- What is interesting is that the Deeds Office at this time allocated a new Title Deed number to the Main Property (being Title Deed No. T. 623/1983), but notwithstanding this, continued to use the old Title Deed (i.e. Title Deed No. 57/1969) on which to record all future transactions that affected the Main Property subsequent to 20 December 1983.

- Consistent with this, the details of future transactions in terms of which various small portions of the Taung Farm were subsequently transferred to various individual landowners, have been endorsed on the original Title Deed of the Main Property.

- The remainder of the Taung Farm (after these portions of property were transferred to various transferees) has continued to remain registered in the name of the Republic of Bophuthatswana. As mentioned before, the Taung Skull National Heritage Site is situated on a portion of the remainder of the Main Property.

With the advent of South Africa's new democracy in 1994, and the re-incorporation of the former independent homelands back into South Africa, provision was made in our first Constitution, being the Constitution of the Republic of South Africa Act. No. 200 of 1993 (the "old Constitution") for the vesting of the various assets held by the former homelands, back in the National Government of the Republic of South Africa, alternatively in the various Provincial Governments appointed for the various provinces in South Africa. And this is where some debate may come in.

- The view is currently that the Taung Farm is vested in National Government at this time, and everyone has accepted this as a fact. However, in simple terms, section 239(1)(b) of the old Constitution provides for instances in which the assets (which include immovable property) of the former homelands can vest in and be registered in the name of a particular Provincial Government. Such assets include assets applied or intended to be applied for or in connection with any matter listed in Schedule 6 of the old Constitution (which is not a matter referred to in section 126 (3)(a) to (e) of the old Constitution).

- Schedule 6 of the old Constitution provides for matters such as cultural affairs and tourism, and in my view a good argument could be made that the entire Main Property, or at least the portion of the Main Property on which the Taung Skull Site is found, in fact vests in the North West Provincial Government to the extent that it can be shown that the Main Property or at least the part on which the Taung Skull was found, was applied and it is intended to continue to apply the asset for and in connection with cultural and tourism matters for the Province.

  Item 28 of Schedule 6 of the Constitution of the Republic of South Africa Act No. 108 of 1997, provides that on the production of a certificate by a competent authority that immovable property owned by the state is vested in a particular government in terms of section 239 of the old Constitution, a registrar of deeds must make such entries or endorsements on the title deed or other document as may be necessary to register that immovable property in the name of that government.

  We understand from our correspondent attorneys in Vryburg that the Deeds Office in Vryburg (the Mmabatho Deeds Office has subsequently been amalgamated with the Vryburg Deeds Office) that no certificate from either National Government or the North West Provincial Government in terms of item 28 of Schedule 6 of the new Constitution requesting that ownership in the Main Property be registered in the name of either of them in terms of the provisions of section 239 of the old Constitution.

- **Their records still show that the Republic of Bophuthatswana is the registered owner of the Main Property.**

One may find that National Government will insist on being recorded as the legal owner of the Main Property by virtue of the fact that the TS NHA is only a small portion of the Main Property. It might prefer to retain ownership of and control of the Main Property for the purpose of discharging its responsibilities for land issues under the Constitution.

Notwithstanding this, National Government may well be amenable to have the portion on which the TS NHS is situated, and a portion of the surrounds (for example the Buffer Zone), sub-divided and transferred to the Provincial Government of the North West Province, alternatively, to DEAT, or even to SAHRA, should this be beneficial to and required by any of these parties. We may mention that section 21(5) of the NHRA specifically provides that SAHRA can acquire any right in and to immovable property. Section 29 of the WHCA also provides that the Minister of DEAT can purchase any property and reserve it for purposed contemplated in the WHCA in relation to World Heritage Sites, if the purpose is in the public interest.

b. Present legal status

- Ownership: There are outstanding issues. These have been explained in detail above.

- National heritage Site Status: The process of achieving National heritage Status is well underway but has not yet been formalised (November 2003) - see section c) below.

- World heritage Site status: The process to achieve this status is well underway but has not yet been formalised. The Tentative World Heritage Site Listing documentation was submitted during September 2003, and Taung should, by the end of 2003, have been accepted as a tentative site - see section c) below.

- Overall management Authority: The overall management agent or authority has not yet been established. The five main possible contenders have been discussed in section c) below.

c. Planned protective measures and means of implementation

The Taung Skull Fossil Site is presently or will shortly be subject to a number of different legislative mechanisms that control land use, land development and environmental impacts.

Protective measures are the same as legal protection afforded the property under the NHRA, the NEMA, the National Water Act and other pieces of legislation. Implementation of these protective measures have been written into the Conservation Management Plan for the site and would need to be

implemented by the proposed overall management authority and overseen by SAHRA.

This legislation is primarily reactive and aimed at the protection of the area and the existing palaeo-anthropological and archaeological sites, and not at the development or management of the area. Some of these protections are described below:

- ***Initiative to declare the Taung Skull Fossil Site a National Heritage Site***

  The South African National Heritage Resources Act (NHRA) (Section 27) allows for special protection of the site by having it declared and gazetted as a National Heritage Site. This process is already at an advanced stage. The proclamation diagram for the proposed protected area has been surveyed and approved by the Surveyor General's office under reference number S.G. No 4496/2002. The proposed National Heritage Site measures 158.7429 hectares and includes most of the most significant palaeontological and archaeological heritage resources as well as the historical and mining buildings associated with the site (Figs. 4, 6 and 7).

  In terms of the NHRA, the site qualifies to be graded as a Grade 1 heritage resource (Section 7 (1)). Once the process already set in motion has reached finality, management responsibility for the site will vest in the South African Resources Agency (SAHRA) in terms of the provisions of section 8(2) of the Act.

  Once the site has been declared a National Heritage Site, SAHRA becomes wholly responsible for the protection of the site in terms of Section 27(18), which provides that "….no person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage site without a permit issued by SAHRA"

  Other protections in section 27 include:

  - (6): SAHRA may make regulations, with the consent of the landowner, to safeguard the site, to specify conditions of use and development, and to regulate the admission to the public, including fees.

  - (7) Any branch of the State or supported body which is the owner of the heritage site must maintain it to a minimum standard and according to a procedure prescribed by SAHRA after consultation with the relevant department of Works.

- (8) SAHRA may, by agreement with the owner, conserve or improve any national heritage site, construct fences, walls or gates around it, acquire or construct and maintain access roads to a national heritage site and erect signs on or near it.

- (9) No person other than the owner of a national heritage site may make reproductions in two or three dimensions of the site for profit without the prior permit issues by SAHRA and the agreement of the owner. SAHRA may prescribe fees payable for these reproduction rights and must deposit such fees in a trust fund dedicated to the conservation of the site or of heritage resources in general.

Section 35 prohibits the export or sale of fossils and artefacts.

Section 38 of the NHRA allows SAHRA to call for a heritage impact assessment report if certain activities, such as road or bridge building, subdivision or consolidation of erven (name for a numbered, surveyed property in South Africa, singular, erf), or rezoning are likely to impact on heritage resources. This is done only if an impact assessment is not required under any other law, such as the Environment Conservation Act (No 73 of 1989) or the National Environmental Management Act (Act no 107 of 1998)

Section 44(2) of the National Heritage Resources Act states that when any person plans to present a national heritage site to the public, or erect a plaque or other permanent display or structure associated with the presentation, the contents of the interpretive material or programmes must be submitted to SAHRA at least 60 days in advance so that SAHRA may comment as part of the consultative process,

In terms of Section 47(2), SAHRA is responsible for adopting a plan for the management of each national heritage site in accordance with the best principles that can be applied. In addition, sub-section (3) states that a conservation management plan may at the discretion of SAHRA and for a period not exceeding 10 years, be operated solely by SAHRA or in conjunction with an environmental or tourism authority on such terms as SAHRA may determine. In terms of Section 42, the responsibility for implementing such a management plan can be delegated to the owner of the property, or to another authority or conservation body, if a formal heritage agreement is drawn up between SAHRA and that body with the agreement of the owner.

The SAHRA North West Province, together with the Department of Social Services, Arts, Culture and Sport have jointly undertaken to ensure that this process moves forward by commissioning the Cultural Heritage Resources Survey, the State of the Environment Report, the

Conservation Management Plan and the Legal Review. This essential documentation was completed in November 2003, some of it being necessary support documentation for the nomination processes underway.

- ***Initiative to declare a Buffer Zone around the Taung Skull Fossil Site***

  It is possible to extend the protection of the Taung Skull Site to an area of land surrounding the Site. To the extent that it may be necessary to ensure the protection and enjoyment of the Site, or to protect the view of and from the Site, it is possible, with the consent of the landowner, for SAHRA to publish a notice in the Government Gazette in terms of which a portion of the Main Property surrounding the TS NHS (for example the area of the proposed buffer zone shown on Fig 5a a) can be declared and designated a " protected area" in terms of the provisions of section 28 of the NHRA.

  As with the procedure under section 27 of the NHRA, this procedure also requires that a formal surveyor's diagram be prepared for the protected area, that the area be declared a protected area by notice in the Government Gazette, and that this fact be recorded against the Title Deed of the Main Property.

  The benefit of doing this would be to ensure some sort of control by SAHRA over the type of development that can occur within the protected area as well as the types of activities that may be conducted in the protected area. In terms of section 28(3) of the NHRA *"…no person may damage, disfigure, alter, subdivide or in any way develop any part of a protected area unless, at least 60 days prior to the initiation of such changes, he or she has consulted the heritage resources authority (in this case SAHRA) which designated such area in accordance with the procedures prescribed by that authority…".* In addition to this, a heritage resources authority may, in terms of section 28(5) make regulations providing for specific protections for any protected area, including the prohibition or control of specified activities by any person in the designated area.

  These provisions can therefore be relied on to provide a protective buffer zone around the Taung Skull Site if necessary.

  To the extent that it is not practically possible to put the formalities of this type of protection in place immediately, it is possible to provisionally protect a protected area in terms of section 29 of the NHRA, with almost immediate effect, and for a maximum period of two years, by SAHRA notifying the landowner accordingly and publishing a notice to this effect in the Government Gazette. If this occurs, then no person may, for the

period of the provisional protection *"…damage, deface, excavate, alter or remove from its original position, subdivide or change the planning status of a provisionally protected place without a permit issued by a heritage resources authority responsible for the provisional protection (i.e. SAHRA)".*

- ***Initiative to propose the Taung Skull Fossil Site for World Heritage inscription***

The World heritage Convention Act (Act No.49 of 1999) provides for the enforcement and implementation of the World Heritage Convention in South Africa, It allows, inter *alia,* for the establishment of Authorities to safeguard the integrity of World Heritage Sites and for Integrated Management Plans and other controls.

The Minister and Department of Environmental Affairs and Tourism is responsible for implementing the Act, but must consult with the Minister of Arts Culture, Science and technology and with other interested parties (such as with the Tourism and Parks Board and SAHRA) when establishing an authority. An authority is a juristic person with a Board that may be appointed by a minister to manage a world heritage site if the Minister deems it necessary. An existing organ of state that is already managing the site may be declared an authority. The Act specifies the powers and duties that may be given to such an authority and its executive staff component. It is crucial to remember that the encouragement of tourism is one of the key objectives of the Convention.

Every Authority must prepare and lodge integrated management plans for World Heritage Sites under its control (Section 21). The plan must be submitted to the Minister for approval within six months of the establishment of an Authority. Approval of the plan must also be sought from the Minister of Arts Culture Science and Technology and the Council of SAHRA. Provision is made for the Minister to prepare a model integrated management plan and norms and standards in consultation with the Minister of Arts, Culture, Science and Technology.

An authority is required to submit an annual report to the Minister that includes an assessment of the implementation of the Management Plan and information about the extent to which the Authority succeeded or failed to meet its obligations in terms of the World Heritage Convention, the Operational Guidelines and the World Heritage Convention Act.

The most likely contenders for the appointment to the position of Managing Agent for the TS NHS are the following:

- NW DACE – they have initiated the project and are prominently involved with it. They probably have access to funding, although this kind of conservation (i.e. heritage resource management) is outside of their normal sphere of activities.

- NW Parks & Tourism – they are responsible for the conservation of formally protected areas and for the development of tourism in the province. They were managing the Site and have employed staff for this purpose. However, they recently transferred the management responsibility to the NW DACE but have indicated that they are initiating the development of a tourism plan around the Site.

- SAHRA – they are legally responsible to protect and manage the Site.

- Gauteng DACEL – they are already managing the national heritage sites falling within the Cradle of Human Kind and have already established the infrastructure and facilities required to manage national and world heritage sites. Since the TS NHS is a serial nomination, and it may make sense if all world heritage sites fell under a single managing agent.

- The Greater Taung Municipality – they are the party that are closest to the Site and the project as a whole. They have a direct interest in ensuring the success of the Site and probably also have the ability to stimulate local small enterprises to undertake management and income generating functions at or in respect of the Site.

Whilst there are advantages that go with being appointed the Managing Agent for the Site, one must not forget that this project will require the investment of a substantial amount of investment capital, operating capital, as well as human capital, in order to be successful. There are numerous and ongoing responsibilities that go with ensuring the proper protection and management of the Site. Financial and capacity constraints, as well as the skills and experience constraints of the various contenders, will have to be identified and evaluated in order to establish who is best placed to take on the management of the TS NHS. A wide range of skills such as business and financial management skills, operational skills, on-site management skills, human resource skills, and the like, will be required of the Managing Agent in order for it to be able to properly manage the Site.

Whilst it is probably difficult at this stage to identify any one single entity that would currently possess all the capital, capacity and skills, necessary to protect and manage the TS NHS, one should not lose

sight of the fact that notwithstanding this, it should be possible for the Managing Agent to acquire capital, capacity and skills, through concluding memoranda of understanding with various other relevant government authorities, alternatively, through concluding agreements with independent consultants/ third parties.

The Managing Agent will be expected to implement the management plan and both will be subject to the scrutiny of the World Heritage Committee. Sites which are deficient in either respect are either eliminated from the World Heritage list of sites or declared a "heritage site in danger".

- The party that is ultimately to accept responsibility to manage and protect the TS NHS on a day-to-day basis must be identified and appointed.

- Whilst the NHRA vests sole responsibility for the conservation, maintenance, presentation and management of the TSNHS in SAHRA, practical considerations dictate that SAHRA should delegate some or all of these responsibilities to a managing agent that is better placed to implement this.

- Dependant on capacity and capabilities of prospective managing agents, the delegation could be to a managing agent vested with overall responsibility to manage the series of World Heritage Sites in South Africa, or to a managing agent more directly involved in the actual day-to-day management and protection of the site.

- Whilst there are advantages that go with being appointed the managing agent of the TS NHRS, this must be seen in the light of the numerous responsibilities that go hand in hand with this. These include raising investment and operating capital required to set up appropriate infrastructure at the site and to improve and manage the site, as well as establishing and maintaining a wide range of skills require to properly manage and protect the site, such skills to include business and financial management skills, day-to-day operational skills, on-site managements skills, human resource/ capacity building/ training skills, and the like.

- ***Legal protections in terms of the Environment Conservation Act and the National Environmental Management Act***

  Environmental Conservation Act 73 of 1989 (“the ECA”), and the National Environmental Management Act No. 107 of 1998 (“the NEMA”).

The Environmental Conservation Act 1989 establishes the environment as "the aggregate of surrounding objects, conditions and influences that affect the life and habits of people or any other organism or collection of organisms".

Regulations promulgated by the Minister of Environment and Tourism in terms of section 21 and 22 of the ECA and the NEMA provide a process whereby an environmental impact assessment must be undertaken before a number of identified activities can be undertaken.

The activities identified by the Minister include activities such as the construction or upgrading of facilities for commercial electricity generation and supply, transport routes, building of roads, public and private resorts and buildings and structures for industrial manufacturing.

This therefore limits the undertaking of the identified activities in the nominated area where they threaten the integrity of the World Heritage Site.

The Environment Conservation Act (Act No. 73 of 1989) enables the Minister of Environmental Affairs and Tourism to call for an environmental impact assessment if a development will have a significant impact on the natural and cultural environment. The Regulations and Guidelines for this legislation have had a significant impact and have increased public awareness of the need for environmental management. The legislation also has weaknesses, particularly with regard to monitoring of cumulative impacts. The National Environmental Management Act (Act No. 107 of 1998), which will come into force when the Regulations for integrated environmental management are published in 2002, overcomes most of the problems and makes environmental impact assessments mandatory. Any development on, or rezoning of, the Makapan Valley Heritage Site will therefore require an independent integrated environmental assessment before the development can take place. This will include an assessment of cultural heritage sites that may be affected.

- ***Legal protections in terms of the Minerals Act***

  Minerals Act 50 of 1991 (“the Minerals Act”)

  Mining and prospecting in the area is limited by the Minerals Act. Mining may only be undertaken by Permit Holders.

  A prerequisite for the commencement of mining by a permit holder is the approval of an Environmental Management Programme. The Director-General may also require that an Environmental Impact

Assessment be carried out in respect of intended prospecting or mining operations.

- ***Access Control***

  Unauthorised access to the Taung Skull heritage site is potentially a strong threat to its security. At present, control appears to be sporadic. It is not clear whether or not gate fees are taken, and what checks and balances exist, or even if some form of visitor records are kept. The North West Parks Board employs persons to function as site gatekeepers, cleaners, and caretakers. However, they were not present on either of the site inspections undertaken. The issue of regular, controlled access needs to be urgently addressed.

d. Agencies with management authority

Although, as outlined above, there are some existing protective measures in place a new mechanism is envisaged to consolidate existing measures and ensure the proper management and protection of the area. This will have to take the form of an "Overall Management Authority". In addition to this, it may be necessary to devolve day to day management to a lower level, but the composition of such a management body has not yet been finalised.

An overall management authority in terms of the World Heritage Act has not yet been appointed.

- ***SAHRA: The South African Heritage Resources Agency***

  The SAHRA exercises management over the site in terms of its protective legislation described in 4c above. SAHRA is legally responsible for protecting and managing the site

- ***North West Department of Agriculture, Conservation and Environment (NW DACE)***

  This provincial body exercises control over certain aspects of the site, notably the control of alien vegetation and the issuing of permits for research that involves the collection of animal and plant material. The Department is also responsible for the supervision of domestic animal grazing rights on the site. (See also under North West Parks and Tourism Board below for further responsibilities devolved to NW DACE).

- ***Department of Water Affairs and Forestry (DWAF)***

  This National organisation exercises control over all matters pertaining to surface and groundwater. The DWAF has pledged an amount of R750 000 for water-related projects in and around the Taung Site.

- ***Greater Taung Municipality***

  This important local government structure is well positioned to play a major role in the day to day management of the Taung site. The improvement of the site and its tourism potential has already been written into the planning documents for the district and region, in the form of the Integrated Development Plan (IDP) and the Spatial Planning Framework (SPF), two planning documents for which local municipalities are responsible. The planning embodied in these two documents has been carried over into the management plan.

  As a possible managing agent, the GTM are the party that are closest to the site and are closest to the project as a whole.

  In terms of municipal regulations, the municipality exercises management over various aspects of the Taung Heritage Site, which falls within Ward 12 of the greater Taung Municipality. The Municipality has a responsibility towards the local resident community in terms of health services, electricity and water supply.

- ***North West Parks and Tourism Board (NWTPB)***

  Responsibility for the management, development and conservation of the site was transferred, along with all other formally protected areas, from the Bophutatswana Parks Board to the NW provincial government in 1994 and from there to the North West Parks and Tourism Board on its foundation in 1997. The NWPTB are responsible for the conservation, management and development of the site as a tourism destination and has appointed two members of staff to manage the site. However, the NWPTB recently transferred the management responsibility, including the staff members, to the NW DACE. This transfer appears not to have been officially recorded. Furthermore, in the absence of any development since the transfer, the NWPTB has initiated planning discussions among some of the stakeholders to try to revitalise the development of the site and its surroundings. It is recommended that such initiatives should be integrated with the planning proposals put forward in this Nomination Dossier, National Heritage Site Application and Management Plan to avoid duplication.

- ***The Batlapeng Tribal Authority***

  The Batlapeng community which occupy the Main Property immediately surrounding the Taung Skull Fossil Site also utilise the resources of the site, such as the fuelwoods, the grazing and the water. They also have an established right as way and preferred pathways criss-cross the heritage site. These issues affect management planning and need to be negotiated with the Batlapeng Tribal Authority. Frictions between tribal and local government authorities can cause interminable delays in implementation of projects.

- ***North West Department of Agriculture, Conservation and Environment (DACE)***

  North West DACE have initiated the project and are prominently involved in it. Heritage Resource Management is probably somewhat outside their normal sphere of mandated activities.
  All these agencies with management authority perform or are able to perform management tasks that are within their legitimate sphere of activities, but there is no integrated management structure that co-ordinates the management of the site across the diverse areas of management that are required to maintain the site and turn it into a tourism icon of note.

e. Level at which management is currently exercised

Soon to be a National Heritage Site, management will ultimately be exercised at the National level.
Level at which management is exercised and responsible person - The Manager: SAHRA North West Province: Mr Ntsizi November, The manager, SAHRA North West Provincial office, P O Box 3054, Mmabatho, 2735, e-mail: sahra.nw1@iafrica.com.

At present (November 2003) the North West Parks Board is in charge of the site. This mandate was recently transferred to NW DACE, who now pay the salaries of the two site caretakers. However, there appears to be no written, formal record of the terms of this devolvement, as far as could be ascertained. In addition, the NWP&TB has this month initiated a tourism planning and development process involving all stakeholders in the area. The Board must therefore be still regarded as the official mandated organ of state responsible for the site. The CEO is Mr Vuysile (Charles) Ndabeni, North West Parks & Tourism Board, P O Box 4488, Mmabatho, 2735. E-mail: ndabenic@nwpg.org.za.

f. Agreed plans related to the property

There are several agreed plans relating to the property embodied in the official Integrated Management Plan and Spatial Development Framework drawn up by the Greater Taung Municipality. Most of these pertain to preparing the site for responsible tourism rather than to the conservation of heritage resources, or they refer to the provision of basic services such as access roads, water and the like.

The Heritage Site Management Plan commissioned by SAHRA North West has been drawn up but it is not yet a document of record, neither has it been through a public participation process. Its endorsement will require workshopping with the local resident community, the Chieftancy, the Greater Taung Municipality, the North West DACE and DSSACS, SAHRA, both provincial and national, and the overall management authority still to be formed as well as the conjoint management structure that will have to be brought into being to manage the World Heritage Site Cluster.

A recent project funded jointly by SAHRA and DSSACS allowed the following documents to be prepared:

- A Cultural Heritage Resources Survey
- A State of the Environment Report, with specific reference to Heritage Values of the site
- A Conservation Management Plan
- A report on the Legal Status of the site
- A Tourism Potential Assessment Report
- A Report on the Training of Tour Guides

The above documents are available from the Offices of the North West SAHRA. The contact details were recorded above.
There is as yet no formal Business Plan.

g. Sources and levels of finance

The Integrated Spatial Development Framework (SDF) for the Greater Taung Municipality was prepared in February 2002 by Metroplan Town Planners, to provide guidelines for the future development of the Greater Municipality.

This document notes the need for urban sprawl to be contained in order to protect cultural resources, such as the Taung Skull Fossil Site.

The attached MTEF Framework and 5- Year Plan indicated that an amount of R750 000 (funding source DWAF) has been set aside for water-related projects at Taung.

The same document shows the following funding provisions:

Buxton (Taung) World Heritage Site

- Buxton Heritage Site: (1st Application) R 10 000 000.00 (Source: Lotto and ECO Fund: Status - Applied)
- Buxton Heritage Site: (2nd Application) R 5 000 000.00 (Source: Lotto and ECO Fund: Status - applied))
- Tourism Sign Boards for Taung Skull Site: R 20 000 (Source: Transnet Foundation: Status - approved)
- Taung Skull Interpretative Museum: R 400 000.00 (Source: Transnet Foundation: Status - approved)
- Conservation Management Plan R 300 000.00 (Source: DACE/SAHRA. Status: Verbal) Note: The verbal agreement has become formal. The Management Plan and this Nomination Dossier has been undertaken on the strength of these funds.

An amount of about R16 000 000 has been budgeted for the project.

An additional document identifies the Taung Skull Tourism Information Centre specifically as "Project Number 10272", a joint venture project between the Greater Taung Municipality and various provincial and national government departments. The project entails the following:

- Conservation Management Plan - Funded R400 000
- Tourism Information Centre - Funded R1 660 000.00
- Museum and Library
- Arts and Crafts centre
- Accommodation facilities and picnic sites together with ablution facilities.

From the above, it can be seen that after many decades of neglect, local, provincial and national structures are in the process of coming together to fund, manage, nurture and present the heritage resources of the Taung Skull Fossil Site.

h. Sources of expertise and training

- North West University, Mmabatho and Potchefstroom Campuses (runs a training course in Tourism and related subjects. Has a History Department)
- The North West SAHRA - source of trained expertise
- MacGregor Museum, Kimberley - source of trained expertise in archaeology, ethnology, botany, zoology, curation of archaeological and palaeontological relics
- Private Tourist Guide training Academies

Unfortunately, the expertise and skills necessary to implement the Management Plan that has been prepared are extremely thin on the ground throughout the North West Province. In the compilers opinion, this is the greatest risk that heritage management in the province faces. There are very few adequately trained and experienced heritage site managers, fund managers, heritage monitors or trained and accredited tourist guides. It is a legal requirement in South Africa to obtain accreditation as an official Tourist Guide before it is permissible to do commercial tourist guiding. To exacerbate the problem, there are few institutions where the necessary training may be obtained, a legacy of the old provincial boundaries versus the new leading to the fact that some of the new provinces have been left with fewer training resources than others.

Appropriate skills will have to be bought in to the project until such time that local training programmes can provide the necessary skills training to sustain the management and wider use of the site.

i. Visitor facilities and statistics

Visitor facilities for appreciation of the heritage content of the site are non-existent. There is no visitor interpretation centre or museum, no sales point for refreshments, no trained, knowledgeable accredited tourist guides, no pamphlets or brochures, no interpretative signage or other explanatory material.

There is, however, a laid out network of roads, parking areas and prepared picnic sites with tables and chairs. There are also walkways and pathways through the site for self-guided walks, but the lack of interpretative material does not allow for the appreciation of any of the heritage assets.

The ablution facilities, meant to service a nearby camping and picnicking area have been vandalised beyond use, due to a lack of site supervision.

The lack of regular controlled access has meant that visitor records have not been kept, but local users of the site report that visitor numbers have been declining.

Many things will have to be put in place before responsible tourism can take place. Experience at the Makapan Valley Site has shown that with the provision of trained tourist guides and minimal tourist-support facilities, visitor numbers soon increase.

j. Property Management Plan

The Property Management Plan is embodied in the Conservation Management Plan commissioned by SAHRA North West and DSSACS. The volume entitled The Taung Skull National Heritage Site: Conservation

Management Plan provides background information and defines the associated Management issues across a broad spectrum of management issues. The site management plan has been presented in Table format as "Appendix 3" of the plan and informs site managers what to do, why it is necessary to be done, how to do it and who should do it. It also outlines the expected outcomes and provides for consideration of the actual outcomes. Monitoring is an integral part of the plan.

k. Staffing levels

The site is overseen and inspected from time to time by Mr Ntsizi November of the North West SAHRA Office. His is a compliance function. Once the site is formally declared as a National heritage Site, the National SAHRA (Cape Town) will assume the compliance and management role.

Once the site becomes a World Heritage Site, DEAT will assume the prime management role.

North West Parks and Tourism Board are at present tasked with site supervision and there are three paid persons who are meant to look after the site and perform caretaking and supervisory functions, which includes waste management and cleaning.

Two persons are currently employed by NW DACE to perform caretaking, supervisory functions, waste management and cleaning. (The arrangement between the North West Parks and Tourism Board and NW DACE is explained above under the heading North West Parks and Tourism Board.)

Base level staffing requirements are:

- Gatekeeper
- Receptionist
- Heritage site rangers (2)
- Site-specific tourist guides (2)

SECTION 5: FACTORS AFFECTING THE PROPERTY

a. Development pressures

The Taung Skull Fossil Site is situated deep within a rural tribal area and is occupied by people who fall within the sphere of influence of the Batlapeng Tribal Authority. The settlement pattern is of the dispersed rural type, with the positioning of settlement density being determined by the presence of natural watering points for livestock. Within the Greater Taung Municipality, within which the Taung site falls, there are 110 widely dispersed rural settlements which makes the provision of services expensive and difficult to install.

Many of the householders do not have formal employment, or one, usually the male, is a migrant labourer, leaving the family to eke out a subsistence existence on scarce local resources.

Overgrazing is a problem everywhere, as is the never-ending spread and dispersal of the rural settlements. The local and regional authorities are concerned about the environmental impact, but densification is not an easy solution given the subsistence nature of the rural economy.

Much of the indigenous Kalahari Thornveld woody vegetation has been stripped for fuelwood, creating an exposed, desert-like approach.

Fortunately, the modest and traditional building materials and attractive traditional architectural styles do not constitute a threat to the heritage values of the site itself. The quality of the transit experience creates the impression that the abandoned limestone quarry is an oasis of green in an otherwise environmentally degraded surrounding territory: it is the environmental degradation not the structures that are the problem..

Development pressure might in future take the form of power lines, telephone lines and telecommunication towers, which will have to be erected with due consideration for visual impact and aesthetics. The buffer zone has been proposed with this, amongst other considerations, in mind.

b. Environmental pressures

Environmental pressures are severe in the immediate surrounding territory outside the heritage boundary. Inside the site, however, there are also several environmental issues which require management intervention:

- ***Fuelwood gathering***

  With the build-up of population pressure around the site, fuelwood gathering is becoming an increasing problem. Although there is a power line to the site and the adjacent Buxton Village which houses the descendants of former limeworkers, most villagers rely on indigenous hardwoods for their energy requirements. There is a never-ending quest for fuel. Villagers collect firewood within the site for use and sale outside. Fuelwood is so highly sought after that its gathering does not seem to be confined to favoured species. Alien pepper trees are also chopped. Apart from the fact that trees within the heritage site are needed for shade in an otherwise arid and glaring, harsh quarry environment, the sawed-off branches are ugly and untidy.

- ***Grazing***

  The weeds, acacia pods, trees and indigenous shrubs and herbaceous vegetation is grazed by cattle, donkeys, goats (particularly destructive), and sheep. Apart from the impact on the vegetation, the trampling of exposed archaeological sites is a problem, and the exclusion of livestock from such areas of the site will have to be negotiated with local residents.

- ***Gathering of Medicinal Plants***

  This practise requires further investigation and study. Several sought after species are rare and endangered, and a compromise will have to be made between protection of vulnerable species and fostering and preserving indigenous knowledge systems.

c. Natural disasters and preparedness

The site is not prone to natural disasters such as floods (elevated position) earthquakes, torrential rains and storms, tropical cyclones, runaway fires, and the like. The only possible "natural disaster" might be the slumping of old abandoned limestone dumps. The matter has been raised in the Management Plan.

Preparedness is an issue noted under the public safety section of the management plan but remains to be addressed. There is no such capacity on site.

d. Visitor / tourism pressures

The visitor/ tourism pressure on site is not occasioned by visitor numbers but by the uncontrolled access and behaviour of the visitors. This has resulted in undesirable behaviour such as theft, vandalism, graffiti, rowdy behaviour and unacceptable noise levels. Trampling of un-noticed archaeological and palaeontological sites and the scavenging of artefacts is also a management issue.

Visitation at present is mainly for the entertainment value of the site: the shady environment in an otherwise desertified landscape, the cool waters of the Blue Pools in the Thabasikwa River and the interesting abandoned quarry landscape which makes an excellent childrens' playground and picnic area.

The serious-minded, heritage-orientated visitor will be very disappointed, and the fall-off of visitor numbers reported in the Management Plan is probably from this former clientele.

Lack of controlled access makes estimation of site user numbers difficult, but it is probably seasonal, peaking on public holidays and festive occasions.

e. Inhabitants within the property and the Buffer Zone

There are people resident very close to the heritage boundary but not actually within. Many people live and use the abandoned mining village and infrastructure in Buxton, the village that was created to service the mine.

Almost immediately west of the site is the Thamasikwa Village. The local school is in Buxton, and the Thamasikwa residents use the Taung site as a short cut.

The area falls within a traditional tribal area and many people use the quarry for grazing their animals. There is a thorn-branch kraal right behind the abandoned mine office building.

Much of the energy requirements of Buxton Village and rural settlements further afield are supplied by fuelwoods removed from the quarry confines, as the woodland vegetation has been almost totally eradicated outside the site.

The pools of the Thabasikwa, created by old weirs put in by the Limeworkers, are major watering points for local livestock. This can be foreseen as a non-negotiable in the eyes of the local inhabitants as there is no alternative watering point nearby. Any security fence or access-control measures will have to take this need of the local inhabitants into account.

The Blue Pools area is used for ritual purposes by local Traditional Healers, who also collect medicinal plants from the site from time to time.
Children use the mine dumps as play areas.

There is a well-patronised liquor store in one of the abandoned mine buildings, right outside the present entrance to the site. The issue has been noted in the Management Plan.

Local people by default have come to regard the site as theirs and the many management issues that arise from their presence and uses of the site will have to be negotiated sensitively with them.

A table of concerns has been compiled, which notes the needs and interests of a wide range of stakeholders. This exercise was part of the public participation programme done as part of the Management Plan. The formalisation of a buffer zone and managed access control will go a long way towards resolving many of these issues.

SECTION 6: MONITORING

a. Monitoring the state of conservation of the site

Monitoring the state of conservation of the property should be conducted in terms of the criteria stipulated in the Taung Skull Fossil Site management plan. The site sensitivities, threats, risks, management requirements and monitoring criteria are summarised in Appendix 3. The table also suggests authorities and parties responsible for the different aspects of management and monitoring.

As yet, there is no administrative structure which can set up a monitoring programme for the Taung site - there are no trained heritage site monitors, nobody to train them and nobody to tell them exactly what to look for, although there is a status quo report which can function as the frame of reference. This is an issue that the new overall management authority will have to address as a top priority. Monitoring of the physical aspects of the site has just not taken place to date.

- ***Monitoring Issue: Research***

  Research proposals are screened by SAHRA who either issues a permit to do research and excavate or not. Regular (annual) progress reports are requires from researchers. The progress and finalisation of the excavation process may be subject to a site inspection by SAHRA. The Provincial SAHRA structure is only just being set up and is not yet in a position to perform comprehensive site inspections.

  Research involving the collection of plants or animals has to be screened by the host institution's animal ethics committee and must receive the consent and permit of provincial environmental authorities.

- ***Monitoring Issue: Infrastructure***

  The access road is subject to inspection by both the local Municipal and Roads Agency inspectors.

  No other inspection of existing infrastructure is taking place.

- ***Monitoring Issue: Environment***

  Various departments are responsible for monitoring different aspects of the environment, for example, SAHRA, North West Parks and Tourism Board who have been tasked with looking after the site, Dept Environmental Affairs and the Municipality. DWAF and the GTM monitor the water situation.

- ***Monitoring Issue: Site safety and stability***

  The site should be subject to a professional safety audit at least once a year, particularly if the underground resources are to be used for tourism. No tourism should be allowed in the latter environments until such time as they have been proclaimed safe by a mine safety officer.

- ***Monitoring Issue: Tourism Impacts***

  Elementary visitor monitoring to gather basic data on visitor attendance figures, revenue generated, seasonal variation, peripheral economic spin-off and reasons for visits should be instituted to gauge shifts in public demand and the overall dynamics of tourism development.

b. Administrative arrangement for monitoring the property

Apart from the compliance and monitoring function of SAHRA, there are no administrative arrangements for monitoring the property as yet. This structure will have to set up by the envisaged overall management authority.

c. Results of previous reporting exercises

As far as can be ascertained, there are no records of previous monitoring reporting on the site in general.

Only the work of permitted scientists has been monitored, by the SAHRA. The original project proposals, conditions of permit, annual progress reports and publications resulting from such work are filed and stored with SAHRA (National), in Cape Town.

- ***Contact person: (National)***

  Mary Leslie
  Archaeology
  South African Heritage Resources Agency
  111 Harrington Street
  Cape Town
  8000
  REPUBLIC OF SOUTH AFRICA
  Tel: 021 462 4502
  Fax: 021 462 4509
  E-mail: mleslie@sahra.org.za

- ***Contact person: (Provincial)***

  Ntsizi November
  Eastleigh Mansion
  c/o Tillard and Warren Street
  MAFIKENG
  2735
  REPUBLIC OF SOUTH AFRICA
  Tel: 018 381 2032
  Fax: 018 381 6953
  E-mail: sahra.nw1@iafrica.com

SECTION 7: DOCUMENTATION

a. List of visual material

The following maps and photographs have been included as Appendix 1 and 2.

- ***Maps (Appendix 1)***

  Fig 1 Taung Skull Fossil Site: Locality Map

  Fig 2: Taung Skull Fossil Site: Provincial Locality Map

  Fig 3: Taung Skull Fossil Site: Regional Locality Map

  Fig 4: Taung Skull Fossil Site: Site Boundary

  Fig 5a: Taung Skull Fossil Site: Buffer Zone

  Fig. 5b: Taung Skull Fossil Site: Buffer Zone with farm boundaries

  Fig 6: Taung Skull Fossil Site: Existing Site Plan showing heritage sites

  Fig 7: Proclaimed boundaries

- ***Photographs (Appendix 2)***

  Fig. 8: First view of Buxton and the Limeworks

  Fig. 9: Buxton Village looking south-east from above the Mine Office

Fig. 10: The abandoned Norlim Limestone quarry at Buxton, near Taung, North West Province

Fig. 11: The Dart Pinnacle deposits and cairn

Fig. 12: Commemorative cairn marking approximate Taung Skull find site

Fig. 13: View across the abandoned Buxton Limeworks looking towards the Ghaap Escarpment

Fig. 14: Exposed fossil bone in the Hrdlicka's Pinnacle deposit

Fig. 15: Part of the Equus Cave archaeological site

Fig. 16: Precambrian fossil stromatolite mats exposed in the surrounding dolomite country rock

Fig. 17: The underground cave: stalactites

Fig. 18: Entrance to abandoned old mine shaft

Fig. 19: Tunnel interior: home to a significant bat colony

Fig. 20: Kalahari Thornveld vegetation on crest of Ghaap Escarpment

Fig. 21: Tree-chopping to obtain firewood

Fig. 22: Transport of fuelwood by donkey cart to surrounding villages

Fig. 23: The Blue Pool on the Thabasikwa River

Fig. 24: The Blue Pool above the weir

Fig. 25: Picnic site above the Blue Pool

Fig. 26: Vandalised toilet

Fig. 27: Abandoned mining "ghost town": the old Mine Office

Fig. 28: Steel girder rail bridge over the Thabasikwa River

Fig. 29: Stone church in Buxton Village (1920's)

Fig. 30: Stone miner's cottage, Buxton Village

Fig. 31: Outdoor altar and place of worship

Fig. 32: View over the quarry site looking towards Buxton

- ***Slides***

  The slides have been sent under separate cover. Each slide is individually labelled. Two sets have been provided. Their use is sanctioned by the signed Authorisation.

b. Bibliography: Key References Only

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c. Address where inventory, records and archive are kept

There is as yet no single archive in which site records are filed and stored. Records of various categories are stored at different addresses:

- ***Heritage-related records***

  These would include project proposals, permit applications, annual progress reports, work completed reports and publications emanating from completed work done on sites within and adjacent to the Taung Skull Fossil Site. The repository of such records is the National SAHRA Office in Cape Town. The address has been given in Section 6c.

- ***Cultural Heritage Resources Survey (November 2003)***

  The Cultural Heritage Resources Survey (CHRS) of the Taung Skull Fossil Site provides a well-annotated inventory of the full spectrum of cultural and natural heritage resources, from geological and Precambrian fossil resources to the present. Surviving aspects of "Living Cultural Heritage" such as oral traditions and indigenous knowledge systems such as ethno-botany have been considered. Gaps in the current state of knowledge for each heritage component have been identified.

  Contact persons:

  Judy Maguire
  P O Box 100
  Prince Albert
  6930
  REPUBLIC OF SOUTH AFRICA
  Tel/Fax: 023-541 1713
  E-mail: questar@icon.co.za

  Menno Klapwijk
  P O Box 11651
  Hatfield
  0028
  REPUBLIC OF SOUTH AFRICA
  Tel/Fax: 012-362 4684
  E-mail: cka@mweb.co.za

- ***State of the Environment Report (November 2003)***

  This document analyses all the threats and risks to which the various categories of heritage resources at the TSFS are subject, and proposes management strategies to mitigate them.

  Contact persons:

  Judy Maguire
  P O Box 100
  Prince Albert
  6930
  REPUBLIC OF SOUTH AFRICA
  Tel/Fax: 023-541 1713
  E-mail: questar@icon.co.za

  Menno Klapwijk
  P O Box 11651
  Hatfield
  0028
  REPUBLIC OF SOUTH AFRICA
  Tel/Fax: 012-362 4684
  E-mail: cka@mweb.co.za

- ***Conservation Management Plan (November 2003)***

  This is a comprehensive heritage site management plan for the Taung Skull Fossil Site which deals with the background and context of the TSFS, former and current initiatives, public consultation, legal issues, detailed site description including current land use and infrastructure, contemporary management issues and management structures. It also provides a site analysis and zoning, discusses development goals and ideal objectives for the site and predicts future management requirements.

  Contact persons:

  Judy Maguire
  P O Box 100
  Prince Albert
  6930
  REPUBLIC OF SOUTH AFRICA
  Tel/Fax: 023-541 1713
  E-mail: questar@icon.co.za

Menno Klapwijk
P O Box 11651
Hatfield
0028
REPUBLIC OF SOUTH AFRICA
Tel/Fax: 012-362 4684
E-mail: cka@mweb.co.za

- ***Legal Considerations Report (November 2003)***

  The Legal Considerations Report discusses the following:

  - Land ownership issues, rights and restrictions
  - Protections afforded the TSFS
  - Land use planning issues, Existing development
  - Existing Institutional Infrastructure
  - Administrative architecture as proposed in the national heritage Resources Act
  - World Heritage Convention and the implications and obligations

  Contact person:

Lisa Hopkinson
Mogg and Hopkinson Attorneys
1 Mokolo Close
Morningside
Sandton
2196
REPUBLIC OF SOUTH AFRICA
Tel: 011-883 4693
Fax: 011-788 3657
E-mail: lisa@mhattorneys.co.za

- ***Tourism and Tourism Potential Report (November 2003)***

  This report analyses the current state of tourism at the TSFS and presents a preliminary tourism marketing and development strategy for the site.

  Contact person:

Vincent Carruthers
VC Management Services
P O Box 368
Rivonia
2128
REPUBLIC OF SOUTH AFRICA

Tel: 011-463 2390
Fax: 011-706 1830
E-mail: vcms@mweb.co.za

- ***Site-specific tour guide training report***

  This report details legal aspects of tourism and tourist guiding and looks at the objectives and multiple benefits of a local site guide training programme for the TSFS. It enumerates selection criteria for site guides and provides a syllabus outline.

  Contact person:

  Murray MacGregor
  South African Conservation &
  Environmental Services
  P O Box 1490
  Strubensvalley
  1735
  REPUBLIC OF SOUTH AFRICA
  Tel/Fax: 011-475 8252
  E-mail: murray.macgregor@absamail.co.za

- ***Local and regional planning documents (local and provincial government)***

  The most significant of these documents are the Integrated development Plan (IDP) and Spatial Development Framework (SDF) for the Greater Taung Municipality.

  Contact person:
  Steyn de Jager
  IDP Coordinator
  Private Bag X1048
  TAUNG
  8580
  REPUBLIC OF SOUTH AFRICA
  Tel: 053-994 3922
  Fax: 053-994 3917
  E-mail: sdej@cybertrade.co.za

- ***Scientific reporting (ongoing)***

  The last almost 80 years of sporadic scientific research at the site has resulted in a large body of published and unpublished data, and numerous fossils, stone tools, coprolites, and palynological samples have been accumulated. These are stored in a number of repositories.

The repositories are normally prescribed by SAHRA at the time of the issue of the permit.

Contact person: Archaeology
Peter Beaumont
McGregor Museum
P O Box 316
Kimberley
8830
REPUBLIC OF SOUTH AFRICA
Tel: 053-839 2700
Fax: 053-842 0986
E-mail: se@museumsnc.co.za

Records kept at the address of the contact persons, also available from SAHRA North West province.

The McGregor Museum Kimberley is the repository of much of the Archaeological material collected from the Taung Skull Fossil Site.

Contact person: Palaeontology and palaeo-anthropology
Prof Jeff McKee
Department of Anthropology
The Ohio State University
124 W. 17th Ave.
COLUMBUS, OH 43210-1364
Tel: 614-292 2745
Fax: 614-292 4155
E-Mail: mckee@insight.rr.com

Prof P V Tobias
School of Anatomical Sciences
University of the Witwatersrand
P O Wits
2050
REPUBLIC OF SOUTH AFRICA

Records kept at the address of the contact persons, also available from SAHRA North West province.
The University of the Witwatersrand is also the repository of fossils from various Taung localities. It is also the repository of the original specimens making up the Taung Skull.

The University of California, USA is the repository of some of the earliest collections made at Taung.

Contact person: Palynology and Phytoliths
Prof. Louis Scott
Department of Plant Sciences
University of the Free State
Nelson Mandela Avenue
Bloemfontein
9300
Tel: 051-4012594
Fax: 051-4488772
E-mail: scottl.SCI@mail.uovs.ac.za

Records kept at the address of the contact persons, also available from SAHRA North West province.

Contact person: Botanical research
Tanya Anderson
McGregor Museum
P O Box 316
Kimberley
8830
REPUBLIC OF SOUTH AFRICA
Tel: 053-839 2700
Fax: 053-842 0986
E-mail: kmgbot@museumsnc.co.za

Records kept at the address of the contact persons, also available from SAHRA North West province.

Contact person: Zoological research
Corne Anderson
McGregor Museum
P O Box 316
Kimberley
8830
REPUBLIC OF SOUTH AFRICA
Tel: 053-839 2700
Fax: 053-842 0986
E-mail: corne@museumsnc.co.za

Records kept at the address of the contact persons, also available from SAHRA North West province.

Contact person: Traditional Knowledge Systems, Oral Traditions
Clive Bapela
Thari-Entsho Development Agency
P O Box 77323
Mamelodi West

0122
REPUBLIC OF SOUTH AFRICA
Tel: 012 805 1481
Fax: 805 1484
E-mail: clivethari@mweb.co.za

Records kept at the address of the contact persons, also available from SAHRA North West province.

Contact persons: History of area: Pre-colonial until the 20th Century

Andy Manson
Uni-Northwest
Private Bag X2046
Mmabatho
2735
REPUBLIC OF SOUTH AFRICA
Tel: 018-389 2186
E-mail: mansona@uniwest.ac.za

Vincent Carruthers
VC Management Services
P O Box 368
Rivonia
2128
REPUBLIC OF SOUTH AFRICA
Tel: 011 463 2390
Fax: 011 706 1830
E-mail: vcms@mweb.co.za

Records kept at the address of the contact persons, also available from SAHRA North West province.

Contact person: Mining and Fossil Site History

Judy Maguire
Project Manager
P O Box 100
Prince Albert
6930
REPUBLIC OF SOUTH AFRICA
Tel/Fax 023 5411 713
E-mail: questar@icon.co.za

Records kept at the office of the Project Manager.

- **Compiler of the Nomination Dossier Report**

Judy Maguire
Project Manager
P O Box 100
Prince Albert
6930
REPUBLIC OF SOUTH AFRICA
Tel/Fax 023 5411 713
E-mail: questar@icon.co.za

d. Glossary of Terms

BCK – Bapela Cave Klapwijk
BNPB – Bophuthatswana National Parks Board
CHRS – Cultural Heritage Resources Survey
CMP – Conservation Management Plan
COH – Cradle of Humankind
DACE – Department of Agriculture, Conservation and Environment
DEAT – Department of Environmental Affairs and Tourism
DSSACS – Department of Social Services, Arts, Culture and Sport
DWAF – Department of Water Affairs and Forestry
FHSSSKE – Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai and Environs
GTM – Greater Taung Municipality
IDP – Integrated Development Plan
NEMA – National Environmental Management Act
NHRA – National Heritage Resources Act
NHS – National Heritage Site
OMA – Overall Management Authority
PPC _ Pretoria Portland Cement
SAHRA – South African Heritage Resources Agency
SDF – Spatial Development Framework
SDI – Strategic Development Initiative
SMME – Small, Medium and Micro Enterprises
SOER – State of the Environment Report
TS FS – Taung Skull Fossil Site
TS NHS - Taung Skull National Heritage Site
UN – United Nations
WHC – World Heritage Committee
WHCA – Word Heritage Conservation Act No 49 of 1999
WHS – World Heritage Site

SECTION 8: SIGNATURE ON BEHALF OF THE STATE PARTY

APPLICATION FOR INCLUSION ON THE WORLD HERITAGE LIST

THE TAUNG SITE

NOMINATION DOSSIER:

A SERIAL EXTENSION TO
"THE FOSSIL HOMINID SITES OF
STERKFONTEIN, SWARTKRANS, KROMDRAAI AND ENVIRONS"

SIGNED _____ on behalf of State Party

FULL NAME: **Mohammed Valli Moosa**

TITLE: **MINISTER OF ENVIRONMENTAL AFFAIRS AND TOURISM**

DATE 27/1/04

APPENDICES

Appendix 1 Maps and Plans, Figures 1-7
Appendix 2 Photographs 8-32
Appendix 3 Letters of consent
Appendix 4 Letters of support from local authorities
Appendix 5 Authorisation: Rights to reproduction of images

APPENDIX 1

MAPS AND PLANS

Legend

Taung Skull Fossil Site

TAUNG SKULL HERITAGE SITE
Locality Map

Figure/Map No: 1
November 2003

NORTH

Bapela Cave Klapwijk
Landscape Architects &
Environmental Planners
Tel: 012 - 362 4684
Fax: 012 - 362 0394
cka@mweb.co.za

BOTSWANA

LIMPOPO PROVINCE

MOLOPO

ELANDS

N4

ZEERUST

RUSTENBURG

BRITS

R52

MMABATHO (MAFEKING)

MOROKWENG

R52

LICHTENBURG

R30

MAIPEING

GAUTENG

NORTH-WEST

R27

GROOT-HARTS

COLIGNY

VENTERSDORP

FOCHVILLE

R54

STELLA

DELAREYVILLE

POTCHEFSTROOM

HARTS

OTTOSDAL

KLERKSDORP

R53

VAAL

VRYBURG

N12

ORKNEY

N14

R34

R47

WOLMARANSSTAD

SCHWEIZER-RENEKE

HARTS

TAUNG

Taung Skull Fossil Site

VAAL

BLOEMHOF

FREE STATE

HARTS

VAAL

CHRISTIANA

NORTHERN CAPE

Kilometers

0 25 50 100 150 200

Legend

- Major Roads
- Railroads
- Rivers
- North - West Province
- Taung Skull Heritage Site

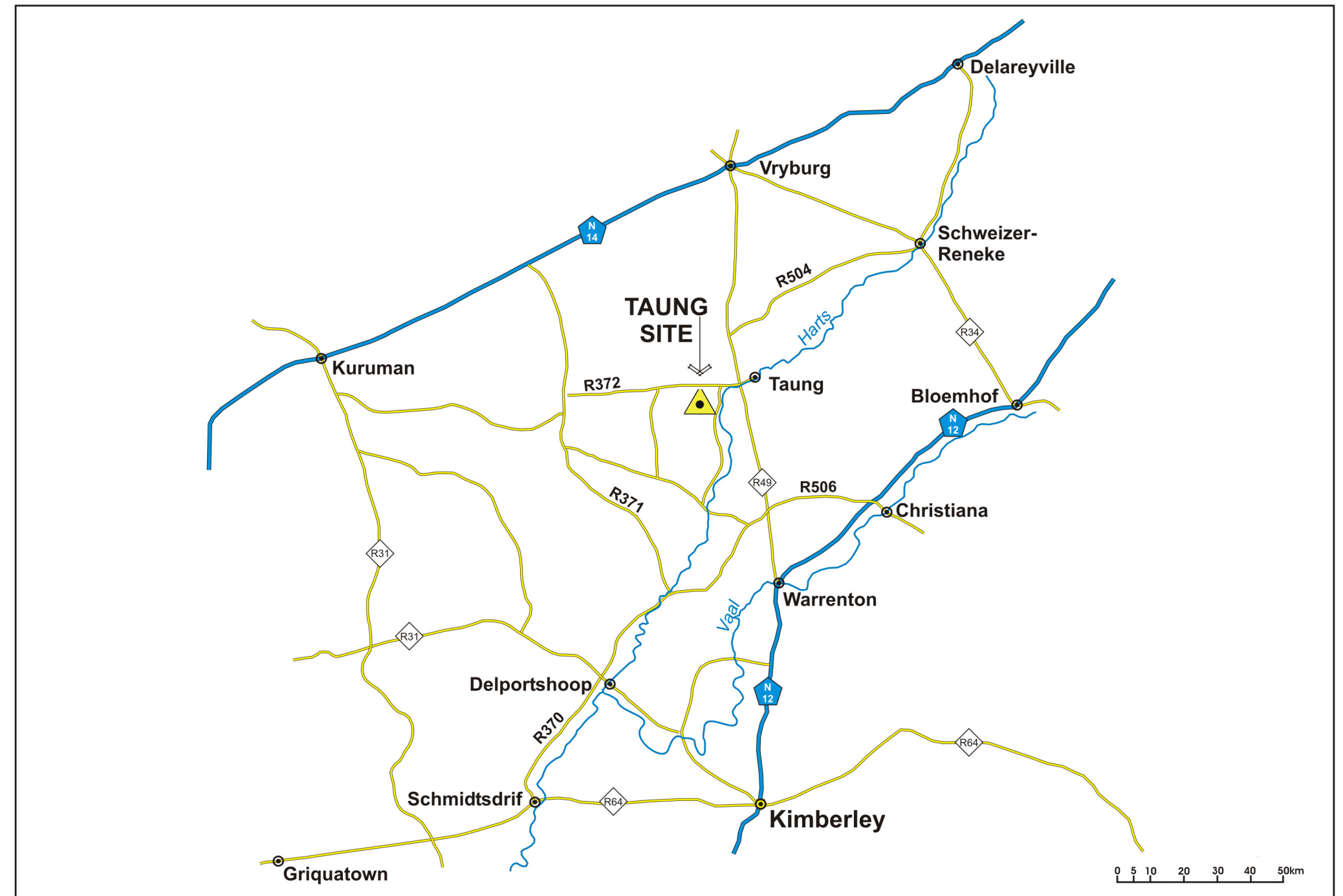
TAUNG SKULL HERITAGE SITE
Provincial Locality Map

Figure/Map No: 2
November 2003

Source: Environmental and Tourism Potential Atlas

NORTH

bck
Bapela Cave Klapwijk
Landscape Architects &
Environmental Planners
Tel: 012 - 362 4684
Fax: 012 - 362 0394
cka@mweb.co.za



Legend

- Major Roads
- Minor Roads
- Towns
- Rivers
- Taung Skull Fossil Site

TAUNG SKULL HERITAGE SITE
Regional Locality Map

Figure/Map No: 3
November 2003

NORTH

bck
Bapela Cave Klapwijk
Landscape Architects &
Environmental Planners
Tel: 012 - 362 4684
Fax: 012 - 362 0394
cka@mweb.co.za

TAUNG

SAAIMAN & PIETERSE
LAND SURVEYORS VRYBURG

REGISTRATION COPY
PROCLAMATION DIAGRAM

DESCRIPTION OF BEACONS:

A,B,C,D,E,F,B1,E1,F1,G1, H1,J1,L1,N1,P1,Q1,R1,S1 — 16 mm iron peg in cairn

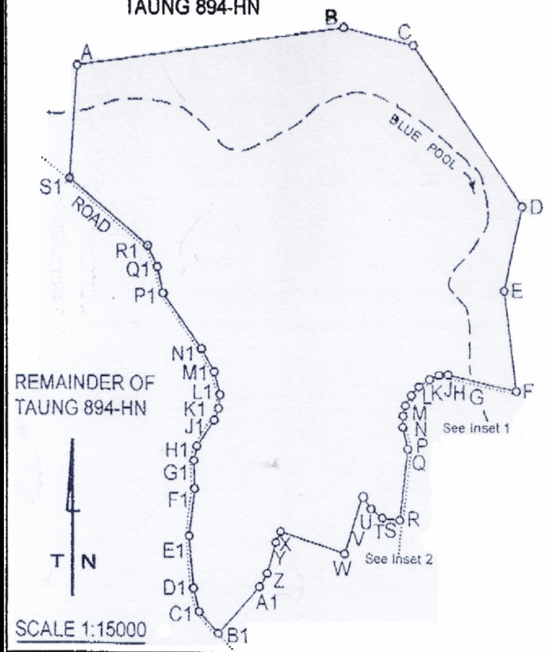
G,H,J,K,L,M,N,P,Q,R,S,T,U, V,W,X,Y,Z,A1,C1,D1,K1,M1 — Pipe corner post in concrete

S.G. No.
4496/2002
Approved

Surveyor-General
2002 -07- 19

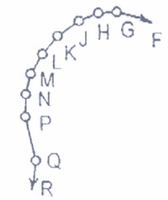
Sheet 1 of 2 Sheets

REMAINDER OF TAUNG 894-HN



SCALE 1:15000

INSET 1



SCALE 1:7500

INSET 2

SCALE 1:2500

The figure A B C D E F G H J K L M N P Q R S T U V W X Y Z A1 B1 C1 D1 E1 F1 G1 H1 J1 K1 L1 M1 N1 P1 Q1 R1 S1 represents 158.7429 hectares of land, being a PROCLAMATION AREA OVER THE REMAINDER of the farm TAUNG No. 894-HN

situate in the Province of NORTH WEST

Surveyed in June 2002 by me

Framed for the purpose of proclaiming a Heritage site in terms of the National Heritage Resources Act No. 25/1999

PROFESSIONAL LAND SURVEYOR
J.C. PIETERSE PLS 0487

This diagram is annexed to	The original diagram is No. C 6450/1967 Deed of Transfer No. T 57/1969	File HN - 894
VRYBURG REGISTRAR OF DEEDS		S.R. 2008/2002
		Comp. HN-6

BOTSWANA

0 1.5 3 6 9 12 15 Kilometers

Legend
- Buffer Zone
- Site Boundary

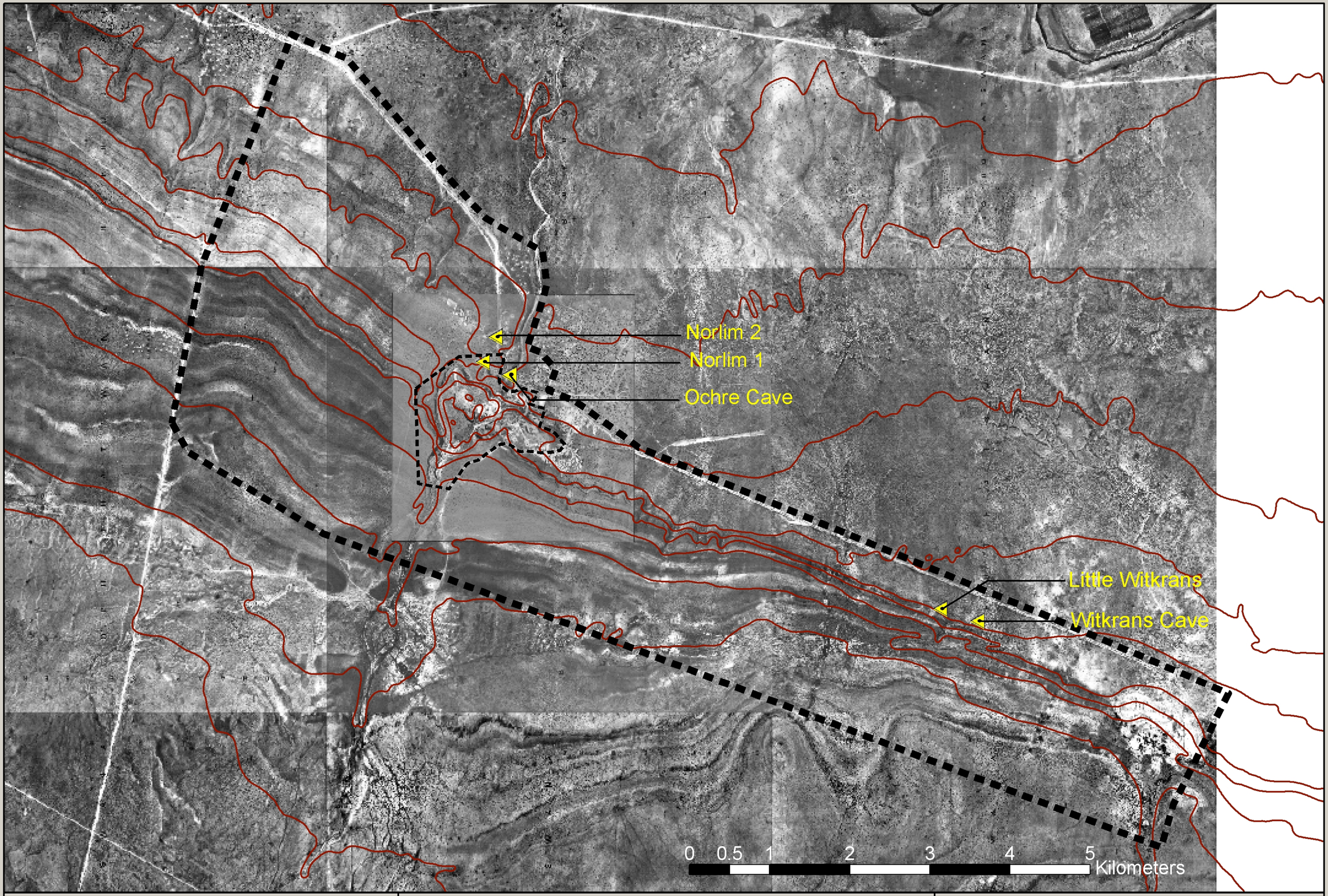
TAUNG SKULL HERITAGE SITE
Site Boundary

Figure/Map No: 4
November 2003

Source: Surveyor General
Maps 2724DA & 2724 DB

NORTH

bck
Bapela Cave Klapwijk
Landscape Architects &
Environmental Planners
Tel: 012 - 362 4684
Fax: 012 - 362 0394
cka@mweb.co.za



Legend
- Buffer Zone
- Sites
- Site Boundary

TAUNG SKULL HERITAGE SITE
Buffer zone

Figure/Map No: 5a
November 2003

Source: Environmental and Tourism Potential Atlas

NORTH

bck
Bapela Cave Klapwijk
Landscape Architects &
Environmental Planners
Tel: 012 - 362 4684
Fax: 012 - 362 0394
cka@mweb.co.za

WITPAN 892
316
315
4
5
25
24
TAUNG 841
THOMING 893
3
6
KLIP-PLAATS 804
KLIP-PAN 803
KGANTSANG 797
DINGLY DELL 2
7
8
28
GLADDEFONTEIN 798
KANG 796
9
23
22
MAREA AMOET 895
BIESJESDAL 799
HOEKPLAATS 1
LETSILABELUNG 794
VAALBOSCHHOEK 10
DRIEFONTEIN 30
CHOGA AMOET 896
MAPANA 795
KANKARO 921
UITEND 793
BRAKFONTEIN 897
VAALBULT 922
KGORE 898

0 1.5 3 6 9 12 15 Kilometers

Legend
- Buffer Zone
- Sites
- Site Boundary

TAUNG SKULL HERITAGE SITE
Buffer zone with Farm Boundaries

Figure/Map No: 5b
November 2003

Source: Environmental and Tourism Potential Atlas

NORTH

bck
Bapela Cave Klapwijk
Landscape Architects &
Environmental Planners
Tel: 012 - 362 4684
Fax: 012 - 362 0394
cka@mweb.co.za

Alcove Cave
Mine Tunnel
Blue Pool Picnic Area
Existing Parking Area
Underground River
Oxland Large Mammal Site
Tobias Cave
Jamie's Cave
Reservoir
Solution Cavity
Ablution Building
Satan Cave
Acacia Cave
Equus Cave
Blom Cave
Peabody's Equus Site
Black Earth Cave
Cut-through Alley
Quinney Cave
Innominate Cave
Lucky Moon Cave
LSN Cave
Berger Cave Complex
Tobias Pinnacle Deposits

Thabasikwa River

Norlim 5 + 6

Blue Pool Weir
Blue Pool
Taphonomy Test Site
Site Boundary
Solution Cavity Fossil Bone
Acheulean Hole
Dart Deposits
Memorial Cairn
Norlim 1
Hrdlicka Deposits
Existing Parking
Powerhouse Weir
Norlim 2
To Taung
Powerhouse Cave
Abandoned Powerhouse
Abandoned Bridge
Ochre Cave
Abandoned Mine Buildings
Lime Kilns
Bottle / Liquor Store
Existing gateway with gate keeper's kiosk
Mine Hostel Buildings
Occupied House
Compound Buildings

Thabasikwa River

Buxton Village

0 125 250 500 750 1,000 1,250 Meters

Legend
- Site Boundary
- Contours
- Sites
- Phase 1 Boundary

TAUNG SKULL FOSSIL SITE
Existing Site Plan

Figure/Map No: 8
November 2003
Source: BCK

NORTH

bck
Bapela Cave Klapwijk Landscape Architects & Environmental Planners
Tel: 012 - 362 4684
Fax: 012 - 362 0394
cka@mweb.co.za

SAAIMAN & PIETERSE
LAND SURVEYORS VRYBURG

REGISTRATION COPY
PROCLAMATION DIAGRAM

DESCRIPTION OF BEACONS:

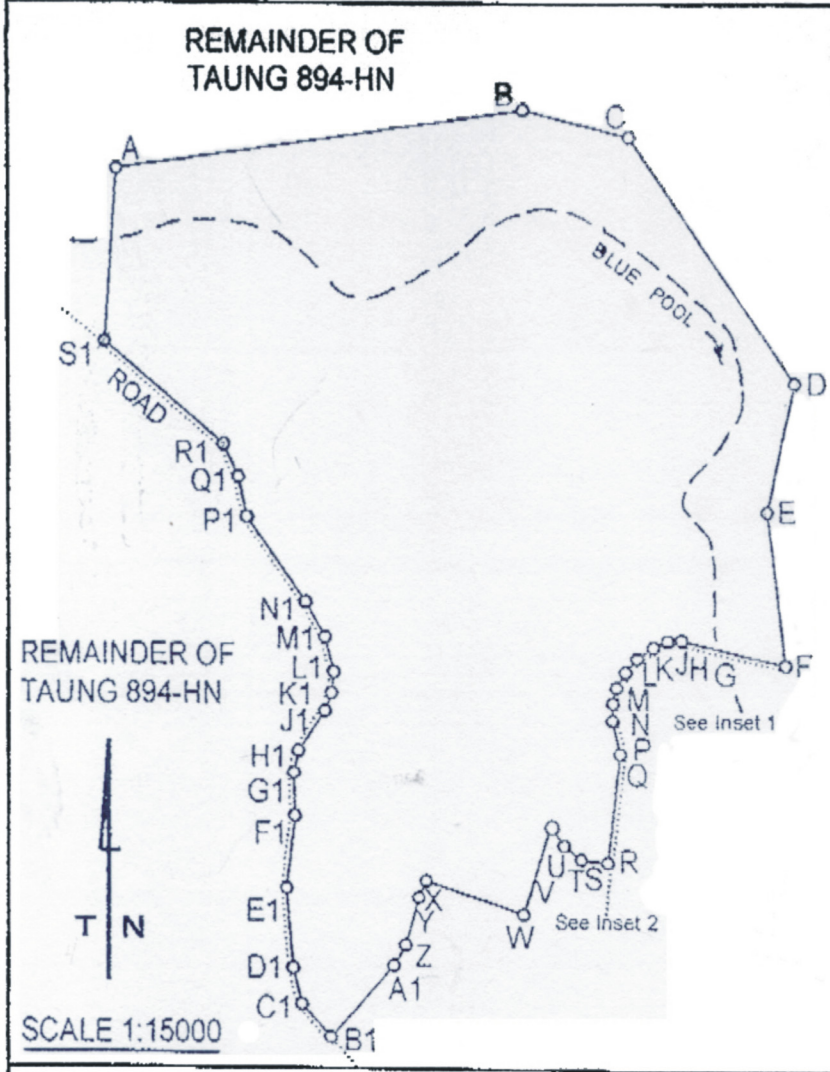
A,B,C,D,E,F,B1,E1,F1,G1, H1,J1,L1,N1,P1,Q1,R1,S1 — 16 mm iron peg in cairn

G,H,J,K,L,M,N,P,Q,R,S,T,U, V,W,X,Y,Z,A1,C1,D1,K1,M1 — Pipe corner post in concrete

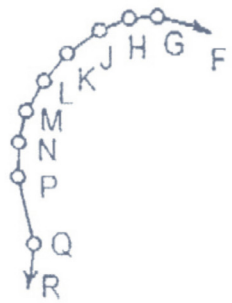
S.G. No.
4496/2002
Approved

Surveyor-General
2002 -07- 19

Sheet 1 of 2 Sheets



INSET 1



SCALE 1:7500

INSET 2

SCALE 1:2500

The figure A B C D E F G H J K L M N P Q R S T U V W X Y Z A1 B1 C1 D1 E1 F1 G1 H1 J1 K1 L1 M1 N1 P1 Q1 R1 S1 represents 158.7429 hectares of land, being a PROCLAMATION AREA OVER THE REMAINDER of the farm TAUNG No. 894-HN

situate in the Province of NORTH WEST

Surveyed in June 2002 by me

Framed for the purpose of proclaiming a Heritage site in terms of the National Heritage Resources Act No. 25/1999

PROFESSIONAL LAND SURVEYOR
J.C. PIETERSE PLS 0487

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Bapela Cave Klapwijk
Landscape Architects & Environmental Planners
Tel: 012 - 362 4684
Fax: 012 - 362 0394
cka@mweb.co.za

Figure No: 7
November 2003
Surveyor General

TAUNG SKUL FOSSIL SITE
Proclaimed Boundaries

Legend

APPENDIX 2

PHOTOGRAPHS

ALL PHOTOGRAPHS DATED 2003

Figure 8: **First view of Buxton and the Limeworks**

Figure 9: **Buxton Village looking south-east from above the Mine Office**

Figure 10: The abandoned Norlim Limestone quarry at Buxton, near Taung, North West Province

The world-famous fossil skull and mandible of a juvenile *Australopithecus africanus* or ape-man was blasted out of a lime-cemented breccia close to the Dart Pinnacle seen in the middle distance (right). This discovery focussed the limelight of lalaeo-anthropological research on the African continent, where it has remained ever since, as the undisputed Cradle of Humankind

Figure 11: The Dart Pinnacle deposits and cairn

The cairn (behind group of visitors) marks the approximate spot where the type specimen of *Australopithecus africanus* was blasted out of the quarry face. Sandy and calcified breccia deposits visible in the unmined boss of limestone behind the figures provide analogues for the sort of deposit that yielded the fossil skull

Figure 12: Commemorative cairn marking approximate Taung Skull find site

"The road to Buxton from Taung is a treacherous farmyard of donkeys, cows and goats but we survived it to find our weather-beaten, dusty, deserted lime-works ancestral home. The only great shakes about the Norlim lime quarry where Raymond Dart unearthed that famous skull in 1924 is the spectral echo of dynamite. Standing on a hill surrounded by dusty debris we found a pyramid of stone, its plague long removed and now replaced by a child-like cartoon chalk drawing of a girl's hair standing up in a state of shock. A troop of baboons confidently prowled across the deserted quarry in the valley below. This is all that marks the spot where Dart first held the skull of our ancient grandmother. This is our beginning."

Heather Robertson: "Talking Heads', 5 September 2000, Sunday Times Explorer

This evocative piece of writing exactly captures the mood of the Taung Skull Fossil Site and emphasises the need for integrated management and an effective development strategy.

Figure 13: **View across the abandoned Buxton Limeworks looking towards the Ghaap Escarpment**

Figure 14: **Exposed fossil bone in the Hrdlicka's Pinnacle deposit**

Figure 15: Part of the Equus Cave archaeological site
Exposed deposits are prone to becoming trampled by people and livestock and eroding fossils and artefacts are available for scavenging

Figure 16: Precambrian fossil stromatolite mats exposed in the surrounding dolomite country rock

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Figure 22: Transport of fuelwood by donkey cart to surrounding villages

Figure 23: The Blue Pool on the Thabasikwa River

Figure 24: The Blue Pool above the weir

Figure 25: Picnic site above the Blue Pool

Figure 26: Vandalised interior of ablution block

Figure 27: Abandoned mining “ghost town”: the old Mine Office

Figure 28: Steel girder rail bridge over the Thabasikwa River

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Figure 30: Stone miner's cottage, Buxton Village

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Fig. 32: **View over the quarry site looking towards Buxton**

APPENDIX 3

LETTERS OF CONSENT

APPENDIX 4

LETTERS OF SUPPORT FROM LOCAL AUTHORITIES

APPENDIX 5

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CONSERVATION MANAGEMENT PLAN FOR THE TAUNG SKULL NATIONAL HERITAGE SITE

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CONSERVATION MANAGEMENT PLAN FOR THE TAUNG SKULL NATIONAL HERITAGE SITE

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Judy Maguire	Project co-leader Heritage resources Conservation planning
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Jeff McKee	Palaeontology
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CONSERVATION MANAGEMENT PLAN FOR THE TAUNG SKULL NATIONAL HERITAGE SITE

1 EXECUTIVE SUMMARY

This Conservation Management Plan (CMP) integrates the Cultural Heritage Resources Survey (CHRS) document, the State of the Environment Report (SOER), the Legal Considerations Report and the two Tourism-related Reports into the Planning, although the CMP together with its 6 Appendices can function as a stand-alone document.

The site management plan draws on information contained in all of the above-mentioned documents and is summarized in table format in Appendix 3.

Natural and Cultural Heritage Resources

The maintenance of site significance and the protection of the heritage values of the Taung Skull National Heritage Site (TS NHS) are the prime drivers of the Conservation Management Plan. The heritage values and significance of those assets, which confer universal value on the site, have been described in detail in the document which was submitted for the Tentative Listing of the site as a World Heritage Site (Appendix 1). They are also detailed more fully in the Nomination Dossier for World Heritage Status, while the CHRS document provides a well-annotated catalogue of both natural and cultural assets.

Of prime importance is the fact that the Taung Skull Fossil Site has Type Locality status, as the first place in the world where the species *Australopithecus africanus* was found, while the fossil skull itself is the type specimen of the genus and species as well as defining the characteristics of the subfamily *Australopithecinae.*

Apart from this, fieldwork over the last six or more decades has shown that it was occupied by Stone Age peoples for a fair portion of the past 100 000 or more years, with over a dozen significant archaeological and palaeontological sites. Some have yielded fossil human remains, as yet undescribed.

Precambrian fossils entombed in the dolomitic country rock are a staggering 2.2 billion years old.

Natural assets include the vast tufa deposits, and the resident baboons, bat colonies and Black eagles. Habitat for several rare and endangered plant species still occurs in patches along the Ghaap Escarpment.

Tourism

The Tourism report is divided into two sections. The first reviews the current state of tourism at the Taung Skull Fossil Site (TS FS), the second presents a preliminary tourism development and marketing strategy for the TS FS as a significant heritage site. A bibliography and a number of explanatory photographs are appended.

Current state of tourism

Marketing, management and development of the TS FS are the responsibility of the North West Parks and Tourism Board. During the last 15 years a number of development plans were prepared but implementation has been minimal. Some of the recommendations contained in these documents are worthwhile and should be incorporated into new development initiatives, while others need to be revised and reconceptualised. Some tourism facilities exist at the TS FS, but much has been vandalised, some are inappropriate and there is an absence of administrative control. The principal use of the site at present is as a recreational resort for local people on public holidays, but other visitors (the number is dropping) include organised tours and individuals. No tourist data has been collected.

Preliminary tourism development and marketing strategy

The tourism potential of the site is recognised, but expectations of the benefits that will accrue to local people are unrealistically high. In addition, the planning mentioned above but the absence of implementation has led to a justifiable cynicism. Sensitivity will be required in order to regain the commitment and confidence of the people of Taung.

Four factors need to be taken into account in tourism development and marketing. The first is the size, dynamics, requirements and trends of the market. Second, a product range, based on market requirements and trends needs to be devised and packaged. Appropriate tourism products are proposed for consideration in this context. Third, a communications strategy to link products with the market is essential and a framework is outlined. Fourth, the clear allocation of tourism roles and responsibilities to designated individuals and institutions needs to be clarified.

Tourism should only be developed if it will be sustainable and if it generates benefits for stakeholders. The current absence of hard data is problematic and much market research needs to be done, so that expectations and business plans are both feasible and realistic. Tools would include desk

research, targeted interviews and field research. A number of potential markets are identified which accord with world-wide trends in tourism, e.g. heritage tourism, adventure tourism etc. The tourism market requires experiences rather than mere products and facilities. In the Taung context, interpretation will be vital, while practical issues such as accommodation, fencing and safety will require attention. It is recommended that the Taung site, on its own, will not generate significant tourism revenue or numbers, and that tourism hubs, nodes and routes will need to be designed to augment the value of the TS FS.

People-related issues

The Norlim quarry at Buxton is surrounded by fairly densely populated dispersed rural settlements. The quarry is situated on the preferred pathway between Thamasikwa Village and Buxton, and as there is only sporadic control of access, and because there is no intact perimeter fence, the heritage site is used for a variety of purposes. Those that have management implications are:

- Thoroughfare - used as a short cut.
- Use of the site for grazing by cattle, donkeys, goats and sheep.
- Watering points for animals at the Thabasikwa River.
- Collection and tree-chopping for fuelwood.
- Use of the area for collection of traditional plant medicines.
- Use of the waters of the Blue Pool for ritual purposes.
- Use of the dumps as a playground for children.
- Use of an old mine building as a liquor store.
- Use of mine buildings as craft centre and other community functions.
- Use of the picnic area as an entertainment venue - the site is not perceived as primarily a heritage venue.
- Disillusionment of local community with "paper plans".

The many management issues that this situation raises will need to be addressed through consultation between the management authority (still to be formed) and a local community forum or resident's committee - also still to be formed. The co-operation of the local people is of vital importance to the success of the development project.

Major objectives in the management plan

Heritage assets have to be managed if they are to retain those particular aspects that together create a unique site significance and authenticity. The management plan is constructed to ensure that this is done.

This required a thorough understanding of what the heritage components of the site are (the CHRS), what their current state of conservation is (the

SOER) and the present and possible future impacts, threats and risks (Heritage Management Table).

It was also necessary to assess, with respect to both the natural and cultural heritage environments, what the impacts of researchers on site significance might be (Appendix 4).

Understanding the legal framework governing heritage sites and the institutional arrangements through which these laws are applied is also an important objective of the management plan (Legal Considerations, Appendix 2).

Likewise, an understanding of current site conditions and existing infrastructure is crucial to site management as well as to possible development projects (see Site Zoning and Site Layout Plans).

It is also the frame of reference for the siting of proposed tourist-related infrastructure.

As the encouragement of tourism is one of the key objectives of the World Heritage Convention, an assessment of the regional and local tourism potential of the area was conducted, with the aim of defining reachable, sustainable tourism goals (main text and Appendix 5 and 6).

An important goal was an attempt to define who might be responsible for the different management areas and functions, and to see how co-operative governance might achieve this, and to identify and point out administrative gaps in the future implementation of the management plan.

Achieving the objectives

Important first steps are:

- Pursue the outstanding ownership issue to reach finality and closure.
- Formalize the application for National Heritage Status.
- Formalize the World Heritage Status initiative.
- Workshop the acceptance or modification of the management plan with key stakeholders, including the local community who will be most affected by developments on site.
- Establish the overall management authority. This authority might have to devolve management powers to a local committee or similar structure that can attend to the day to day management of the site.
- This project will require the investment of a substantial amount of investment capital, operating capital as well as human capital in order to be successful. Financial and capacity constraints and skills and experience constraints will have to be identified and evaluated in order to establish which contender or contenders for the position of

management authority are best placed to take on management of the site.

- It is essential that the management authority liaise with local government structures in order to assess existing funding provisions in order to implement the management plan and proposed tourism-related development projects.

There appears to be a shortage of skilled people to do heritage management in the Province, and to implement and execute the management plan.

Resources immediately required

- The necessary human resources for management
- The management authority, with access to funding
- Perimeter fence - approximately 8 km
- Full-time gatekeeper - (reception function)
- Full-time site caretaker
- Full-time heritage monitor for site surveillance
- Site guide
- New toilet block
- Something for the tourists to look at - site interpretation boards and a site museum. This can start off as something quite modest, and be expanded depending on demand. The previous "Site Solutions" proposals that were made would form an excellent "starter pack" that could be accomplished without excessive expense
- The immediate securing and protection of Equus Cave and Black Earth Cave
- Professional inspections of the underground environments - or their complete closure until such time that this can be arranged.
- Urgent need for the training of site guides.

2 INTRODUCTION

The context of this conservation management plan for the Taung Skull National Heritage site and the associated documentation may be summarized as follows:

- Bapela Cave Klapwijk (BCK) were appointed by the South African Heritage Resource Agency (SAHRA) North West and its partner in this Venture, the Department of Social Services, Arts, Culture and Sport (DSSACS), to compile a Cultural Heritage Resources Survey (CHRS) of the site, a Conservation Management Plan (CMP) (that includes natural and cultural heritage assets, infrastructure and tourist-related infrastructure), a Monitoring and Evaluation programme, a Heritage

Agreement and a Nomination Dossier for submission to the World Heritage Committee in Paris.

- The major issues in the motivation for this request were the need to comply with the pending application for National Heritage Site status and with the documentation requirements for World Heritage Site status.

- A Heritage Agreement had to be prepared but its negotiation and implementation are not part of the present brief.

- Approval of the management plan by a variety of stakeholders is desirable and necessary but achieving this is also not part of the present brief.

2.1 Why prepare a Management Plan?

- Heritage areas need to be managed if they are to retain those particular aspects that together create a unique site significance and authenticity.

- For management to be effective there needs to be an understanding of exactly what the heritage components of the site are, where they are located, their significance, and what the risks and threats to each are. This is, in part, the purpose of the Cultural Heritage Resources Survey (CHRS) and State of the Environment Report (SOER), which should be seen as an integral part of the Management Plan.

- Management needs to understand past and present human impact, and its possible future impact.

- The management plan needs to explain the full spectrum of measures and actions necessary to sustain the site itself, and to embed it positively within the community and local and regional planning that may take place in the surrounding area or region.

- The management plan needs to cater for the requirements of a wide range of potential users of the site: researchers, teachers, students, school children, and visitors seeking recreation.

- However, the activities of these groups must not put at risk the primary values of the site: its heritage significance and authenticity, its wildlife, the sense of wilderness and the well-being of the resident local community. The plan therefore needs to examine the requirements of these interest groups and integrate them into site planning. The focus at

all times is the well-being of the Heritage Site, and the retention of its heritage values.

- For this to happen, there has to be an understanding of the heritage assets of the site, what the values of each are, the processes that threaten or sustain them, and the definition of a set of objectives and priorities aimed at their conservation, presentation to interest groups and future management.

- The objectives of National and International Conventions, legislation and directives need to be incorporated in a clear and logical way into the planning framework, so that the legal obligations of these are met.

- Finally, a management plan needs to address the issue of audit, monitoring and review.

- A management plan lying on a desk is no use. What counts is an agreed upon management plan that is used to create visible results on site. This management plan has been written with this goal in mind.

- Steps need to be taken to devise and plan a process by which the Conservation Management Plan will receive the widest possible recognition and approval.

2.2 General requirements of the Management Plan

- Needs to inform all involved with the site, especially the site manager, about what is present, why it is there, why it is important or interesting, what factors threaten it, and how it should be managed. Much of this is documented in the CHRS.

- Needs to identify those who ought to be responsible for various aspects of management.

- Needs to identify key problem areas for managers to address.

- Needs to provide a state of the environment report against which changes in the site or management policy can be assessed so that further or improved strategies and plans can be developed.

- Needs to outline a review process, in order to check management effectiveness.

- Needs to provide a clear health and safety guidance for visitors and all who work there.

The following steps are essential parts of the planning process:

- Description of the area and the policies and legislation that affect it (this document).
- Evaluation of the components of the site (this document and CHRS).
- Determining ideal objectives for the site, including the reasoning behind each objective (this document).
- Identification of modifiers or constraints including risks (this document, State of Environment Report).
- Developing operational objectives (Management Table).
- Implementation through strategies or projects (Management Table).
- Identification of priorities for action (Management Table).
- Review of progress (Management Table, Monitoring and Evaluation).

2.3 Strategic planning issues: overview

The natural and cultural heritage values of the Taung Skull National Heritage Site (TS NHS) inform the entire structure of the management plan. The management plan has been constructed in order to preserve these values, to ensure that the things that make the TS NHS special and that are of universal significance are not diminished.

The identification and understanding of the values of the TS NHS have been documented in the Cultural Heritage Resources Survey which should be regarded as an integral component of the management plan. The identification, listing, understanding and analysis of these values of the site that are chronicled in the CHRS has enabled the vision for the site, the guiding principles, the management strategies and actions to be identified and highlighted.

The vision represents a short “big picture” statement of how the current generation and managers wish to leave the site for future generations of South African and international site users and research scientists.

The guiding principles link the vision with the management strategies and actions.

An important part of the basis for management relates to existing and required management structures and administrative arrangements that are available to provide the ongoing and long-term support for the TS NHS, which will include the implementation and execution of the management plan.

2.3.1 The values of the Taung Skull National Heritage Site

This is the first time that a full cultural heritage resources survey has been done for the TS NHS.

These assets have been described in detail in the Cultural Heritage Resources Survey document, which should be seen as an essential supplement to the Management Plan. The CHRS also contains the State of the Environment Report, which outlines the threats and risks to the all-important heritage resources.

The entire Management Plan has been constructed with the conservation of the heritage resources, and with them, the preservation of site significance, in mind. The Management Plan seeks to find a balance where this can be successfully achieved alongside carefully considered site presentation, in order to comply with the requirements of the World Heritage Convention.

Many sets of values have been identified, including:

- Geological and geomorphological (landform) values
- Precambrian palaeontological values
- Palaeontological and palaeo-anthropological values
- Archaeological values
- Palynological and micro-palaeontological values
- Historical values
- Mining history and production values
- Local architectural values
- Living heritage, including traditional healing and ritual practises, ethnobotany, crafts and dance
- Tourism and economic values
- Research and scientific values
- Educational values
- Botanical values
- Zoological values

These values or so-called “Cultural Heritage Resources” have been documented in detail in the CHRS and are summarised in the Table that follows:

VALUE OF NATURAL OR CULTURAL HERITAGE RESOURCE	LOCAL HERITAGE	PROVINCIAL HERITAGE	NATIONAL HERITAGE	WORLD HERITAGE
Geological, geomorphological (landscape)				
- Ghaap escarpment	v			
- Tufa deposits	v	v		
- Active accretion at Blue Pool Tufa	v			
- Channel fills	v			
- Good demonstrable geological contacts	v			
- Fossilisation of leaves in process	v			
- Solutional caves	v			
- River-cut caves	v			
- Record of post climatic change	v	v	v	
Palaeontological and Palaeo-anthropological values				
- Taung Skull fossil and site			v	v
- Hrdlicka's Pinnacle deposits			v	
- Dart Pinnacle deposits				
- Black Earth Cave	v	v		
- Stromatolites in dolomite	v			
Archaeological values				
- Numerous sites spanning the Earlier Stone Age to Later Stone Age. Equus Cave is particularly noteworthy (see CHRS)	v	v	v	
- Khoikoi settlements (relics of stone walling)	v			
Palynology and micro-palaeontology				
- Fossil pollens and phytoliths are preserved in some deposits. The information is of global significance (global climate charge)		v	v	v
Historical values				
- The surrounding area is rich in pre-colonial and early colonial history.	v			
- Historical evidence confirms BaTaung and Khoikhoi identity	v			

VALUE OF NATURAL OR CULTURAL HERITAGE RESOURCE	LOCAL HERITAGE	PROVINCIAL HERITAGE	NATIONAL HERITAGE	WORLD HERITAGE
Mining history				
- Quarry itself provides special ambience for Type Locality of *Australopithecus africanus*			v	v
- Remaining lime dumps are an important relict cultural imprint			v	
- Remaining mining infrastructure supports site significance	v			
- Mine buildings are of historical importance and a significant cultural imprint	v			
Architectural values				
- The mine environs and Buxton Village preserve many interesting examples of local vernacular architecture and stone-built miners' cottages	v	v		
- Architecture provides material substance to historical background to area	v			
- Mining and "Ghost town" provide sense of history	v			
Living heritage values				
- Traditional healing still practiced	v			
- Active indigenous knowledge systems still present	v			
- Traditional dance group present	v			
- Traditional crafts still practiced	v			
- Oral traditions still intact	v			
- Ethnobotanical knowledge still current	v			
- Old graveyard and grave sites	v			
- Traditional ties to land present	v			

VALUE OF NATURAL OR CULTURAL HERITAGE RESOURCE	LOCAL HERITAGE	PROVINCIAL HERITAGE	NATIONAL HERITAGE	WORLD HERITAGE
Tourism and economical values				
- Site is a potential World Heritage Site				v
- With basic tourist-related infrastructure in place, tourism could be increased	v	v		
- Outlets for local crafts and sewing	v			
- Economic opportunities in tourist-related support services, e.g. general dealer, tea shop, tuck shop, curios, informal accommodation, etc.	v			
Scientific research				
- The remaining scientific research opportunities are numerous. Information yield could be of National of Global significance			v	v
- Unique opportunities for research across many disciplines			v	
Educational values				
- Site has potential to function as “Outdoor Classroom” to support local schools and the environmental studies syllabus	v	v		
- Visitors’ interpretive centre would increase enjoyment of site and understanding of values	v	v	v	v
- Local community appreciation of heritage values and country	v			
Botanical values				
- Escarpment edge preserves elements of Kalahari Thornveld vegetation	v	v		
- 129 species present	v			
- Habitat for several Red Data Species (rare and threatened species)	v	v	v	

VALUE OF NATURAL OR CULTURAL HERITAGE RESOURCE	LOCAL HERITAGE	PROVINCIAL HERITAGE	NATIONAL HERITAGE	WORLD HERITAGE
- 64 medicinal plants - 16 medicinal to people and animals - 28 used magically	v			
- 87 ethobotanically important species	v	v		
Zoological values				
- Blue Pool escarpment area is a Black Eagle nesting site	v			
- Resident chacma baboon troop	v			
- Species recorded: 13 mammals 74 birds 8 reptiles 4 amphibians	v			

Management issues

The management of the Cultural Heritage Resources is a crucial component of the management plan. Interventions required are discussed in the SOE Report (Table) included in the CHRS and listed in the Management Table, Appendix 3 of this document.

2.3.2 Vision and desired future

The "Official" vision for the TS NHS will have to be workshopped with stakeholders. A provisional tentative vision might be:

- "*To ensure that the World Heritage and other multiple natural and cultural values of the TSNHS are understood, conserved, protected, respected and shared by all*".

- The main elements of the "desired future" (as assessed from previous documentation and interviews) are to improve the local, national and international image of the TS NHS by pursuing National and World Heritage Status and to create a well-managed and sustainable tourist venue at the site. Future planning must ensure that the local community benefits from the World Heritage listing and enhanced tourism and that it understands, appreciates and supports whatever has been achieved.

2.3.3 Guiding principles

- Stakeholder participation
- Forging partnerships in management
- Protection of heritage values
- Environmental protection
- Sustainable and appropriate use
- Multiple land use if this does not threaten the heritage values of the site
- Community needs and concerns considered and built into planning
- Community to benefit from development projects by means of employment, skills transfer, empowerment, etc.
- Economics of financial support base considered at all times
- In terms of responsibilities, the principle of the "beneficiary pays" has been employed.

2.3.4 Administrative arrangements

An overall managing agent will have to be appointed by SAHRA. The rationale behind this and the major contenders to fulfil the management role have been discussed fully in the Legal section and in section 10: Existing Management Structures.

2.4 Method employed in developing the Management Plan

The Management Plan is based on the conservation of natural and cultural values of the site. The steps taken to achieve this outcome have been outlined below:

- Identify the natural and cultural values of the site by undertaking a Cultural Heritage Resources Survey.

- This allowed the distillation of a vision to provide focus for the Management Plan.

- The "state of the environment report" was undertaken to identify the threats and risks to the heritage values.

- A legal review was undertaken to identify legal issues and obligations affecting the site that would have to be drawn into the planning process.
- Site visits and scans provided a status quo report on current site conditions.

- Current management issues were identified.

- Future tourism and educational opportunities were researched.

- New management issues that are likely to arise were assessed.

- From the above, the current management issues in relation to the protection of the values of the site became apparent.

- This determined the management strategies needed in order to maintain site significance.

- The operational plan (the "Management Table"; Appendix 3) could be derived from the above 10 steps. The Operational Plan also identifies persons or agencies responsible for executing each aspect of the management plan, and includes a Monitoring and Evaluation Strategy.

2.5 Core components of the Management Plan

The following components are the core sections of the management plan:

- The Cultural Heritage resources Survey
- The "State of the Environment Report"
- The Legal Considerations chapter (Chapter 5, Appendix 2)
- The analysis of current site conditions and contemporary management issues (Chapters 8 and 9)
- The analysis of the tourism potential of the site (Chapter 11 and Appendix 5)
- The analysis of ideal objectives for the site
- Site zoning and layout
- The Operational Management Plan (The Management Table, Appendix 3)
- The Heritage Agreement, which incorporates the management Plan as an appended document.

3 BACKGROUND TO THE TAUNG NATIONAL HERITAGE SITE

3.1 Locality

The Taung Skull Fossil Site is situated in within the abandoned Buxton Limeworks, which was an extensive limestone quarry excavated into the ancient travertine carapaces that had built up along the Ghaap Escarpment, where the Thabasikwa River drops over the escarpment edge. The Buxton Limeworks lie some 17 km west of the town of Taung, which is situated on the floor of the valley of the Harts River. The town of Taung is about 100 km north of the regional centre of Kimberley (in the Northern Cape) and 220 km south of Mmabatho, capital of Northwest Province - see Locality Maps,

Figures 1, 2, 3, 4. It lies deep within the drier western part of South Africa and is not on a major transport or tourist route. (Figures 6, 7).

To reach the site, the visitor has to turn off the main Vryburg-Kimberley road (the R49) and take the tar road to Reivilo, east of Taung. About 10 km out, is a turn-off to the south marked "Mokassa II" (also tarred), which takes the visitor through a dispersed rural settlement to Buxton, where the Limeworks are situated.

The site is also accessible from Reivilo, approaching from the west.

The area of the National Heritage property is 158,7429 ha (Figure 4) which includes the full extent of the former limeworks together with the associated lime-burning kilns, industrial buildings and mine compound. The entire Heritage Site area falls within "The Remainder of the property Taung 894 HN" and is on State-owned land which falls under the sphere of influence of the local Batlapeng Tribal Authority.

A buffer zone around the site, created in order to preserve site aesthetics and to prevent undesirable land-uses, has been proposed (Figure 5a and 5b). The approximate area and motivation for the buffer zone is discussed in the Section 3.3.

Management issue; off-site signage, rural ambience

- Although there is a regulation brown tourism notice board on the Taung-Reivilo road, a clear indication at the turn-off to Mokassa II is required, as well as at least one confirmatory sign between the turn-off and Buxton. Many visitors are apt to become anxious in unfamiliar surroundings and need announcements of distances, etc.

- Management strategies should be adopted to preserve the rural ambience of the approach and transit experience. Thought should be given to presenting houses built in traditional vernacular style, some of which could be used as "Bed and Breakfast" type accommodation. Care should be taken to ensure that these buildings are authentic and a true reflection of traditional building style and materials.

- Additional management issues are discussed under the section entitled Access Road, Section 8.1.

Legend

Taung Skull Fossil Site

TAUNG SKULL HERITAGE SITE
Locality Map

Figure/Map No: 1
November 2003

NORTH

Bapela Cave Klapwijk
Landscape Architects &
Environmental Planners
Tel: 012 - 362 4684
Fax: 012 - 362 0394
cka@mweb.co.za

BOTSWANA

LIMPOPO PROVINCE

MOLOPO

ELANDS

N4

ZEERUST

RUSTENBURG

BRITS

R52

MMABATHO (MAFEKING)

MOROKWENG

R52

LICHTENBURG

R30

MAIPEING

GAUTENG

NORTH-WEST

R27

GROOT-HARTS

COLIGNY

VENTERSDORP

FOCHVILLE

R54

STELLA

DELAREYVILLE

POTCHEFSTROOM

HARTS

OTTOSDAL

KLERKSDORP

R53

VAAL

VRYBURG

N12

ORKNEY

N14

R34

R47

WOLMARANSSTAD

SCHWEIZER-RENEKE

HARTS

TAUNG

Taung Skull Fossil Site

VAAL

BLOEMHOF

FREE STATE

HARTS

VAAL

CHRISTIANA

NORTHERN CAPE

Kilometers

0 25 50 100 150 200

Legend

- Major Roads
- Railroads
- Rivers
- North - West Province
- Taung Skull Heritage Site

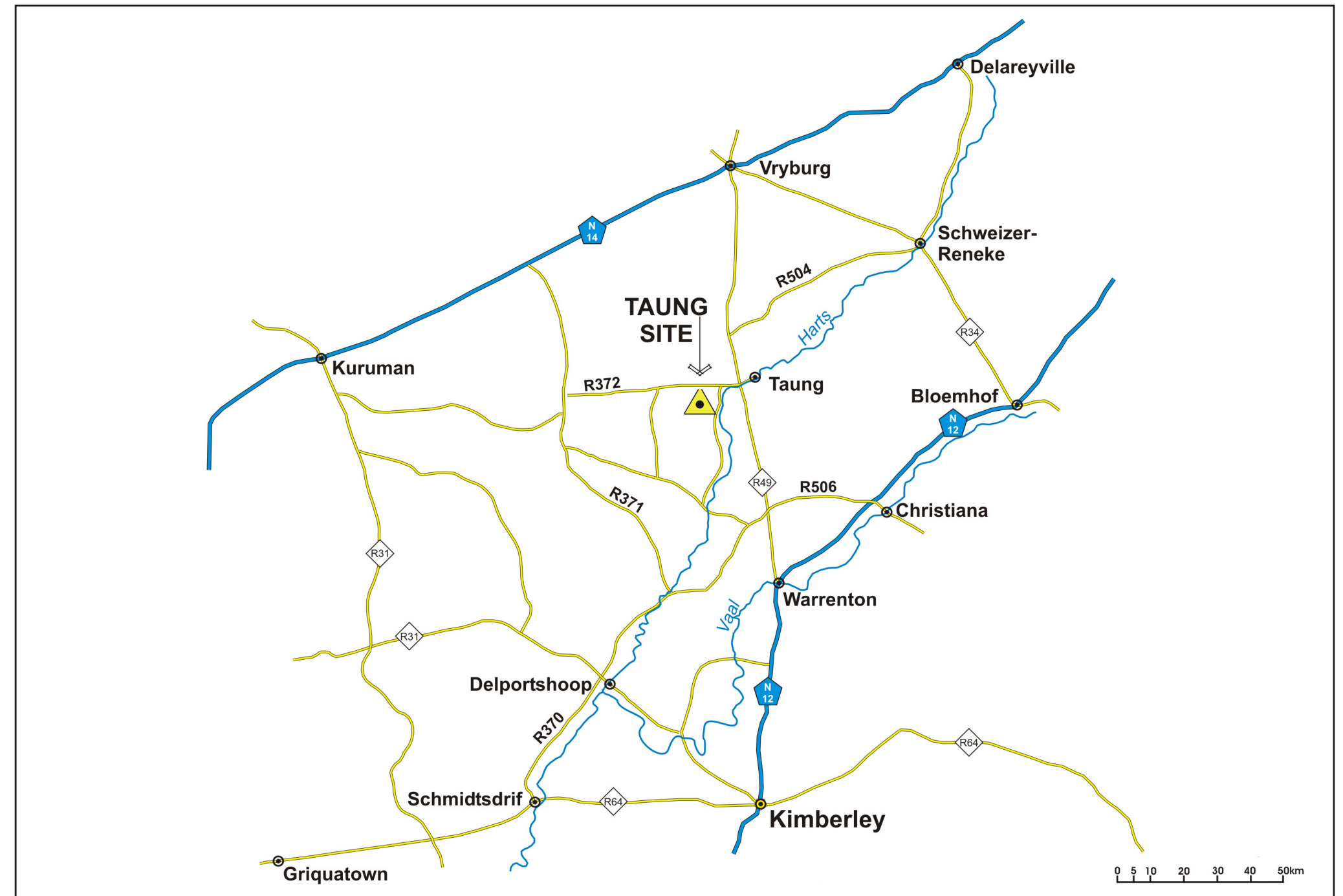
TAUNG SKULL HERITAGE SITE
Provincial Locality Map

Figure/Map No: 2
November 2003

Source: Environmental and Tourism Potential Atlas

NORTH

bck
Bapela Cave Klapwijk
Landscape Architects &
Environmental Planners
Tel: 012 - 362 4684
Fax: 012 - 362 0394
cka@mweb.co.za



Legend

- Major Roads
- Minor Roads
- Towns
- Rivers
- Taung Skull Fossil Site

TAUNG SKULL HERITAGE SITE
Regional Locality Map

Figure/Map No: 3
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NORTH

bck
Bapela Cave Klapwijk
Landscape Architects &
Environmental Planners
Tel: 012 - 362 4684
Fax: 012 - 362 0394
cka@mweb.co.za

TAUNG

SAAIMAN & PIETERSE
LAND SURVEYORS VRYBURG

REGISTRATION COPY
PROCLAMATION DIAGRAM

DESCRIPTION OF BEACONS:

A,B,C,D,E,F,B1,E1,F1,G1, H1,J1,L1,N1,P1,Q1,R1,S1 — 16 mm iron peg in cairn

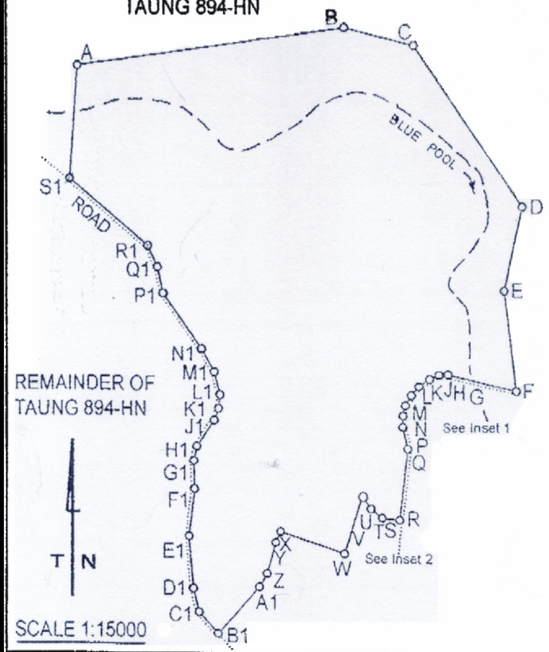
G,H,J,K,L,M,N,P,Q,R,S,T,U, V,W,X,Y,Z,A1,C1,D1,K1,M1 — Pipe corner post in concrete

S.G. No.
4496/2002
Approved

Surveyor-General
2002 -07- 19

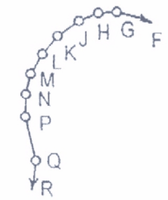
Sheet 1 of 2 Sheets

REMAINDER OF TAUNG 894-HN



SCALE 1:15000

INSET 1



SCALE 1:7500

INSET 2

SCALE 1:2500

The figure A B C D E F G H J K L M N P Q R S T U V W X Y Z A1 B1 C1 D1 E1 F1 G1 H1 J1 K1 L1 M1 N1 P1 Q1 R1 S1 represents 158.7429 hectares of land, being a PROCLAMATION AREA OVER THE REMAINDER of the farm TAUNG No. 894-HN

situate in the Province of NORTH WEST

Surveyed in June 2002 by me

Framed for the purpose of proclaiming a Heritage site in terms of the National Heritage Resources Act No. 25/1999

PROFESSIONAL LAND SURVEYOR
J.C. PIETERSE PLS 0487

This diagram is annexed to	The original diagram is No. C 6450/1967 Deed of Transfer No. T 57/1969	File HN - 894
VRYBURG REGISTRAR OF DEEDS		S.R. 2008/2002
		Comp. HN-6

BOTSWANA

0 1.5 3 6 9 12 15 Kilometers

Legend
- Buffer Zone
- Site Boundary

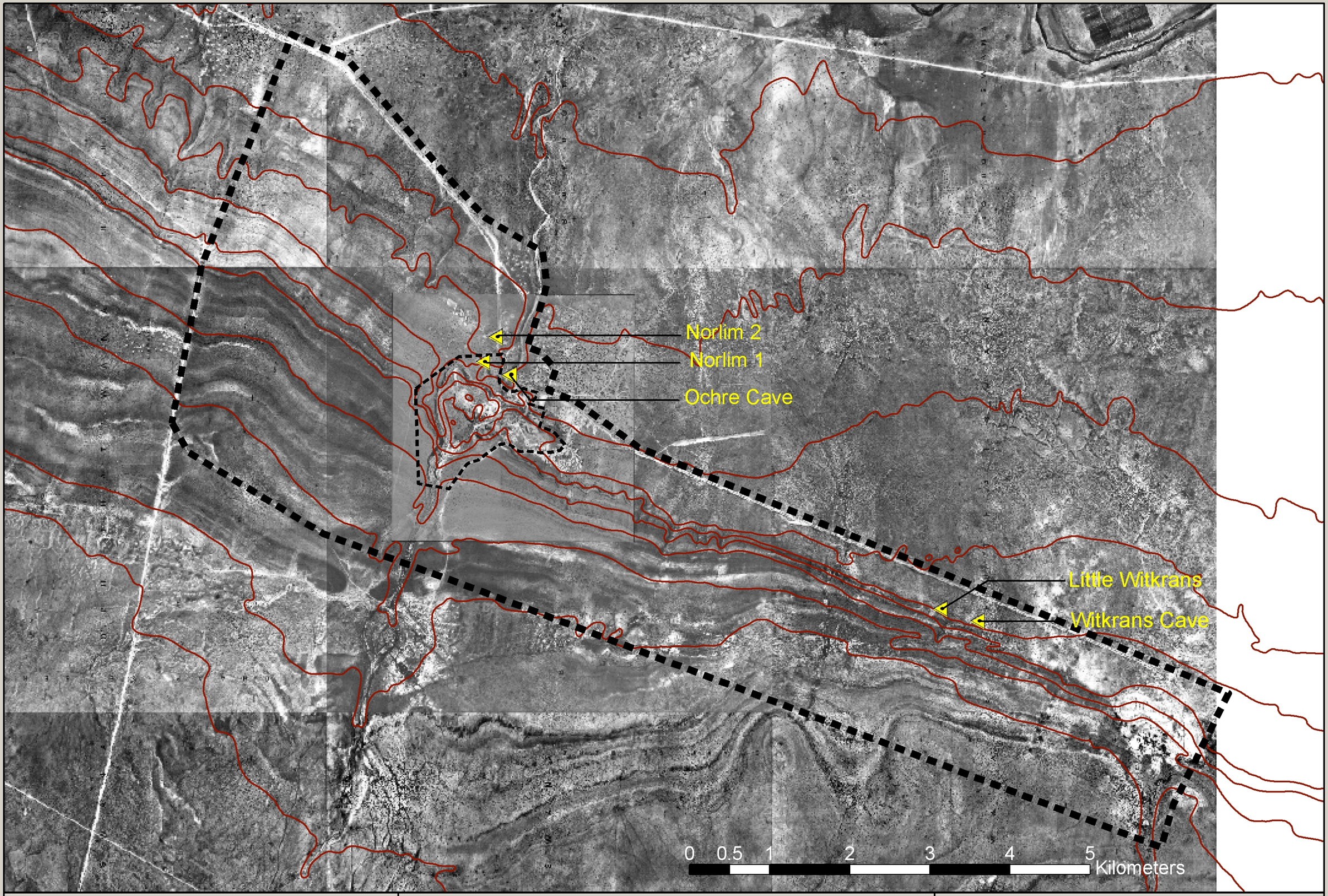
TAUNG SKULL HERITAGE SITE
Site Boundary

Figure/Map No: 4
November 2003

Source: Surveyor General
Maps 2724DA & 2724 DB

NORTH

bck
Bapela Cave Klapwijk
Landscape Architects &
Environmental Planners
Tel: 012 - 362 4684
Fax: 012 - 362 0394
cka@mweb.co.za



Legend
- Buffer Zone
- Sites
- Site Boundary

TAUNG SKULL HERITAGE SITE
Buffer zone

Figure/Map No: 5a
November 2003

Source: Environmental and Tourism Potential Atlas

NORTH

bck
Bapela Cave Klapwijk
Landscape Architects &
Environmental Planners
Tel: 012 - 362 4684
Fax: 012 - 362 0394
cka@mweb.co.za

WITPAN 892
316
315
4
5
25
24
TAUNG 841
THOMING 893
3
6
KLIP-PLAATS 804
KLIP-PAN 803
KGANTSANG 797
DINGLY DELL 2
7
8
28
GLADDEFONTEIN 798
KANG 796
9
23
22
MAREA AMOET 895
BIESJESDAL 799
HOEKPLAATS 1
LETSILABELUNG 794
VAALBOSCHHOEK 10
DRIEFONTEIN 30
CHOGA AMOET 896
MAPANA 795
KANKARO 921
UITEND 793
BRAKFONTEIN 897
VAALBULT 922
KGORE 898

0 1.5 3 6 9 12 15 Kilometers

Legend
- Buffer Zone
- Sites
- Site Boundary

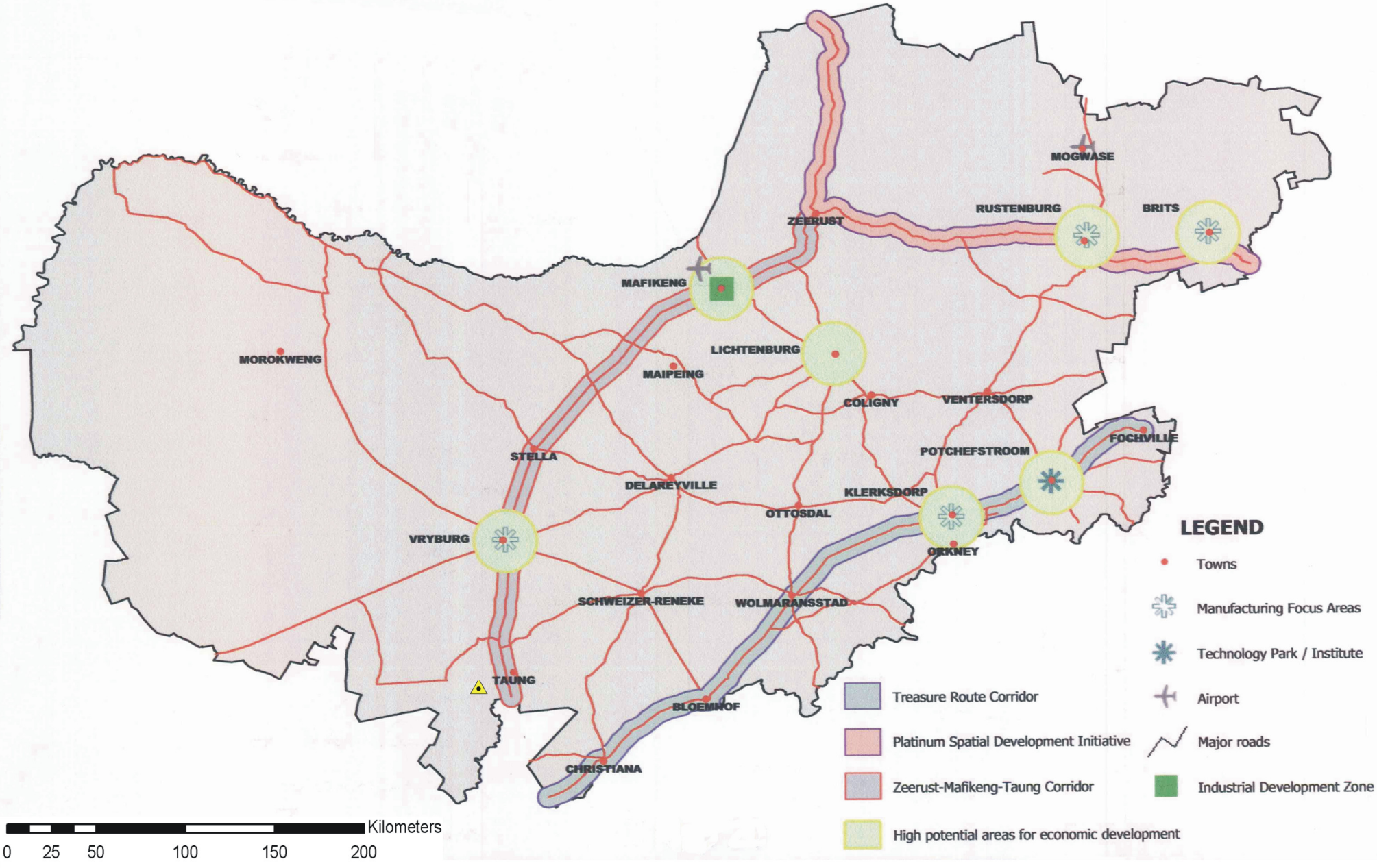
TAUNG SKULL HERITAGE SITE
Buffer zone with Farm Boundaries

Figure/Map No: 5b
November 2003

Source: Environmental and Tourism Potential Atlas

NORTH

bck
Bapela Cave Klapwijk
Landscape Architects &
Environmental Planners
Tel: 012 - 362 4684
Fax: 012 - 362 0394
cka@mweb.co.za



Legend

Taung Skull Fossil Site

NORTH WEST: Spatial Development Initiatives and Major Transport Routes

Figure No: 6
November 2003

Source: North West Department of Economic Development and Tourism 2001

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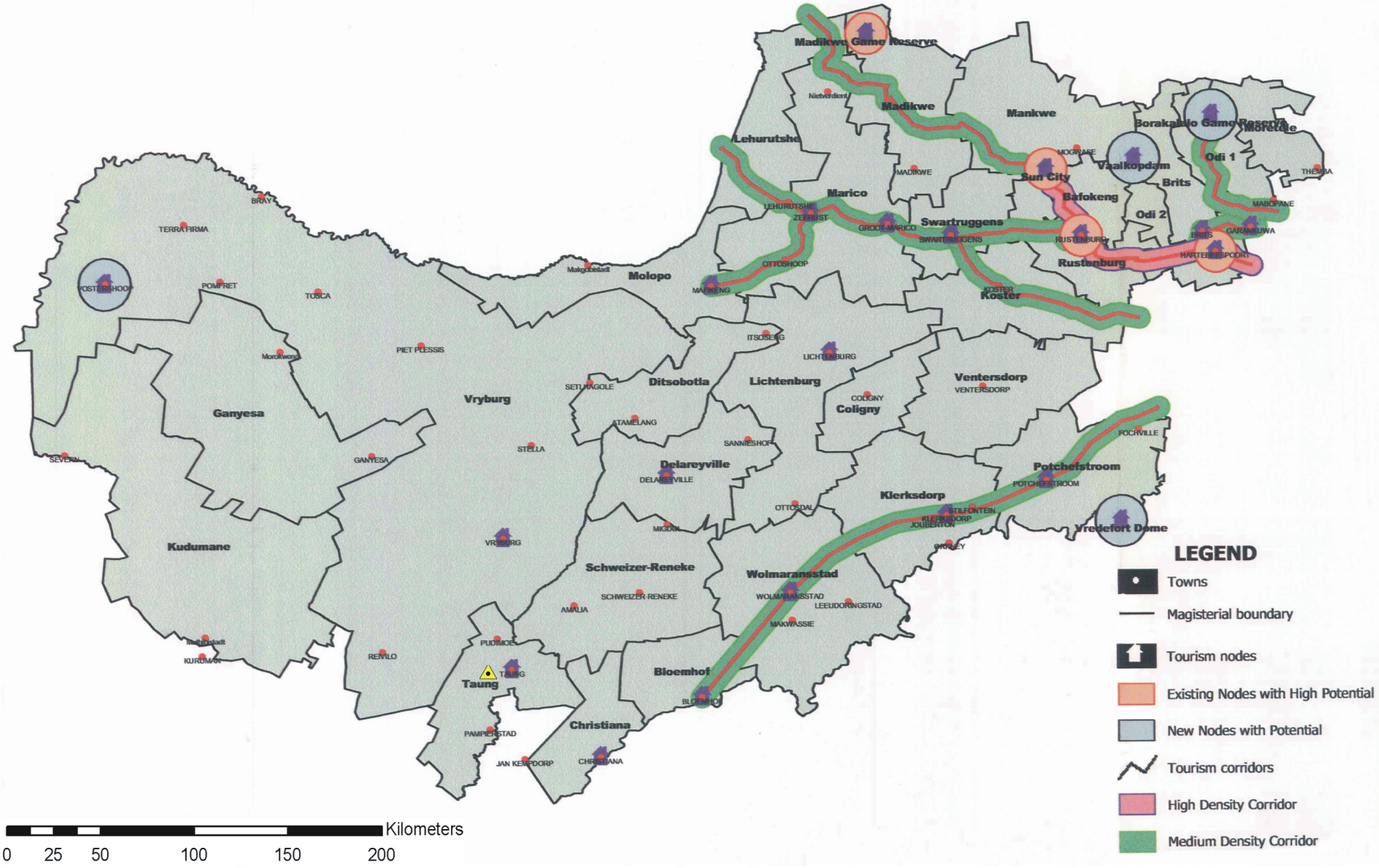
bck
Bapela Cave Klapwijk
Landscape Architects & Environmental Planners
Tel: 012 - 362 4684
Fax: 012 - 362 0394
cka@mweb.co.za



Legend

Taung Skull Fossil Site

NORTH WEST: Tourism Nodes and Corridors

Figure No: 7
November 2003

Source: North West Department of Tourism, Environment and Conservation 1998

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bck
Bapela Cave Klapwijk
Landscape Architects & Environmental Planners
Tel: 012 - 362 4684
Fax: 012 - 362 0394
cka@mweb.co.za

Alcove Cave
Mine Tunnel
Blue Pool Picnic Area
Existing Parking Area
Underground River
Oxland Large Mammal Site
Tobias Cave
Jamie's Cave
Reservoir
Solution Cavity
Ablution Building
Satan Cave
Acacia Cave
Equus Cave
Blom Cave
Peabody's Equus Site
Black Earth Cave
Cut-through Alley
Quinney Cave
Innominate Cave
Lucky Moon Cave
LSN Cave
Berger Cave Complex
Tobias Pinnacle Deposits

Thabasikwa River

Norlim 5 + 6

Blue Pool Weir
Blue Pool
Taphonomy Test Site
Site Boundary
Solution Cavity Fossil Bone
Acheulean Hole
Dart Deposits
Memorial Cairn
Norlim 1
Hrdlicka Deposits
Existing Parking
Powerhouse Weir
Norlim 2
To Taung
Powerhouse Cave
Abandoned Powerhouse
Abandoned Bridge
Ochre Cave
Abandoned Mine Buildings
Lime Kilns
Bottle / Liquor Store
Existing gateway with gate keeper's kiosk
Mine Hostel Buildings
Occupied House
Compound Buildings

Thabasikwa River

Buxton Village

0 125 250 500 750 1,000 1,250 Meters

Legend
- Site Boundary
- Contours
- Sites
- Phase 1 Boundary

TAUNG SKULL FOSSIL SITE
Existing Site Plan

Figure/Map No: 8
November 2003
Source: BCK

NORTH

bck
Bapela Cave Klapwijk Landscape Architects & Environmental Planners
Tel: 012 - 362 4684
Fax: 012 - 362 0394
cka@mweb.co.za

Legend

1 Ghaap Escarpment and Thabasikwa Valley
2 Natural and Less Disturbed Areas
3 Research Zone
4 Tourism Development
5 Abondoned Mining Area
6 Historic Buxton Village

TAUNG SKULL HERITAGE SITE
Site Zoning Plan

Figure No: 9

November 2003

Source: BCK

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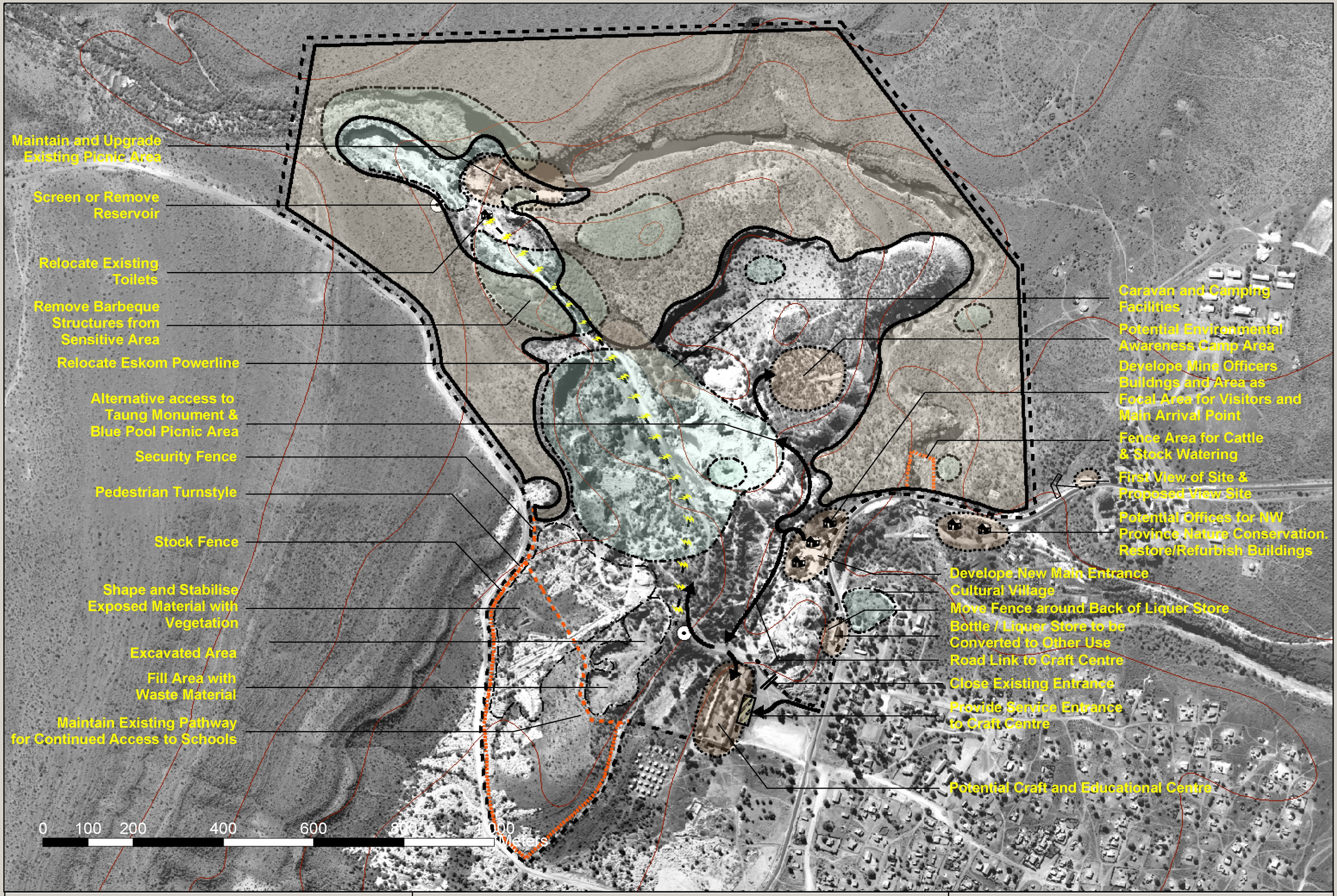
Bapela Cave Klapwijk
Landscape Architects &
Environmental Planners
Tel: 012 - 362 4684
Fax: 012 - 362 0394
cka@mweb.co.za



Legend

- Undisturbed Natural Area
- Sensitive Area
- Activity Nodes
- Disturbed Areas, Requiring Stabilization with Vegetation
- Security Fence
- Stock Fence
- Existing Eskom Powerline

TAUNG SKULL HERITAGE SITE
Site Analysis & Conceptual Development

Figure No: 10

November 2003

Source: BCK

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Bapela Cave Klapwijk
Landscape Architects &
Environmental Planners
Tel: 012 - 362 4684
Fax: 012 - 362 0394
cka@mweb.co.za

3.2 Site Boundary

This is shown in Figure 4, which is the Proclamation Diagram of the Taung Skull Heritage Site Boundary, approved by the Surveyor General on 19/07/02. There are 41 surveyed points which define the boundary. The boundary was framed for the purpose of proclamation of a National heritage site in terms of the National Heritage resources Act No 25 of 1999. The perimeter is not fenced. Fencing will have to be done in such a way as to allow access to crucial watering points for local livestock, and after consultation with local stakeholders.

Management issues

- The initiative to apply for National Heritage Site Status needs to be pursued and brought to a conclusion.
- The Proclamation diagram needs to be lodged with the Vryburg Registrar of Deeds after gazetting has taken place.
- Fencing should allow for continued access to important watering points for livestock.

3.3 Buffer Zone

The proposed buffer zone (Figure 5a and 5b) may be proclaimed at the discretion of SAHRA, to provide additional protection as a National Heritage Site, in terms of Section 28 of the NHRA. A buffer zone is not a requirement in terms of the guidelines for World Heritage Sites.

3.3.1 Motivation for a Buffer Zone

A buffer zone or protected area is allowed for in terms of the NHRA (Section 28). The benefit of doing this would be to ensure some sort of control by SAHRA over the type of development that can occur within the protected area as well as the type of activities that can take place. This process entails obtaining the permission of the landowner for SAHRA to publish a notice to this effect in the Government Gazette, that the area so designated is a “protected area” (see legal considerations, Chapter 5). Once such a protected area is proclaimed, any development that needs to take place must obtain the approval of SAHRA and the overall management agent to be appointed. The proclamation of a protected area does not affect ownership of the property.

A buffer zone is needed to:

- Provide some protection for those archaeological sites which fall outside the proclaimed Heritage Site Boundary.

- To prevent undesirable land use which will impact on the sense of wilderness by allowing township development right up to the heritage site boundary. The uncontrolled spread of dispersed informal settlements has been deemed undesirable in the Integrated Spatial Development Framework Plan (see below, and Bibliography).

- To prevent the situation that the Taung Site becomes a small island in a sea of environmental degradation to the point that it becomes unpleasant to visit the site.

- To preserve ecological interactions which exist within the natural habitat inside the Heritage Site by preventing impacts in the surrounding territory which might jeopardise such interactions. An example is the continued existence of the resident troop of baboons and the nesting black eagles.

- To protect the visual integrity of the escarpment horizon.

- To protect relict patches of Kalahari Thornveld vegetation still present along the escarpment margin from destruction by restricting grazing to sustainable limits so that the site does not become surrounded by an overgrazed desert.

- To prevent the construction of structures which will affect visual aesthetics.

- To preserve the rural, traditional tribal ambience of the approach to establish an attractive approach to the site itself.

- To protect the buffer zone from undesirable categories of development which come in the wake of enhanced tourism.

The criteria governing the designation of the buffer zone boundaries are as follows:

- Generally, to include all those significant archaeological sites that have been excluded from the Heritage Site Boundary.

- Also, care was taken not to propose that too much or unnecessary land be included.

- On the west: Include the Ghaap Escarpment because it forms the strong visual backdrop to the heritage site and the visual integrity of the

horizon needs protection from disfiguring elements such as the construction of reservoirs, communication towers, power pylons and power lines, housing that transgresses the skyline and roads. A strip of territory west of the escarpment is required to preserve the vegetation and plant communities that include several Red Data species' habitats.

- On the East: The old road and rail bed of the Thomeng-Buxton connection, as these are significant cultural imprints.

- On the north, the road to the Thamasikwa Village, then following the ridge line down to the Taung-Buxton tar road. This has been done to preserve the natural appearance of the "first impression" approach to the site. A small informal settlement in the northeast corner of the buffer zone has had to be included.

- On the south, the southern extremity of the Thomeng Quarry. The Thomeng Quarry has been included not only as a cultural imprint but because it encapsulates several significant geological features.

Management Issue, Buffer Zone

- The proposed buffer zone (Figures 5a and 5b) needs to be examined from the standpoint of regional planning and management, and its establishment formalised.

- Special regulations pertinent to the buffer zone aimed at preserving the heritage values of the TS NHS need to be promulgated.

- Local administrative structures need to be informed of the implications of the buffer zone so that development proposals can be referred to SAHRA and the TS NHS management authority.

3.4 Geographical, social and economic context of the Taung Site

- The Taung Skull Fossil Site falls within the Greater Taung Municipality (Ward 12), established on 5 December 2002 when the former Municipalities of Reivilo, Pudimoe and the large rural area of the Bophirima District Council amalgamated.

- The size of the new municipality is 5639 square kilometres and is predominantly of a rural nature.

- The operating budget for 2002/2003 is R26 million.

- There are at least 110 rural villages within the borders of the municipality, with huge service and amenity backlogs. Only by sourcing external donor funds the Greater Taung Municipality hope to make a positive difference to its community.

- The tax base is small in relation to the needs of the communities.

- The municipal area contains the towns of Taung, Reivilo and Pudimoe of which Taung acts as the major service centre.

- The N18 between Vryburg and Kimberley is the most important transportation route within the municipal area (Figure 6) and most major industrial and commercial development are situated close to the road.

- The distribution of villages and informal settlements is determined by the local availability of water for livestock and people. As there is little or no formal water supply to rural villages, it can be foreseen that water availability and quality will play an important part in future settlement patterns.

(Source: Executive Summary: "Development of the Taung Skull Heritage Site", by Charl du Plessis, obtained from the GTM on 28 July 2003 and the Integrated Spatial Development framework of the Greater Taung Municipality, February 2002).

DEMOGRAPHIC INFORMATION	
Geographic Size	5639.66 sq km
Population	184 482 (contrary to this figure, the 1996 census - already 7 years out of date - gives 210 000 for the Taung District
Density	32.71 per sq km
Registered Voters	Unknown
Population by Race:	
African:	181 083
Coloured:	1813
Indian:	82
White:	927
Other:	577
Gender Analysis:	
Male	85 520
Female	98 837
Economic Analysis:	
Average annual income per household	10 129.42
Income per capita	1871.40

The geographical, demographic and economic characteristics of the study area have profound implications for the future development of the site for tourism. These are discussed in the section dealing with tourism – Section 11.3.1.

3.4.1 Integrated Development Plan (IDP)

This has not yet been received. The Spatial Development Framework discussed in section 3.4.2 below is an extract from the IDP. The list of projects intended for the immediate surroundings in Ward 12 discussed below are also taken from the IDP document as are Figures 6 and 7. The remainder of the IDP document may not be of immediate relevance.

3.4.2 Spatial Development Framework (SDF)

An Integrated Spatial Development Framework for the Greater Taung Municipality was prepared in February 2002 by Metroplan Town Planners, to provide guidelines for the future development of the Greater Municipality.

This document notes the need for urban sprawl to be contained in order to protect cultural resources, such as the Taung Skull Fossil Site.

The attached MTEF Framework and 5- Year Plan indicates that an amount of R750 000 (funding source DWAF) has been set aside for water-related projects at Taung. Steps should be taken to ensure that such projects include the water needs of tourist-related developments planned for the Taung Skull Fossil Site.

The same document shows the following funding provisions:

Buxton World Heritage Site

- Buxton Heritage Site: (1st Application) R10 000 000.00 (Source: Lotto and ECO Fund: Applied).
- Buxton Heritage Site: (2nd Application) R5 000 000.00 (Source: Lotto and ECO Fund: Status - applied).
- Tourism Sign Boards for Taung Skull Site: R 20 000 (Source: Transnet Foundation: Status - approved).
- Taung Skull Interpretative Museum: R 400 000.00 (Source: Transnet Foundation: Status - approved).
- Conservation Management Plan R 300 000.00 (Source: DACE/SAHRA. Status: Verbal) Note: The verbal agreement has become formal. This Management Plan has been undertaken on the strength of these funds.

An amount of about R16 000 000 has been budgeted for the project.

An additional document identifies the Taung Skull Tourism Information Centre specifically as "Project Number 10272", a joint venture project between the Greater Taung Municipality and various provincial and national government departments. The project entails the following:

- Conservation Management Plan - Funded R 400 000
- Tourism Information Centre - Funded R1 660 000.00
- Museum and Library
- Arts and Crafts centre
- Accommodation facilities and picnic sites together with ablution facilities.

Management issue: existing funding and other

- The Executive Committee of the Greater Taung Municipality must be kept informed of all developments concerning the TS NHS and should become a key member of the TS NHS Management Committee. It should also have a representative on the joint committee (still to be formed) which will manage the Serial World Heritage Site cluster.

- Conversely, the overall management agency for the Taung Site should keep abreast of the developments within the IDP and SDF planning.

- It should also pursue the funding opportunities outlined in the above section.

3.5 Former Initiatives

It is distressing to see that so much money and time has already been spent on the Taung Site with very little to show on the ground. A factor to bear in mind is the disenchantment factor, "Oh no! Not another academic study!" (which affects all contractors) as well as abnormally heightened expectations of the effect that having the site declared a World Heritage Site are going to mean ("poverty will be relieved").

The following former initiatives regarding the possible development of the Taung Skull Fossil Site have been done:

3.5.1 The EDP Plan (October 1991)

The document is entitled "Buxton Limeworks: Archaeological and Fossil Sites" and compiled by Heritage Resources Management and Environmental Design Partnership (EDP). It was commissioned by the Bophuthatswana

National Parks Board to prepare a Development Concept Plan for the Taung Skull Site. The recommendations of this 11-page document and map have been carried forward into the Cultural Heritage Resources Survey and this Management Plan, in this way "mainstreaming" the ideas and work incorporated in the report.

3.5.2 The Scientists' Plan for Future Work (27 March 1992)

This was called for by BOP National Parks. The Director at that stage was R F H Collinson. The compiler was Dr Jeff McKee. In this plan, the following was noted:

- All areas where work is likely to be carried out, and the total extent of these areas.
- The proposed dates for beginning work in each area and the duration of such work.
- When these areas would be "returned to the BNPB (as the development co-ordinator).
- Any other items such as access, security, own developments, etc which could impact on the planned BOP developments.

The contents of this plan have been noted and mainstreamed.

3.5.3 Launch of the Taung Heritage Trust (10 April 1992)

This was launched by L Rammutla, Assistant Director (National Conservation) and was an initiative of the Bophuthatswana National Parks Board. Since the demise of the BOP Parks Board, the current status of the Taung Heritage Trust it is not known.

The only document at hand is Mr L Rammutla's address.

3.5.4 The Interpretation Master Plan: and Taung Monument Redevelopment Proposals (1 May 1992)

The documentation at hand was distributed as part of a Development Workshop held under the auspices of EDP mentioned above wand comprises the following:

- List of issues addressed
- Agenda for the workshop
- Project Brief and Outline

- Basic Concepts for the Interpretation Master Plan, with the main visitor Centre and dispersed visitor locations separately discussed
- Redevelopment Proposal Document

The useful portions of the above documents have been noted and included where appropriate.

3.5.5 The Concept Plan for Sustainable Tourism Development in the District of Bophirima (November 1997)

This Concept Plan was compiled by Robford Tourism. It notes the following:

- Although the Taung Skull Fossil site is well known, even internationally, it is not effectively and imaginatively interpreted for it to be a popular tourist attraction. Visitors do not enjoy an informative and worthwhile experience at this site of enormous heritage significance.

- The Taung Skull Heritage concept has not been fully developed, advertised or marketed.

- Interpretation facilities should be constructed.

3.5.6 The Strategic Marketing Plan for the North West Parks and Tourism Board (June 1998)

This Strategic marketing plan was compiled by Seaton Thomson and Associates, and recommends that:

- The potential of palaeo-anthropology tourism has yet to be fully optimised within the international ecotourism market, although Africa has been established as the Cradle of Humankind.

- The Taung Skull Heritage Site is of international renown and has the potential to be integrated with the Sterkfontein/Kromdraai fossil hominid sites (Since this report was published, the latter have been declared World Heritage Sites, and Taung will become a serial extension of these).

- The development of palaeo-anthropological tourism to South Africa, utilizing the Sterkfontein/Swartkrans sites has provided the potential for Taung to be included in itineraries with this theme.

3.5.7 North West Tourism Master Plan (1998) and Tourism Implementation Programmes (2000)

The Tourism Master Plan for the North West Province is the principal guiding document for the Department of Economic Development and Tourism and the Parks and Tourism. It establishes a framework for tourism growth and development and sets out a management system for tourism in the province. The 2000 Implementation Programme identifies the following six key elements for tourism development and sets detailed strategies, objectives, timelines and budgets for each:

- Research and information
- Integrated tourism nodes and corridors.
- Investment in tourism
- Infrastructure
- Marketing
- Small business and employment

The Vryburg/Taung corridor is identified in this section. Modest budgets were set to incorporate this and other concepts into local and provincial plans and IDPs.

3.5.8 The Taung Local Tourism Development Zone (July 2000)

This project aims at including several noteworthy local places of tourist interest, such as the Taung Dam, Pendomer Farm, Taung Skull Site and Buxton Village, Taung Tusk, Harts River and Diamond Diggings, Agricultural Tourism. The project was commissioned by Chief S M Mankuroane of the Baphuduhucwana Tribal Authority by Bigen Africa Project management, Mafikeng.

3.5.9 Development Plan: Taung Heritage Centre (June-Sept 2001)

This project was undertaken by Site Solutions (Ms S Haines and G Benneywith), for the Department of Social Services, Arts, Culture and Sport (DSSACS), North West province. The documentation available contains much useful information and valuable suggestions. The project was abruptly discontinued when funding was deployed elsewhere. It is a pity that the work completed - and underway - by this group cannot be mainstreamed. It embodied many hours of public participation and its cessation, through no fault of the contractors, left the local community disillusioned and suspicious of new initiatives (see report on Public Participation).

Available documentation includes the "Development Plan Phase 1: June-September 2001).

3.5.10 Western Frontier SDI Tourism Analysis (2002)

The analysis indicates the possible link between Taung as a serial site with the Cradle of Humankind World Heritage Site. Together with the Taung Dam, rock engravings and diamond diggings, Taung is cited as potentially "a major tourism attraction." It is one of eight such attractions that are analysed in the Bophirima Region.

Proposals include a 30-bed lodge with conference and wedding facilities at the dam with guided tours to the skull site and Buxton. Emphasis is given to local and domestic markets with a small percentage of international tourists and palaeontologists.

A development capital budget of three to four million $US is proposed. Employment opportunities for 50 people are anticipated.

3.5.11 Western Frontier SDI Tourism Analysis (2002)

The audit is published by the Institute for Tourism and Leisure Studies, Potchefstroom University. It provides a certain amount of statistical data on tourism resources in the region. It also indicates shortcomings and makes recommendation on how these may be addressed. However, very little of the data is specifically relevant to Taung. In addition, the audit is strictly confined to the North West Province, so the significant tourism resources located in Kimberley are omitted.

Management issue: previous initiatives

- The large number of previous initiatives indicates a considerable expenditure of scarce funds, with little if anything to show on the ground. Management should take steps to see that local communities are not disillusioned further by having their hopes dashed when the promised development does not take place. Care should also be taken not to raise expectations too high regarding the effect that enhanced tourism will have on poverty relief: Unemployment figures stand at around 77%. The numbers of people directly employed on site is not likely to be high. A temporary increase in employment numbers will occur while developments are being undertaken.

- An archive of all documentation pertaining to the site should be collated and archived in a central point where it is available to the greatest numbers of users and managers of the site.

- All these documents are saying much the same thing, namely that in its present state, the Taung Skull Heritage Site cannot support responsible tourism, and definitely not international tourism. Implications for management are that there is a need to create an exciting, well-

interpreted, widely marketed and enriching visitor experience that involves the local community and is of benefit not only to them, but to the greater Taung region.

3.6 Extant Policies

- There is an initiative to have the Taung Skull Fossil Site declared a National Monument or Grade 1 Heritage Site.

- There is an initiative to have the TS NHS declared a World Heritage Site as a Serial Extension to the Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai and Environs.

Management issues

- The process to achieve NHS status for Taung should be actively pursued.

- The process to achieve World Heritage Status as a serial site should be actively approved.

- Preparations for the future site inspection by the World Heritage Committee (possibly as soon as September 2004) should proceed with immediate effect as there is much to be done.

4 PUBLIC CONSULTATION

4.1 Stakeholders Identified

The following are the most important stakeholders who have an existing interest or who may perhaps develop a future interest in the Taung Skull Fossil Site:

- National Government, through the Dept of Public Works
- National Dept of land Affairs
- The Minister of DEAT
- The Greater Taung Municipality
- The South African Roads Agency
- National and Provincial SAHRA
- The local community at Buxton and environs
- The local community at Thomeng
- Chief Mankuroane and other local traditional Leaders
- Baphuduhucwana Tribal Authority
- The University of North West

- The Macgregor Museum, Kimberley
- The scientific community who have research plans at the site
- The North West Tourism Board (NW Dept Economic Development and Tourism
- Affairs)
- The North West Department of Social Services, Arts, Culture and Sport (DSSACS)
- The local Business Forum
- Mmabana Cultural centre
- Department of Water Affairs and Forestry (DWAF)
- ESCOM
- Pretoria Portland Cement (PPC)
- Sun International
- North West Department of Agriculture and Environment Affairs

4.2 Stakeholder Consultations: Identification and Project Awareness

4.2.1 Introduction

Based on previous experience and research on the success or otherwise of such project, it was realized that it is imperative to liaise with the communities around where the project is about to be implemented. All the role players within the community involved should be informed about the project and given an opportunity to provide their own inputs based on how they perceive the project is going to impact on their life.

For the sustainability of the project and protection, the affected community should be made the beneficiary of the project. In the interaction with the communities, the consultants can simply identify all gaps in the communities and recommend required training of skill for capacity building. For this reason, a skills inventory within the community is required.

It is also important to bridge all the gaps between the authorities, local government, traditional leaders and communities to work collectively in a transparent manner.

4.2.2 Purpose of the initial site visit

The Consultants first visited the site on 12 July 2003. The purpose of the site visit was to identify stakeholders in and around the Taung Skull Site, to verify if the community was well informed about the intention and progress taking place regarding the Skull Site by SAHRA and the Greater Taung Municipality.

4.2.3 Methodology, approach (Stakeholders)

The Consultant's previous knowledge and skills enables communication with sensitive communities, by respecting their norms and values. It was discovered that because of the sensitivity of issues surrounding the TS NHS, the Taung community should be approached, both on one on one and in group situations.

4.2.4 Some official stakeholders

On 12 July 2003, a meeting was held with the Greater Taung Municipality officials; in particular, the Municipal Manager, Mr. Johnny Motlogelwa, who is well conversant with the progress and process of projects concerning the Skull Site and immediate environs.

At the meeting Mr. Tiny Mogaadile was identified, who is the councillor for Ward 12 which is known as Bophirima District in which area the Skull Site is located.

He informed the team about the communities directly affected by the project, which are the Buxton community and Tamasikwe community. The Consultants communicated with the Mayor of Greater Taung Municipality, Mr. N.K. Khorokhobe, who is concerned about the vandalism within the site and the mechanisms of alleviating this type of behaviour.

Ms. Kadiemetse Bogaleboile, who represents the Taung Business Forum, was identified. She wanted to know when the project is going to start operating officially and what opportunities are available for local business people.

Communication was made with local media individuals from Vaaltar FM, Ms. D. Letsholo, A. Matuane and P. Manankong from SABC who wanted to know more about the project progress and implementation. Other provincial stakeholders identified included Messrs. T.G. Masumaku from DEAT, L. Molambo from the Dept of Agriculture, Conservation and Environment, Samuel Mathobane from the Department of Arts and Culture who informed about their role in the project and contribution towards to the project.

Mr. Ntsizi November is from SAHRA, who is leading the project and is well conversant with all the development and requirements of the Nomination Dossier for serial World Heritage Status for Taung Fossil Site.

It was concluded that further interaction with other stakeholders, both one on one and in groups is necessary. It is important that further awareness of the project is created in order to inform the community on the feasible benefits of the project to the community. Unattainable community expectations need to be dampened at this early stage.

4.3 Further stakeholder identification

4.3.1 Introduction

A following visit to the area to identify and interact with further stakeholders was carried out from 29 July to 31 July 2003.

Prior to the meeting, arrangement were made with the Municipal Manager's office which organized a meeting for us. The Consultant identified all the stakeholders with whom they wanted to communicate and all meeting arrangements were made and communicated to the social consultants. After this initial meeting, further individuals and community members were identified with whom awareness of the project was created.

Further project stakeholders were identified and requested to attend a meeting where the project progress was tabled. All the role players were invited to a meeting, where each and every organization, individuals and concerned groups were given the opportunity to view and make their input on the projects. The entire liaison was done in consultation with the ward councillor Tiny Mogaadile.

4.3.2 Purpose of the meeting

The Consultant informed the stakeholders about the intention of SAHRA and the Greater Taung Municipality. He also informed them about their important role in the success of the project as beneficiaries of the project.

The Consultant informed the stakeholders that they wanted them to make their inputs in the project. They are inviting them to be part of the planning of the Skull Site. They wanted to make sure that their needs, demands and expectations are carried forward through the development of the site.

The Consultant informed the stakeholders that the Greater Taung Municipality wanted to make sure that the process is inclusive and that everybody is given a fair chance to make his/her input in the development of the project.

4.3.3 Interaction / Public Participation Process

A meeting was held with Jeremiah Lebelela who is the Chief in the area. He gave the project his blessings on behalf of the King and his tribe. He wished the project could address poverty, which is among his people. He also spoke about his working relationship with the Greater Taung Municipality and that he has a good working relationship with them.

The Consultants communicated with Moses Tyatya who is one of the workers who started to work on the mine. Mr. Tyatya claims that he knows the mine

as he knows himself. He claims to know all the areas where they were dumped all the fossil and bone brecchia. He is prepared to show the Consultant everything on the quarry.

Michael Majola, a former worker of the mine and a cousin to Tyatya claims that his work was to remove bones. He also claims that they have the history of the area from 1924 written down. He also informed that they have photos of the site and what took place within the site.

Tebogo Diradingwe represented the youth around Buxton and Tamasikwe. He was concerned about the ownership of the area. He was also concerned about the Consultants coming to the area and disappearing without any progress and a lot of false promises. He also made a request that provision should be made for learners from Tamasikwe who are attending school at Buxton, who use the site as a short cut to school. He also made a request that they should be considered as the youth when development takes place.

Thompson Kgasa is a Traditional Healer. He represents the Traditional Healers and cattle farmers. He made a request that provision be made for them to access the site as they perform rituals in the Blue Pool. He also made a request for provision of their cattle grazing and water drinking within the site, as it is the only area where their livestock could drink water. He also gave a short history of the area and made a request that the area be renamed to its original Xabasiqwa, which is a Khoikhoi name of the inhabitants of the area.

Sefadi, a cattle farmer, requested that provision be made for their cattle grazing in the planning. He also endorsed the indigenous names of the area Xabasiqwa and Xamasiqwa.

The Consultants met with Cornelia Mokgadi who is a member of the Buxton School Governing Body. She made a request that the site provides learners with an opportunity to learn more about geography and that a museum be put on the site for learners.

Mpho Serape represented the sewing project on the Skull Site. She informed us that they started working on the site since 1995, sewing school uniforms and traditional attires. She stated that they have identified a place on the site on which they wish to build a workshop and offices. They have also identified a building in which they should display and sell their products to the tourists. She also stated that they are funded by Eskom, Transnet, Social Welfare and the Department of Education – ABET Sector.

She informed that the CSIR has put money aside to pay for all the renovations. She made a request that they be included in the planning of the site. She also informed us that they could request their funders to channel

the renovation funds towards the development team of the site for their identified sites.

The Consultants met with Pule Moswana, who is one of the Buxton Brickmaking Project Leaders. He is also the chairperson of the Buxton Monument site. He stated that they wish to build a monument for all the workers who died on the site next to their graveside. They have already drafted a business plan towards the monument. He stated that they wish to make the AME Church and the demolished family houses outside the site where married couples lived as part of the tourist areas within the site. He informed that they drafted a history of the area from the time of the Khoikhoi up to date. He made a request that in all the planning their request be considered.

A meeting was held with the Buxton Batswana Craft group, which is currently operating on the site. They are funded by the Department of Social Services, Arts and Culture. They are currently making cultural products from wood. They wish to be incorporated into the planning of the site.

The Consultants met with Joyce Mocumi, who works at the local clinic. She is a member of the Buxton Tribal Dance Group and also an AIDS activist in the community. She informed about members of the community who are infected and not looked after. They also requested assistance and involvement of the youth in the planning of the site.

Contact was also made with D.J. Mabote from the Department of Social Services, Arts and Culture who is in charge of the Buxton Batswana Craft. He made a request that a village be built within the site for tourists and for showcasing the Batswana, Khoikhoi culture.

4.3.4 Way forward

Report back to the communities about progress and the formulation of a Project Steering Committee which will at all times take reports to communities and conduct community meetings. The following concerns and relevant contact persons have been noted. This Table should be circulated to local stakeholders for comment and additions.

AFFILIATION OR ORGANIZATION	REPRESENTATIVE	CONCERN
Youth Group leader	Tebogo Diradingwe	• Concerned about ownership of the area (National and WHS status will not change ownership status) • Concerned about lack of feedback • Concerned about "false promises" • Concerned about learners who use the site for short cuts across heritage site • Concerned that youth remain informed and involved about planning process
Traditional Healer	Thompson Kgasa	• Wishes to have continued access to Blue Pools area for ritual use • Would like to see Khoikhoi toponyms retained or re-instated
Cattle Farmer	Thompson Kgasa Mr Sefadi	• Wish to retain access to livestock watering points as these are the only ones in the area • Wish to use the heritage site for grazing animals
Local Chief	Jeremiah Lebelela	• Concerned that the project should address poverty • A good relationship with the municipality should be maintained
Ex-mine-workers	Moses Tatya Michael Majola	• Have crucial historical information which they are prepared to share
Buxton School Governing Body	Cornelia Mokgadi	• Wishes to use the site as an extension to classroom activities, to enrich geography syllabus • Would like a museum to stimulate learners
Buxton Sewing Project	Mpho Serape	• Wishes to identify existing buildings that they would like to use for sewing project – workshop, offices and sales point • Funding is available
Buxton Brickmaking Project	Pule Moswane	• Include project in planning
Buxton Monument Committee	Pule Moswane	• Would like to erect a monument to those workers who had died during the time that the mine was open at gravesites
AME Church	Pule Moswane	• Involved in monument planning
Buxton Batswana Craft	D J Mabote	• Concerned about being involved in planning

AFFILIATION OR ORGANIZATION	REPRESENTATIVE	CONCERN
		• Would like a sales point for the wood crafts that are being produced • Would like to see the establishment of a Cultural Village which could showcase Batswana and Khoikhoi culture
Buxton Clinic	Joyce Mocumi	• Would like to see more being done for Buxton Aids sufferers • Would like to see the continued involvement of the youth
Buxton Tribal Dance Group	Joyce Mocumi	• Continued involvement of the youth in this aspect of culture
Ward Councillor for Buxton and Taung	Mr Tiny Mogaadile	• Involved in the planning of the Bophirima area • Needs to be kept informed about planning
Mayor, Greater Taung Municipality	Mr N K Khorokhobe	• Concerned about the extent of vandalism on site • Concerned about how to address this kind of behaviour
Municipal Manager, Greater Taung Municipality	Mr Johnny Motlogelwa	
Taung Business Forum	Ms Kadiemetse Bogaleboile	• Would like to know what business opportunities are going to present themselves and become available to local business
Vaaltar FM	Ms D Letsholo A Matuane	• Would like updates on project progress
SABC	P Manangkong	• Ditto
DEAT	Mr T G Masumaku	• Ditto
DACE	L Molambo	• Informed stakeholders about their roles and how their institution could offer help
DSSACS	Samuel Mathobane	• Ditto
SAHRA	Ntsizi November	• Project leader • Source of information concerning project progress
BCK	Clive Bapela	• Concerned about unrealistic expectations concerning the level of benefits that will be generated by the project

4.3.5 The feelings of the local traditional authorities

The wholehearted support of the local Traditional Leaders seems to be apparent from consultation and the letters of support for the National Heritage Site Status that has been received by SAHRA.

4.3.6 The feelings of the local youth

The local youth appear to have become disillusioned by the many "paper plans" that have been produced with nothing positive yet on the ground. Steps will have to be taken that this does not happen indefinitely, and that no further empty promises are made. The numerous initiatives that have been called for and submitted without much concrete happening on site seem to justify this attitude on the part of the youth.

There is a very real danger of raising unrealistically high expectations of what World Heritage Site recognition is going to bring, as the tourism potential of the site is not high at present and will take many years to build up.

4.4 Workshopping the Management Plan

This will need to be done with all stakeholders but the process is not part of the current brief. The management issues noted in sections 9.1, 9.6, 9.10, 9.11 and 9.12 are particularly pertinent.

Management issues

- For the purposes of this project, steps should be taken to provide a forum where the authorities, local government, local traditional leaders and local communities can interact, share their concerns and work in an atmosphere of mutual trust and transparency, e.g. a "Taung Project Forum". It is important to the success of the project that local communities are included in the project processes.

- A skills inventory of the Buxton and Thamasikwa communities is required.

- Steps should be taken to demonstrate positive outcomes to the community to prevent further disillusionment.

- The "Concerns Table" should be shared with the local community and maintained as a "live document" for ongoing planning.

- The Management Plan in its entirety will need to be workshopped with the community.

- Project Awareness locally needs to be improved.

5 LEGAL ISSUES

This section of the Conservation Management Plan outlines all the legal issues which affect site management, including:

- Ownership of the land
- Ownership of Mineral Rights
- Existing servitudes and other rights
- National Heritage Site Status: legal protections in terms of the NHRA
- Criteria for the definition of the final National Heritage Site boundary
- Protections and restrictions: The NEMA
- Protections and restrictions: The Water Act
- Security of tenure Act
- Parks and Tourism Act of the Province
- Institutional structures for Management and process pathways
- Buffer Zone in terms of the NHRA legislation: necessary or not?
- International obligations: duties and obligations of the State Party to the World Heritage Convention

5.1 Land ownership and related issues

5.1.1 Land ownership issues

- The Taung Skull National Heritage Site (“the TS NHS”) is situated on a portion of the immovable property described as the remainder of the farm TAUNG No. 894-HN, district of Taung, Province of the North West (“the Main Property”).

- The Main Property currently measures 132 522,3445 hectares in extent and predominantly falls within the municipal area of the Greater Taung Local Municipality.

- The Proclamation Diagram for the proposed National Heritage site encloses an area of 158.7429 ha. (the "Heritage Site").

- The Main Property was originally registered in the name of the Republic of South Africa in terms of a Certificate of Registered State Title No.T 57/ 1969 issued to the Republic of South Africa on 31 January 1969.

- On the same date, the Certificate was endorsed to the effect that the Main Property thereafter vested in the South African Development Trust

in terms of the provisions of the Development Trust and Land Act No. 18 of 1936.

- The next endorsement that appears was made on 20 December 1983 to the effect that on 2 December 1977, the State President published a Proclamation (No. R347/1977 published in Government Gazette No. 5820 dated 2 December 1977) to the effect that all land situated in certain specified districts, and all rights to minerals found in, on or under such land , were transferred to the Government of Bophuthatswana.

The Main Property was land to which this Proclamation applied with the result that the Title Deed of the Main Property was endorsed by the Mmabatho Deeds Office to the effect that, as from 2 December 1977, ownership vested in the Republic of Bophuthatswana.

The South African Development Trust was finally disbanded in 1992.

- What is interesting is that the Deeds Office at this time allocated a new Title Deed number to the Main Property (being Title Deed No. T. 623/1983), but notwithstanding this, continued to use the old Title Deed (i.e. Title Deed No. 57/1969) on which to record all future transactions that affected the Main Property subsequent to 20 December 1983.

- Consistent with this, the details of future transactions in terms of which various small portions of the Taung Farm were subsequently transferred to various individual landowners, have been endorsed on the original Title Deed of the Main Property.

- The remainder of the Taung Farm (after these portions of property were transferred to various transferees) has continued to remain registered in the name of the Republic of Bophuthatswana. As mentioned before, the Taung Skull National Heritage Site is situated on a portion of the remainder of the Main Property.

With the advent of South Africa's new democracy in 1994, and the re-incorporation of the former independent homelands back into South Africa, provision was made in our first Constitution, being the Constitution of the Republic of South Africa Act. No. 200 of 1993 (the "old Constitution") for the vesting of the various assets held by the former homelands, back in the National Government of the Republic of South Africa, alternatively in the various Provincial Governments appointed for the various provinces in South Africa. And this is where some debate may come in.

- The view is currently that the Taung Farm is vested in National Government at this time, and everyone has accepted this as a fact. However, in simple terms, section 239(1)(b) of the old Constitution provides for instances in which the assets (which include immovable

property) of the former homelands can vest in and be registered in the name of a particular Provincial Government. Such assets include assets applied or intended to be applied for or in connection with any matter listed in Schedule 6 of the old Constitution (which is not a matter referred to in section 126 (3)(a) to (e) of the old Constitution).

- Schedule 6 of the old Constitution provides for matters such as cultural affairs and tourism, and in my view a good argument could be made that the entire Main Property, or at least the portion of the Main Property on which the Taung Skull Site is found, in fact vests in the North West Provincial Government to the extent that it can be shown that the Main Property or at least the part on which the Taung Skull was found, *was applied and it is intended to continue to apply the asset for and in connection with cultural and tourism matters for the Province.*

Item 28 of Schedule 6 of the Constitution of the Republic of South Africa Act No. 108 of 1997, provides that on the production of a certificate by a competent authority that immovable property owned by the state is vested in a particular government in terms of section 239 of the old Constitution, a registrar of deeds must make such entries or endorsements on the title deed or other document as may be necessary to register that immovable property in the name of that government.

We understand from our correspondent attorneys in Vryburg that the Deeds Office in Vryburg (the Mmabatho Deeds Office has subsequently been amalgamated with the Vryburg Deeds Office) that no certificate from either National Government or the North West Provincial Government in terms of item 28 of Schedule 6 of the new Constitution requesting that ownership in the Main Property be registered in the name of either of them in terms of the provisions of section 239 of the old Constitution.

- ***Their records still show that the Republic of Bophuthatswana is the registered owner of the Main Property.***

One may find that National Government will insist on being recorded as the legal owner of the Main Property by virtue of the fact that the TS NHA is only a small portion of the Main Property. It might prefer to retain ownership of and control of the Main Property for the purpose of discharging its responsibilities for land issues under the Constitution.

Notwithstanding this, National Government may well be amenable to have the portion on which the TS NHS is situated, and a portion of the surrounds (for example the Buffer Zone), sub-divided and transferred to the Provincial Government of the North West Province, alternatively, to DEAT, or even to SAHRA, should this be beneficial to and required by any of these parties. We may mention that section 21(5) of the NHRA specifically provides that SAHRA can acquire any right in and to immovable property. Section 29 of

the WHCA also provides that the Minister of DEAT can purchase any property and reserve it for purposed contemplated in the WHCA in relation to World Heritage Sites, if the purpose is in the public interest.

Management issues

- The aspect of ownership of the Taung Farm and/or that portion on which the Taung Skull Site is situated, should be discussed and resolved between the National Department of Public Works and the Provincial Government of the North West Province, and the necessary steps be taken to update the records of the Deeds Office in Vryburg. At this stage, it is conceivable that either National Government or the Provincial Government of the North West Province could be the legal owner of the Main Property. It is critical to this Project and to the Heritage Agreement that will eventually be prepared as part of this Project, that the legal owner of the Main Property be identified and recorded as such at the Deeds Office in Vryburg.

- It therefore seems that National Government (through the Department of Public Works), the National Department of Land Affairs, the Provincial Government of the North West Province, the Minister of DEAT, and SAHRA, may all have an interest in matters concerning ownership of the Main Property and/or that portion on which the TS NHS is situated, and the intention to declare the Taung Skull Site a National Heritage Site in terms of section 27 of the NHRA, or any intention to designate any portion of the Main Property surrounding the Site as a Protected Area in terms of section 28 of the NHRA.

- There should accordingly be communication between these parties on each of these aspects.

- We have for the purpose of this initial report however proceeded on the basis that ownership of the entire Main Property (and therefore the TS NHS) vests in National Government. We may mention at this point that the immovable property of National Government is administered by the National Department of Public Works and that National Government, through this Department, will have to be consulted on any proposal to formally declare the Taung Skull Site a National Heritage Site on the basis and within the time periods provided for in section 27 of the NHRA. National Government will also have to be represented by the National Department of Public Works in the Heritage Agreement that will ultimately be prepared for the TS NHS.

5.1.2 Occupier issues

- The occupants of the Main Property are essentially all members of the Batlapeng tribal community and they have for some years now occupied various portions of the Main Property.

- We understand that this tribal community is represented by a traditional tribal authority for the area called the Batlapeng Tribal Authority, and that land use and planning for the Greater Taung Municipality municipal area occurs in consultation between the Minister of the Department of Land Affairs, the Greater Taung Local Municipality and the Batlapeng Tribal Authority.

- We also understand from Mr Ntzisi November that this community wholly supports the initiative to proclaim the Taung Skull Site as a National Heritage Site. A letter to this effect exists.

Management issues

- Since all of the above persons have an interest in the Main Property and therefore the Taung Skull Site, and since all of them will be affected by any decisions to declare the Taung Skull Site to be a National Heritage Site, and thereafter, a World Heritage Site, the Department of Land Affairs, the Greater Taung Municipality and the Batlapeng Tribal Authority will all have to be notified of SAHRA's intention to declare the Site to be a National Heritage Site.

- Section 27 of the NHRA requires that these parties should be given at least 60 days within which to make submissions regarding the proposed declaration, although the Landowner is entitled to longer notice and additional consultation with SAHRA on this (see section 27 of the NHRA for full details on this). SAHRA North West should pursue this with immediate effect.

- It would be helpful if the written consent to the proposal to declare the Site to be a National Heritage Site in terms of the NHRA specifically could be obtained from all of the above parties during the course of and as part of this process, although the NHRA does not require that the consent of the Landowner or any other particular interested or affected party must be obtained before the proposed declaration can be made by SAHRA. It is however preferable that such consent be obtained so as to ensure support for all future initiatives proposed for the Site.

- The declaration of the Site as a National Heritage Site has a number of consequences for the local community, not least of all for those members of the community that currently cross over the Taung Skull Site for the purpose of daily and expedient access to the nearest

schools and surrounding settlements, as well as for those members that water their cattle at the pools situated on the Taung Skull Site. Since SAHRA is responsible to suitably protect all National Heritage Sites and since it is likely that the Taung Skull Site will ultimately be fenced off in order to afford the Site adequate protection as required by the NHRA and the WHCA, this aspect will have to be carefully and properly managed and provision for a reasonable alternative made. Whilst the unrestricted access over the Site can be restricted and prohibited by SAHRA in terms of the NHRA, the more sensitive issue will be that of curbing or eliminating the existing access that the community has to the water on the Site. Whilst SAHRA may be entitled to fence the Site off in discharge of its obligations under the NHRA, this should not result in the community being denied access to water for subsistence purposes and a workable alternative will have to be provided for. The National Department of Water Affairs and Forestry should be consulted on this issue.

5.1.3 Mineral rights issues

- The mineral rights initially vested in the Government of the Republic of South Africa, then in the Republic of Bophuthatswana by virtue of the Proclamation made by the Government of the Republic of South Africa on 2 December 1977, and finally in the National Government of the Republic of South Africa in 1994 by virtue of the provisions of section 239 of the old Constitution.

- There is an endorsement on the Title Deed of the Main Property to the effect that a Notarially executed Prospecting and Mining Rights Agreement was registered against this Title Deed on 15 July 1970 in terms of which the South African Government granted the South African Development Trust the right to dig for and mine any minerals on the Main Property, subject to the payment of certain royalties to the South African Government.

- This agreement was abandoned by the South African Development Trust on 22 October 1979 at which time the mineral rights in the Main Property then vested in the Republic of Bophuthatswana.

- A second mining lease over a small portion only of the Main Property was granted by the Government of Bophuthatswana to Southern Spheres Mining and Development Company (Pty) Limited in 1987,and this lease was ceded to Bop Diamonds at a later stage. It is not evident from the Title Deed of the Main Property as to when this exactly took place, and whether or not this is still in place.

From a purely historical perspective, we understand that prospecting and mining for limestone took place on the Main Property, and particularly in the

area where the Taung Skull Site is situated, for many decades, but that all mining and prospecting operations ceased by the end of 1977.

The Site at which these operations were conducted has never been rehabilitated, and in terms of the old Mineral Rights Act No.73 of 1964, this law did not require restoration or rehabilitation of a Site. Notwithstanding this, there may well be a responsibility on the mining companies to restore or to rehabilitate the Site, either in terms of the new Mineral Rights Act, alternatively, in terms of the provisions of the section 28 of the National Environmental Management Act No. 107 of 1998, which requires remediation of past environmental damage by the persons responsible for such environmental damage.

The view is however currently that rehabilitation of the Site is not required as this would detract from the character of the Site, but that notwithstanding this, an approach to PPC (Pty) Limited, being the company that we are told were the last company to mine limestone in this area, for a financial contribution towards the future preservation, conservation, development and management of the Taung Skull Site, may well be considered.

Management issues

The Management Authority to approach PPC for preservation, development and management support of the project.

5.1.4 Servitudes, title deed conditions and other restrictions

No servitudes are currently registered against the Title Deed of the Main Property. There are also no conditions of title attaching to the Main Property. We are not aware of any land use planning, zoning or other restrictions which apply to the Main Property or more specifically that portion of the Main Property on which the TS NHS is situated.

5.2 Protections afforded the Taung Skull Site in terms of the NHRA

5.2.1 Under Section 27 of the NHRA by declaring the Site a National Heritage Site

- A surveyors diagram for the Site has been prepared for the purposes of formalizing the intended declaration by SAHRA of the Taung Skull Site as a National Heritage Site.

- The site measures 158,7429 hectares in extent and the diagram depicting the exact location of the site on the Main Property has been approved by the Surveyor General's Office under reference number S.G. No. 4496/2002.

- The Taung Skull Site qualifies to be graded as a Grade I heritage resource as defined in section 7(1) of the NHRA. Management responsibility for this Site will therefore vest in the South African Heritage Resources Agency ("SAHRA") in terms of the provisions of section 8(2) of the NHRA.

- SAHRA is in the process of following the necessary procedures to declare the Taung Skull Site to be a National Heritage Site. The Taung Skull Site will only acquire the status of a National Heritage Site after SAHRA has followed all of these procedures followed by the publishing a notice to this effect in the Government Gazette.

- A copy of the notice published in the Government Gazette, the particulars of the protection, a copy of the survey diagram referred to above, and a copy of the Heritage Agreement (if there is one for the Site at this time – this can always be registered with the Deeds Office at a later stage when actually executed), will have to be lodged with the Registrar of Deeds in Vryburg.

- Similar information must be furnished to the Surveyor-General's office. If possible, the original Title Deed of the Main Property should also be lodged with the Registrar of Deeds at this time, but if not, this can be lodged for endorsement of the declaration at a later stage.

- The Registrar of Deeds will then endorse the Title Deed of the Main Property filed with the Deeds Office and make appropriate entries in the registers of the Deeds Registry recording the declaration of the Taung Skull Site as a National Heritage Site.

- The Surveyor General's offices will also make similar entries into its records.

It is mentioned at this stage that, as far as the consultants are aware, SAHRA has not yet published a declaration in the Government Gazette in terms of section 27 of the NHRA declaring the Site to be a National Heritage Site. The Taung Skull Site has therefore not yet been formally declared a National Heritage Site. The Deeds Office have not yet been approached to record such a declaration against the Title Deed of the Main Property. This procedure needs to be completed <u>before</u> any Nomination Dossier can be submitted to the UN for recognition of the Site as a World Heritage Site.

Mention is made at this stage that the parties that must be notified by SAHRA of its intention to declare the Taung Skull Site to be <u>National Heritage Site protected as such under the provisions of section 27 of the NHRA</u> are:

- National Government through the National Department of Public Works (as registered owner of the Main Property).

- The National Department of Land Affairs.

- The Greater Taung Municipality.

- The Batlapeng community and the Batlapeng Tribal Authority (as occupiers of the Main Property); and

- All conservation bodies which have registered their interest in the geographical area of the Main Property with SAHRA as required by section 25(1)(a) of the NHRA.

There are certain time periods that apply to such notification that need to be complied with before any formal declaration can be made by SAHRA, and SAHRA needs to be vigilant that such time periods are complied with. The Landowner is entitled to a longer notification period than the other affected parties. One needs to note that the process envisaged in section 27 is one of notification and consultation, and that the actual consent of these parties is not required under the NHRA for SAHRA to ultimately be able to declare the Site to be a National Heritage Site. Notwithstanding this, consent would be preferable if any initiatives proposed for the Site are to be supported by the affected parties.

Mention is made that section 27(8) of the NHRA states that the landowner of the property concerned shall be entitled to negotiate conditions under which the proposed action will be acceptable. SAHRA should therefore establish whether or not the landowner wishes to propose conditions that are to apply to the proposed declaration.

Further mention is made that one of the stakeholders in the Taung Skull Site Project has enquired as to the purpose of the “Heritage Line” that has been drawn around the Taung Skull Site, and we have assumed that they are referring to the formal survey and delineation of the Site for the purpose of our preparing a response to this.

The purposes of having the Site formally surveyed and demarcated is to formally identity the exact location and layout of the Site that is being protected in terms of section 27 of the NHRA, and to record this fact, as well as the fact that the Site has been declared a National Heritage Site, into our property registration system. Once this fact is recorded in our property registration system, any person who intends to deal in any way with the Main Property will be publicly informed of these facts, and any future dealings in respect of the Main Property will be subject to the terms and conditions of the declaration. Anybody therefore proposing to purchase all or any part of the Main Property will be alerted to the fact that the Taung Skull Site, and

possibly also a formally demarcated area around this, is formally protected under the NHRA, and that neither the Site, nor the particular area around the Site, nor the Main Property, may be used in a way that infringes on any of the rights and protections afforded to the Taung Skull Site, or any area surrounding the Site, under the NHRA. Such a third party will also be alerted to the existence of any Heritage Agreement that may have been concluded in respect of the Site.

In addition to this, the Registrar of Deeds is obliged to inform SAHRA of the particulars of registration of any property rights transactions, such as transfers or subdivisions of the Main Property, within 14 days of such registrations taking place. In this way, SAHRA will always be advised of any property transfers or subdivisions that have been concluded in respect of the Main Property, and will be able to gauge the extent of property developments occurring in the area and the extent to which these may impact on any rights of protection afforded to the Site or any area surrounding the Site in terms of the NHRA.

Finally, in terms of section 27(15) of the NHRA, once a Site has been declared a National Heritage Site in terms of the provisions of section 27, SAHRA becomes wholly responsible for the protection of a National Heritage Site in accordance with the provisions of section 27, and can, in terms of section 27(18) of the NHRA, exercise some control over activities that may affect the Site to the extent that this section provides that *"…no person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage site without a permit issued by SAHRA".*

There are a number of further rights that vest in SAHRA in terms of section 27 of the NHRA as from the date that the Site is declared a National Heritage Site, and these include inter alia, the right to safeguard the Site, to regulate the conditions of use of the Site, to regulate the conditions of any development on the Site, and to regulate the admission of members of the public to the Site.

Management issues

The TS NHS has not as yet been formally declared a National Heritage Site. SAHRA must complete the process. This declaration must be registered against the title deeds of the Main Property at the deeds office in Vryburg.

5.2.2 Under Section 28 of the NHRA by designating a protected area around the site

- It is possible to extend the protection of the Taung Skull Site to an area of land surrounding the Site. To the extent that it may be reasonably necessary to ensure the protection and reasonable enjoyment of the

Site, or to protect the view of and from the Site, it is possible, with the consent of the landowner, for SAHRA to publish a notice in the Government Gazette in terms of which a portion of the Main Property surrounding the TS NHS (for example the area comprising a radius of 5 km from the formerly surveyed boundaries of the TS NHS), can be declared and designated a " protected area" in terms of the provisions of section 28 of the NHRA.

- As with the procedure under section 27 of the NHRA, this procedure also requires that a formal surveyors diagram be prepared for the protected area, that the area be declared a protected area by notice in the Government Gazette, and that this fact be recorded against the Title Deed of the Main Property.

The benefit of doing this would be to ensure some sort of control by SAHRA over the type of development that can occur within the protected area as well as the types of activities that may be conducted in the protected area. In terms of section 28(3) of the NHRA *"…no person may damage, disfigure, alter, subdivide or in any way develop any part of a protected area unless, at least 60 days prior to the initiation of such changes, he or she has consulted the heritage resources authority (in this case SAHRA) which designated such area in accordance with the procedures prescribed by that authority…".* In addition to this, a heritage resources authority may, in terms of section 28(5) make regulations providing for specific protections for any protected area, including the prohibition or control of specified activities by any person in the designated area.

These provisions can therefore be relied on to provide a protective buffer zone around the Taung Skull Site if necessary.

To the extent that it is not practically possible to put the formalities of this type of protection in place immediately, it is possible to provisionally protect a protected area in terms of section 29 of the NHRA, with almost immediate effect, and for a maximum period of two years, by SAHRA notifying the landowner accordingly and publishing a notice to this effect in the Government Gazette. If this occurs, then no person may, for the period of the provisional protection *"…damage, deface, excavate, alter or remove from its original position, subdivide or change the planning status of a provisionally protected place without a permit issued by a heritage resources authority responsible for the provisional protection (i.e. SAHRA)".*

Management issues

The Management Authority together with SAHRA will have to complete the formalities in order to establish the protected area which will function as a buffer zone around the site.

5.3 Land use planning issues, existing development

Refer to Legal Appendix (Appendix 2) for details.

There is no Zonation Plan for the Taung area as yet. It is unlikely that such a plan will be available until late in 2004. The site is therefore not zoned for any particular use at present.

The local and provincial authorities have proposed that the TSNHS be incorporated into a tourism initiative that includes the Taung Dam, the Spitskop Dam and existing local tourism venues. The use of local "Bed and Breakfast" accommodation has also been mooted.

5.4 Existing institutional infrastructure

5.4.1 Background

- Responsibility for the conservation and protection of the Taung Skull Site was initially delegated to the Bophuthatswana National Parks Board and thereafter to the North West Parks & Tourism Board.

- We also understand that the Government of Bophuthatswana intended to initiate the process to officially declare the Taung Skull Site a National Monument under the old National Monuments Act, but that this process was never completed.

- The Taung Skull Site was thus never officially protected under the old National Monuments Act. This Act has now been repealed by the NHRA.

- We understand that the intention is to take all steps necessary under the new NHRA to formally protect the Site as a National Heritage Site, and to put in place the necessary structures required for the future management, conservation and protection of the Site.

- Whilst the right and responsibility for the management of the Site has previously vested in the parties mentioned above, the provisions of the NHRA provide for structures that are intended to supersede this.

- The result is that SAHRA is now vested with the responsibility for the management, conservation and protection of the site.

It has been stated in the Terms of Reference provided for this project, that:

- SAHRA, together with the North West Provincial Department of Agriculture, Conservation and Environment ("DACE") as well as the

North West Provincial Department of Social Services, Arts, Culture and Sport ("DSSACS"), are responsible for managing the project to conserve and appropriately develop the TS NHS.

- We were wondering if there is a formal agreement between these parties in terms of which they have agreed to accept responsibility to manage, conserve and protect the TS NHS.

- This point requires clarification.

- We have in any event attempted to evaluate how this can be implemented within the parameters set by the NHRA and our views on this are set out below.

5.4.2 Appointing a Managing Agent

- Responsibility for the conservation, maintenance, presentation and management of the Taung Skull Site is vested solely in SAHRA in terms of the NHRA.

- It is possible for SAHRA to enter into a contract to appoint a managing agent to whom it can delegate some of this responsibility to a competent authority on an agency basis ("the SAHRA Managing Agent").

- Alternatively, SAHRA can enter into a contract with an independent third party or authority ("the Independent Managing Contractor"), in terms of which some or all of SAHRA's responsibilities to protect and manage the Site can be contracted out to a third party on the basis that such party is an independent contractor and not an agent of SAHRA.

(Note: the Heritage Agreement for the Cradle of Humankind is structured on the proposal that SAHRA follows the delegation route by appointing a Managing Agent to whom it has delegated its responsibilities for the protection and management of the national heritage sites falling within the Cradle of Humankind, rather than by appointing an independent contractor, and our report set out below is based on this.)

If a SAHRA Managing Agent is appointed for the TS NHS ("the Managing Agent"), then the purpose of the Heritage Agreement will be to record the basis of the managing agent relationship between SAHRA and the Managing Agent.

It will also have to regulate that relationship between SAHRA/ the Managing Agent and any other third parties as may be required to be a party to the Heritage Agreement e.g. the landowner or a local municipality (to the extent that certain rights and obligations for the management of the site are to be

contracted out to such local municipality). In other words, the Heritage Agreement serves to:

- Regulate the relationship between SAHRA and the Managing Agent in respect of the management of the TS NHS.

- Regulate the relationship between SAHRA, the Managing Agent, the landowner and any other independent contractors as may be required to be a party to the Agreement.

We believe that if SAHRA intends to delegate its responsibility to protect and manage the TS NHS to both DACE and to DSSACS, then the Heritage Agreement will have to be very specific as to exactly what rights and responsibilities are being delegated to each of these parties. This could make the Heritage Agreement quite cumbersome, and it may be more practical to simply appoint one Managing Agent for the TS NHS. This agent will in turn will have the right to conclude separate agreements or memoranda of understanding with various government authorities or independent third parties, in terms of which the Managing Agent will secure all the necessary resources, assistance and services, that it will require to properly and effectively protect and manage the TS NHS.

The question that needs to be asked and evaluated is to whom such responsibilities can and should be delegated and/or contracted, and on what terms.

The decision as to who the ultimate SAHRA Managing Agent, or alternatively, the Independent Managing Contractor, of the TS NHS will be, will have to be made, and the necessary structures for this put in place, as a matter of some urgency, as the UN requires this to be formalized before any Site can be recognized by them as a World Heritage Site.

This decision should be taken after proper consideration of the structures proposed in the NHRA , as well as the structures proposed under the provisions of the World Heritage Convention Act No. 49 of 1999 (“the World Heritage Convention Act”) for the protection and management of the Site as a World Heritage Site.

- The NHRA places various responsibilities on SAHRA and therefore its Managing Agent for the management and protection of National Heritage Sites.

- In contrast, in the terms of the WHCA, more wide-ranging responsibilities can be delegated to the Managing Agent.

- The first-mentioned agent is selected by SAHRA and derives its powers from SAHRA, whilst the last-mentioned agent is selected by the Minister

of DEAT and derives the powers that it requires under the WHCA from the Minister of DEAT.

We mention this because the appointed Managing Agent for the Site should be an organ of state that will have the capability, competency and infrastructure not only to comply with the requirements of the NHRA, but also to comply with the requirement of the WHCA. This agent should probably therefore also be an agent that is acceptable to the Minister of DEAT.

The documentation submitted in support of the application for World Heritage Site status to the UN will need to show that the person identified as the managing agent for the TS NHS is able to protect and manage the Site in accordance with the provisions of the WHCA, the Convention Concerning the Protection of the World Cultural and Natural Heritage and its Operating Guidelines. It makes sense to work towards setting up a structure which facilitates the appointment of a Managing Agent under the NHRA that can ultimately also be declared an Authority under the WHCA. Until such time as the Site is declared a World Heritage Site however, this Site will have to be protected and managed in terms of the provisions of the NHRA.

5.4.3 Possible contenders

The most likely contenders for the appointment to the position of Managing Agent for the TS NHS are the following:

- NW DACE – they have initiated the project and are prominently involved with it. They probably have access to funding, although this kind of conservation (i.e. heritage resource management) is outside of their normal sphere of activities.

- NW Parks & Tourism – they are already managing the Site and the NW Provincial Government has placed the Site under their care. They already have staff on Site, are responsible for tourism in the province, and should be able to develop a tourism plan around the Site.

- SAHRA – they are legally responsible to protect and manage the Site.

- Gauteng DACEL – they are already managing the national heritage sites falling within the Cradle of Human Kind and have already established the infrastructure and facilities required to manage national and world heritage sites. Since the TS NHS is a serial nomination, and it may make sense if all world heritage sites fell under a single managing agent.

- The Greater Taung Municipality – they are the party that are closest to the Site and the project as a whole. They have a direct interest in ensuring the success of the Site and probably also have the ability to

stimulate local small enterprises to undertake management and income generating functions at or in respect of the Site.

Whilst there are advantages that go with being appointed the Managing Agent for the Site, one must not forget that this project will require the investment of a substantial amount of investment capital, operating capital, as well as human capital, in order to be successful. There are numerous and ongoing responsibilities that go with ensuring the proper protection and management of the Site. Financial and capacity constraints, as well as the skills and experience constraints of the various contenders, will have to be identified and evaluated in order to establish who is best placed to take on the management of the TS NHS. A wide range of skills such as business and financial management skills, operational skills, on-site management skills, human resource skills, and the like, will be required of the Managing Agent in order for it to be able to properly manage the Site.

Whilst it is probably difficult at this stage to identify any one single entity that would currently possess all the capital, capacity and skills, necessary to protect and manage the TS NHS, one should not lose sight of the fact that notwithstanding this, it should be possible for the Managing Agent to acquire capital, capacity and skills, through concluding memoranda of understanding with various other relevant government authorities, alternatively, through concluding agreements with independent consultants/ third parties.

The Managing Agent will be expected to implement the management plan and both will be subject to the scrutiny of the World Heritage Committee. Sites which are deficient in either respect are either eliminated from the World Heritage list of sites or declared a "heritage site in danger".

Management issues

- The party that is ultimately to accept responsibility to manage and protect the TS NHS on a day-to-day basis must be identified and appointed.

- Whilst the NHRA vests sole responsibility for the conservation, maintenance, presentation and management of the TSNHS in SAHRA, practical considerations dictate that SAHRA should delegate some or all of these responsibilities to a managing agent that is better placed to implement this.

- Dependant on capacity and capabilities of prospective managing agents, the delegation could be to a managing agent vested with overall responsibility to manage the series of World Heritage Sites in South Africa, or to a managing agent more directly involved in the actual day-to-day management and protection of the site.

- Whilst there are advantages that go with being appointed the managing agent of the TS NHRS, this must be seen in the light of the numerous responsibilities that go hand in hand with this. These include raising investment and operating capital required to set up appropriate infrastructure at the site and to improve and manage the site, as well as establishing and maintaining a wide range of skills require to properly manage and protect the site, such skills to include business and financial management skills, day-to-day operational skills, on-site managements skills, human resource/ capacity building/ training skills, and the like.

5.5 Structural arrangements proposed in the NHRA

5.5.1 Purpose and application of the NHRA

See Legal Appendix (Appendix 2).

5.5.2 What does "Responsibility for heritage resource management mean"?

- The term “to manage heritage resources” is defined in section 1 of the NHRA and includes the conservation, presentation and improvement of a place protected in terms of the NHRA.

- The term “conservation” is defined in the Act as including the protection, maintenance, preservation and sustainable use of places and objects so as to safeguard their cultural significance.

- The term “improvement” of a heritage resource includes the repair, restoration and rehabilitation of a place protected in terms of the NHRA.

- The term “presentation” is defined as including the exhibition or display of; the provision of access and guidance to; the provision, publication or display of information in relation to; and the performances or oral presentation related to; heritage resources protected in terms of the NHRA.

This inevitably implies that money and other resources are going to have to be invested in the TS NHS in order for it to be properly managed as required by the NHRA.

Notwithstanding any delegation of its responsibilities to a managing agent, there is still an obligation on SAHRA to ensure that the management of the Site, either by SAHRA personally, or by its managing agent, or by its independent contractor, will take place in a manner which will at all times uphold the general principles of heritage resources management set out in the NHRA and comply with the provisions of the NHRA in all respects.

5.5.3 General principles of heritage resource management

See Legal Appendix (Appendix 2).

5.5.4 System of grading heritage resources and allocating responsibility for their management

See Legal Appendix (Appendix 2).

5.5.5 Capability and competency to manage heritage resources

- In terms of section 8(6), a provincial heritage resources authority or a local authority shall not perform any function in terms of the NHRA or any other law for the management of heritage resources, unless it is competent to do so.

- The capacity of a provincial heritage resources authority or local authority shall be assessed in terms of criteria prescribed by the Minister, including the availability of adequate staff, expertise, experience and administrative systems.

- These criteria shall then be applied by SAHRA, in the assessment of the capacity of the provincial authorities to perform specific functions in relation to prescribed categories of heritage resources; and by provincial heritage resources authorities, to establish the capacity of local authorities to perform any function under the NHRA.

- If an authority at provincial or local level does not have the capacity or is not competent to perform a specific function for which it is responsible under section 8, that function shall be performed on an agency basis by an authority at a higher level or a competent authority on the same level.

- It is incumbent upon the provincial heritage resources authority or a local authority to apply to the relevant authority for an assessment of its competence in the manner prescribed by the assessing authority. The assessing authority shall at least every two years, reassess the competence of a subordinate authority and review the assumption of function and powers under the NHRA.

5.5.6 Formal protection of the Taung Skull Site and its declaration as a National Heritage Site

Once the site is declared a National Heritage Site, SAHRA will be entitled:

- to make regulations pertaining to safeguarding of the site from destruction, damage, disfigurement, excavation or alteration; regulating

the conditions of use of the site or the conditions for any development thereof; regulating the admission of members of the public to the site and the fees that will be payable for such admission.

- to conserve or improve the site.
- to construct fences, walls or gates around or on the site.
- to acquire or construct and maintain an access road to the site over any land and construct upon such land fences, walls or gates.
- to erect signs on or near the site.
- to grant permits in respect of rights to reproduce the site.
- to enter into a Heritage Agreement with a managing agent or third party as contemplated in section 42 of the NHRA for the conservation, improvement and presentation of the site.
- to regularly inspect the site.
- to produce, acquire and market products relating to the site or enter into arrangements for the production, acquisition and marketing of such products.

It is interesting to note that in terms of section 27(23)(b) of the NHRA, no person, other than the owner of the property, shall be entitled to make any reproductions of the site for profit, unless such person has obtained a permit from SAHRA authorising this. If such permit is granted, then SAHRA shall be entitled to stipulate a fee to be paid for such permit, which fee shall be deposited in a trust fund dedicated to the conservation of the site or of heritage resources in general.

It is also interesting to note that section 44 of the NHRA states that heritage resource authorities (in this case SAHRA) and local authorities must wherever appropriate, co-ordinate and promote the presentation and use of places of cultural significance and heritage resources which form part of the national estate and for which they are responsible in terms of section 5 of the NHRA for public enjoyment, education, research and tourism, provided that where the heritage resource in question is a formally protected heritage resource (which the site will be if declared a National Heritage Site), then any person wishing to undertake such presentations must, at least 60 days prior to the institution of interpretive measure or manufacture of associated material, consult with the heritage resources authority responsible for the protection of such heritage resource (in this case SAHRA) regarding the contents of interpretive material or programmes.

Section 25(2)(e) of the NHRA also requires that if the heritage site is owned by the State, is the case for the TS NHS, the National Department responsible for arts, culture and heritage, must be consulted before any arrangements can be made by and person can present the TS NHS in any way whatsoever.

5.5.7 Delegation of responsibilities to another authority

See Legal Appendix (Appendix 7).

5.5.8 Concluding a Heritage Agreement

We mention a this stage, and only for the purpose of providing a brief background to Heritage Agreements, that section 42 (9) of the NHRA sets out some of the issues that can be regulated in a Heritage Agreement and these include:

- The maintenance and management of the site.
- The custody of the place and the duties of any person who may be employed in connection therewith.
- The occupation or use of the place by the owner or otherwise.
- The restriction of the right of the owner or occupier to do certain acts of things on or near the place.
- The facilities of access to be permitted to the public and to person deputed by the guardian to inspect or maintain the place.
- The presentation of the place.
- The notice to be given to the guardian of the place in case the owner intends to offer the land on which the place is situated for sale, lease or other disposal, and the right to be reserved to the guardian to have first refusal of such sale or lease or other disposal.
- The payment of any expenses incurred by the owner or by the guardian in connection with the maintenance of the place.
- Any other matter connected with the protection and management of the place which is agreed to by the owner and the guardian.
- The duration of the agreement, with provision for the earlier termination thereof by any party thereto; and

- The procedure for the resolution of any dispute arising out of the agreement.

Please refer to full text in Legal Appendix.

5.6 World Heritage Convention; World Heritage Site Status: implications

The Convention aims to promote co-operation among nations to protect heritage which is of such universal value that its conservation is a concern of all people. South Africa became a signatory to the convention in 1998, and remains a strong supporter of its aims. The Fossil Hominid Sites of Sterkfontein Swartkrans Kromdraai and Environs (FHSSSKE) was one of the three first South African World Heritage Sites, and Taung will be proposed as a serial extension to this site.

It should be borne in mind that the focus of World Heritage Site status is enhanced protection, and not simply recognition of universal value.

In contrast to the NHRA, the World Heritage Convention Act No. 49 of 1999 ("the WHCA") vests responsibility for the implementation of the UN Convention Concerning the Protection of the World Cultural and Natural Heritage ("the Convention") in respect of world heritage sites situated in South Africa, in the Minister of DEAT, alternatively, and to the extent determined by such Minister, in an Authority appointed by him under the WHCA. If the TS NHS is declared a world heritage site, then the ultimate management and protection of the TS NHS will, in addition to all existing legislation and policy, have to be managed in accordance with the WHCA, the Convention and the Operational Guidelines issued by the World Heritage Committee for the implementation of the Convention in South Africa. The Conservation Management Plan considers and provides for this.

5.6.1 World Heritage Site Status

In August 2003, at the Second World Heritage Convention Committee Workshop on the Revision of the South African Tentative Site List, it was decided that there were strong arguments to include Taung on South Africa's Tentative List as a serial extension to the Cradle of Humankind sites, listed as "The Fossil Hominid Sites of Sterkfontein Swartkrans Kromdraai and Environs". Taung and Makapan Valley will join the latter listed World heritage Site as part of a serial cluster

A Tentative World Heritage Site Listing submission as a serial site was made on 15 September, to ensure that by the time of submission of the Serial Site Nomination Dossier (January 2003), Taung will be on the list. The document is appended as Appendix 1.

5.6.2 World Heritage Values of the Taung Skull Site

See Cultural Heritage Resources Survey volume and Introduction to this document, Section 2.3.1, and Section 5.6.3 that follows Appendix 1 (Tentative World Heritage List Submission – Serial Site)

5.6.3 World Heritage Obligations

The World Heritage Committee has no powers to manage or influence management of listed properties. However, management should be in accordance with the duties and obligations of each State Party to the World Heritage Convention. These are described under Article 5 of the Convention.

The primary management objectives which derive from the general obligations of South Africa under the World Heritage Convention are:

- To protect, conserve and present the World Heritage values of the property.
- To integrate the protection of the area into a comprehensive planning programme.
- To give the property a function in the life of the South African community.
- To strengthen appreciation and respect of the property's World Heritage Values, through educational and information programmes and to keep the community broadly informed about the condition of the World Heritage values of the property.
- To take the necessary scientific, technical legal administrative and financial measures necessary to achieve the foregoing objectives.

In achieving these primary objectives, due regard must be given to:

- Ensuring the provision of essential services to communities within and adjacent to the property.
- Allowing uses of the property that do not threaten the World Heritage Values and integrity.
- Recognising the role of current management agencies in the protection of the property.
- Involving local community in the planning and management of the property.

Management issue: world heritage convention obligations

The South African Government (State Party) has an international obligation to protect and conserve the world heritage values listed above. Management strategies should include:

- Ensuring that all stakeholders understand the Convention obligations. Stakeholders should include the Greater Taung Municipality, especially its Executive Committee, the local Tribal Authority, local business leaders and the local resident community. SAHRA should of course be aware of all the obligations. Responsibility: SAHRA, DACE, DSSAC.

- Ensuring that reporting obligations to the World Heritage Committee are met, to maintain status as a World Heritage Site as required by the World Heritage Guidelines. Responsibility: SAHRA.

- Develop education and information programmes to meet obligation for presentation of World Heritage property. Responsibility: All stakeholders, SAHRA.

The way in which the above management issues should be addressed is described in the Management Table (Table 1, Appendix 3).

5.6.4 The need for a conjoint management structure for the serial World Heritage Site Cluster

This is a requirement in terms of the World Heritage Convention regulations governing serial sites. Reference to such a management structure needs to be incorporated into the Nomination Dossier under the site management section. However, no such management structure currently exists, although relevant authorities have been alerted to the need to establish such a structure. It would form the conjoint management structure to oversee the Serial World Heritage Site cluster, dealing with issues common to all, as in terms of World Heritage thinking, the three sites (Taung, FHSSSKE, and Makapan Valley) will be treated as a unit.

Management issue: the need for a conjoint management structure for the serial WHS cluster

- SAHRA needs to take the necessary steps to ensure that all relevant government departments are alerted to this fact and to take the initiative in ensuring that such a body is brought into being.

- In terms of the requirement for the nomination dossier, it will be noted that the problem has been noted, the relevant authorities notified and that steps will be taken to establish the management structure.

6 SITE DESCRIPTION: ASPECTS PERTINENT TO MANAGEMENT

The site is remote from most popular tourist venues and far from tourist routes. This fact carries with it implications for expected tourist numbers.

The site is in its entirety confined to an abandoned limestone quarry and its immediate precincts. The local environment is harsh, arid, dusty and in full sunlight, the remaining limestone faces are glaring white. Glare, blowing lime-dust and the scarcity of shade are factors that must be borne in mind. Eradication of the alien pepper trees will have to be considered in counterbalance to loss of shade for site users.

The hot summer months exacerbate the feeling of aridity and dust. North-west facing slopes are the hottest and should be avoided. Where they need to be used for site interpretation and on-site interpretation boards, a sun-screened and windbreak shelter should be provided.

These factors should be considered when planning picnic places (shady, not directly in the path of wind-blown lime dust, not against north-west facing slopes. Water on tap should be available within an easy walk of picnic places. A tuck shop should provide cold water and liquid refreshments for visitors.

7 PREVIOUS LAND USE

The site was previously used as a limestone quarry, from 1907 until 1977.

Although this has created a harsh local environment as described above, it is important to preserve the abandoned quarry ambience to the site, as it is an intimate part of site significance.

The mining background and history of the site needs to be brought upfront in site interpretation. In part this could be done by eventually re-establishing some of the original mining infrastructure like cocopan rails with cocopans, a reconstruction or model of the type of kiln used on site and an exhibit detailing the lime beneficiation process.

Management issues

- The mining ambience of the site needs to be acknowledged, preserved, and interpreted.

- Uncontrolled on unauthorised removal of lime from abandoned dumps should not be allowed.

8 EXISTING INFRASTRUCTURE AND SITE USE

In this section a contemporary overview or status quo report is given of the existing infrastructure and site conditions. Figure 8 (Existing Site Plan) shows a site plan with the main existing structures and features labelled:

8.1 Access Road

Access to the site is by means of a good tar road from Taung, if approaching the site from the east, or from Reivilo, if approaching from the west. As noted, additional signage near the Mokassa II turnoff in both directions is required, to ensure that tourists do not miss their way. Signage is not consistently present at all intersections.

There is also a need to preserve the rural atmosphere of the transit route, and perhaps enhance it by encouraging people next to the road to build some structures in traditional vernacular architectural styles, using traditional and authentic building materials.

Care should be taken to ensure appropriate land use to ensure that the experience of visiting a World heritage Site is not marred by undesirable development. This may indeed become an issue after the declaration of World heritage Site status, and with increased tourist visitation.

The condition of the tar road should be maintained to enable tourists to reach their destination safely, and steps should be taken to ensure that families living alongside the road are protected by ensuring good road-user behaviour, for example by imposing and enforcing a speed limit.

Obtrusive signage within the road reserve should be avoided, as too many, or too large signs create a negative visual impact.

Animals should be kept off the road. This will have to be negotiated with the surrounding communities, as the road verges are not fenced.

A sign announcing the traveller's arrival within a famous World Heritage Site should be erected immediately east of the bridge over the Thabasikwa, or nearby, taking care that it does not obstruct the approach view of Buxton and the Limeworks.

An embayment (lay by) should be created close to the bridge so that motorists can safely move off the road in order to stop and take photographs - this approach is the obvious viewpoint. (Figures 10 Site Layout Plan and 11).

Figure 11: Access road: The tar road from Taung to Buxton near the Thabasikwa bridge

The Old Powerhouse (still roofed) is in the middle distance (right). The remaining lime dumps are a prominent feature in the landscape. An embayment of lay-by should be created on the left lane to accommodate vehicles wishing to stop so that photographs of the old mining village can be taken. This should be situated at a point just off the picture (left) and at an elevated position which affords the best and most informative view over the entire Heritage Site

Management issues

- The Management Authority to ensure that together with the local Roads department and greater Taung Municipality, the quality of the access road is maintained.

- Additional official signage at the Mokassa II turn-off and further along is required.

- Informal signage by local residents should be regulated so as not to create a negative visual impact. For example, controls should be put in place to restrict sign size and positioning relative to the road reserve.

- The stray animal problem needs to be addressed in consultation with local residents.

- A speed restriction will have to be put in place and enforced.

- The transit route needs to be an integral part of the whole Taung experience, and steps need to be taken to preserve and enhance the quality of the access route.

- A lay-by or parking bay just off the tar road should be considered just east of the Power House Bridge, near the hill crest, as this vantage offers the best view of the whole quarry and mining infrastructure.

8.2 Fencing

- The property is only partially fenced at present.

- Fencing is likely to prove a sensitive management issue because for many years the site has been used as a thoroughfare short cut to the school by local residents.

- The site is also used as a source of firewood and grazing for donkeys, goats, sheep and cattle.

- Traditional healers occasionally use the site as a source of medicinal plants (see Public Participation Report).

- Religious ceremonies and other rites are performed in the waters of The Blue Pool area.

- The water of the Thabasikwa River at the lower weir (Fig 12a,b) is a major watering point for local livestock. This water should remain available to local residents, and the position of the fence, as opposed to the markers of the heritage Boundary should be negotiated with local stakeholders.

- The Public Participation exercise with local stakeholders had been taken to the point where local residents had agreed to the fence position and local labourers were about to be trained to erect the fence when funding was withdrawn. It is our suggestion that the contractors involved be re-approached to take up where they had left off, and complete at least this part of the project.

Management issues

The whole fencing issue and the need for a fence should be workshopped with local residents and the tribal authority. Care should be taken to allow livestock access to key watering points, for example the lower weir on the Thabasikwa, close to Powerhouse Cave.

Figure 12a: The concrete weir across the Thabasikwa below the Power House Cave. Cattle access to the impounded water is required by the local community

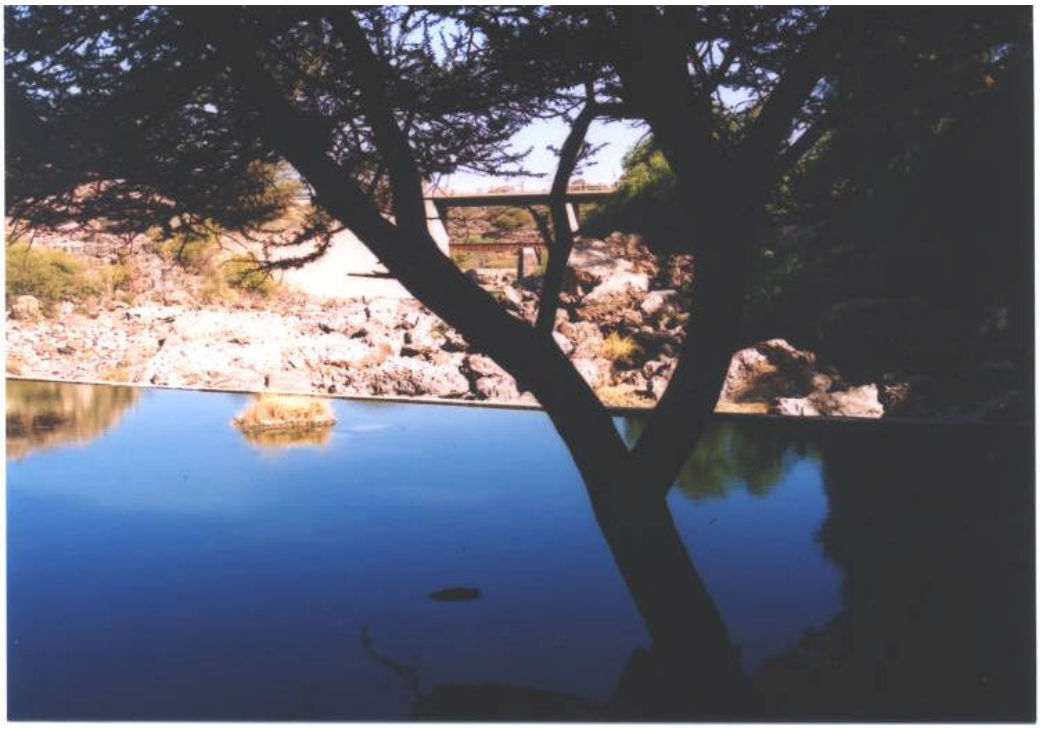


Figure 12b: The weir across the Thabasikwa described above, looking south. The nearby road and rail bridges across the river can be seen in the distance

In 2001, the estimated cost of the 8 km perimeter fence was R80 000 Today, at about R50 per metre, the cost of this fencing is estimated at around R400 000.

8.3 Gateway

The present entrance to the site comprises a wire gate and boom. The adjoining building functions as a gatehouse. The gateway notice board of a few years ago has been torn down and is no more (Figures 13a,b). A new 'statement gateway' needs to be erected. In any case, as the present entrance gate was perhaps not located at the most appropriate site for an entrance, but simply at the traditional vehicular entrance to the quarry, which is at a rather unexpected place 'around the corner", and which visitors are likely to drive right past.

An alternative position has been suggested, which will have the advantage of taking visitors past the 'ghost town' mine buildings, lime loading area and the site of the lime-burning kilns - see Figure 10 Site Layout Plan and Section 13.3.

Many informal entry points of uncontrolled pedestrian and livestock entrance exist at various points on the perimeter.

The site warden employed by North West Parks and Tourism Board was not present during the site visit.

Management issues

- A 'statement gateway' needs to be planned and budgeted for.
- Alternatives to the existing gateway need to be considered.
- The possibility of providing a circular route through the site needs to be considered.
- The gateway will need to be manned full-time in order to provide the necessary access control and safety.
- The gatekeeper will have to keep visitor records and be subject to supervision.

Figure 13a: Current Main Entrance to Taung National Heritage Site. The lettering off the entrance notice board has been removed. Red-roofed gatekeeper's house in centre

Figure 13b: Entrance gateway with boom, looking south towards Buxton

8.4 Parking

At present, there is no formally designated parking area at the entrance gate.

Neither is on-site parking formally announced at the Taung Skull Fossil Site near the Dart Pinnacle and Hrdlicka's Pinnacle, although an informal parking area is in use.

A parking place has, however, been designated at the Blue Pools Picnic area At all other picnic sites, including the one next to the Equus Cave, free-range parking is possible.

The roads are dusty but in reasonable condition.

Alternative parking arrangements have been suggested - see Figure 10 Site Layout Plan.

Management issues

- Haphazard parking may encroach on the limited space for picnickers and specific parking areas should be designated and defined.

8.5 Energy

There is ESKOM supply to the site. The power lines have unfortunately taken the shortest route through the quarry, right down the middle of the main access route, where they create a major negative visual impact. This makes it almost impossible to obtain photographs which do not include the power lines (Figure 14). As this is to be a World Heritage Site, future planning should include either relocation of the most obtrusive sections of the power line, or putting it in underground. This is an expensive option. The line could be camouflaged by repositioning closer to the escarpment – see Management issues.

A decision needs to be taken as to who will be responsible for payment for the re-connection, maintenance and electricity bills.

Management issues

- The relocation of power lines needs to be considered, perhaps closer to the escarpment where their visual impact would be camouflaged and lessened by the backdrop of the country rock (or the possibility of underground power supply weighed up).

- The body responsible for paying the electricity bill needs to be designated.

Figure 14: Visually obtrusive elements in the landscape: Centrally situated ablution block, power lines and posts which run the full length of the Heritage Site and the conspicuously sited reservoir on the horizon

8.6 Water

Water reticulation to the defunct ablution block at the Blue Pool picnic site exists (Figure 14), but water supply has apparently been cut off. Presumably it can be easily re-established.

There is no way that responsible tourism can take place on site without the re-establishment of the water supply and complete revamping of the vandalised ablution facilities (Figure 15). At the same time, the possible relocation of the ablution block to a more secluded and less "in your face" site should be considered.

As with energy supply, a decision will have to be taken as to who will be responsible for the payment for water.

Figure 15: Vandalised interior of ablution block. The u-bend remains of wash hand basin plumbing are testimony to the efficiency of the vandalism

Management issues

The reservoir on the escarpment edge is very visually obtrusive (Figure 14) and should be relocated or at least camouflaged. If not essential, it should be demolished and the site rehabilitated.

It should be noted that the MTEF Framework and 5-year plan has set aside funds for water provision to Buxton. Steps should be taken to ascertain the water requirements of the tourist infrastructure and amenities that are planned so that these can be incorporated into the forward planning.

The water reticulation plan is required for management purposes.

The body responsible for the payment of water servicing needs to be established.

8.7 Sanitation

The established on-site sanitation at the Blue Pools picnic site has been totally vandalised to the point that it is unusable (Figure 15). Its continued existence in this state gives an indelible impression of neglect and decay, and should be a top priority to revamp or replace (see above).

On-site sanitation is also required at the reception area and Visitor Interpretative Centre. As the quarry functioned as a working mine until 1977, presumably mine management at the time were obliged to comply with health regulations governing mines and quarries and the necessary installations would have been in place. Presumably these can be resuscitated and revamped where necessary.

Sanitary treatment is by means of the septic tank/French Drain method.

Management issues

- The revamping or relocation of the Blue Pool Picnic Site ablution block is a top priority.

- The building required full-time supervision by a site manager or picnic area attendant to function properly. Such a building cannot be left unattended as it will be vandalised exactly as before. Theft of building materials is a problem. The training and appointment of a full-time caretaker or site attendant should be budgeted for. Such a person should be drawn from the local community.

8.8 Waste Management

The site is officially managed by the North West Province Department of Parks and tourism. It is assumed that waste management is included in the management terms of reference. However, nothing is at present operative at the site. A waste management scheme should be instigated, which incorporates community involvement and recycling wherever possible. The local school could be involved in "Collect-a-Can".

The bins at the Blue Pool picnic area and other picnic and camping sites should be regularly emptied, and the site should be regularly cleared of dropped litter to discourage baboon activity. This operation should be carried out before and after week-ends, and once mid-week, the latter depending on visitation. The bins must be baboon and animal proof.

8.9 Present human use within the site

There are several present human uses of the site which will create management issues that require immediate management action:

- There is no controlled access to the site and people, particularly the local community, are used to entering and leaving the site at will.
- The principal use of the site at present is as a recreational resort for local people. This is particularly true during festivities such as New Year and Easter when many hundreds of visitors are reputed to congregate. Visitor numbers are apparently not recorded on these occasions.
- The quarry is used as a short cut to the school, situated to the east of the quarry, by the people living to the west.
- The site is used as grazing for donkeys, cattle, sheep and goats. Trampling of sensitive deposits such as the Equus Cave is a problem.
- Firewood gathering is taking place, resulting in felling of trees and chopping back of branches. This becomes a significant factor where shade is required in the picnic areas and trees are needed to cut down the glare off the highly reflective and blinding white limestone faces.
- Traditional healers collect herbal remedies in the site from time to time.
- Children use the abandoned dumps as a playground (Figures 16a,b). The play area is immediately above a potentially lethal drop, and the site is extremely dangerous.
- Thorn branch livestock pens were found, and presumably livestock are penned there from time to time.
- The waters of the Blue Pool are considered to have special qualities, and the pool is used for rituals and ceremonies
- The graveyard within the heritage site is still visited by relatives of those buried there. The cemetery needs care and refurbishing.
- There are some families resident within the site, although this is not necessarily problematic.
- The site buildings are used by a local community sewing circle. Again, this is not necessarily problematic.

Figure 16a: Children playing in powdery lime dump above a lethal drop

Figure 16b: Vertical drop below lime dump (upper left)
Who would be responsible if these children were seriously injured or killed?

- An old building very close to the site, is used as a liquor store, resulting in rowdy behaviour and crowding immediately adjacent to the main entrance, as it is presently situated.

Management issues

- Access control requires fencing, a gatehouse and a gatekeeper.
- The sensitive issues of site fencing and other land use issues need to be discussed and negotiated with the local residents and tribal authority.
- Animals need to be excluded from the site because of the risk of trampling, but access should be allowed by arrangement to key watering points. This may require embayments into perimeter fence, sub-fencing or special gates.
- Access to the Blue Pool Weir for livestock use can be done by arrangement in times of drought, under the control of herders.
- The gathering of firewood may be allowed within sustainable limits. This aspect should be monitored by the community themselves. A site monitor should be trained. Such a person should be drawn from within the community.
- Likewise, the collection of medicinal plants should be allowed if this can be monitored and kept within sustainable limits.
- Ritual use of the Blue Pool waters should be allowed by arrangement.
- Access to the graveyard should be allowed. Alternatively, this could be fenced and provided with a separate entrance.
- The Sewing Circle should be allowed to continue and extended into a craft centre of "Living Heritage".
- The Liquor Store should be relocated to a less conspicuous site. The presence of inebriated persons right outside the entrance to a World Heritage Site is undesirable.
- The continued residence of the existing resident families should be allowed provided that terms of occupancy can be devised and a formal agreement entered into.
- It would assist planning if the existing preferred pathways of both people and livestock through the site could be determined.

8.10 Present human land use outside the site

The area outside the heritage site is used mainly as a widely dispersed rural residential area or comprises tribal lands, under the control of traditional tribal authorities. Whether within or outside tribal areas, the local communities practise subsistence farming wherever this is possible. Livestock is kept by most families (cattle, donkeys, goats and sheep) and the distribution of the dispersed settlements is controlled by the local availability of water for domestic and livestock purposes. There is no service provision, and local fuelwoods provide much of the energy requirements.

This situation, where poverty is widespread, has led to overgrazing and stripping of the local vegetation. The Harts Valley used to be covered with riverine thicket and dense thorn scrub, which has almost totally disappeared. The social realities of the situation make the control of environmental degradation very difficult. However, special regulations will need to be worked out for the buffer zone around the site so that the World Heritage Site does not become an island in a sea of desertification.

Management issues

The Overall Management Authority will need to be kept informed about local government planning initiatives which might affect the access route to the site.

Special regulations regarding land use and grazing will have to be negotiated with residents within the buffer zone.

8.11 Existing old mine buildings and other infrastructure and their present use

Most of the buildings constitute a mining 'ghost town' – See Cultural Heritage Resources Survey for illustrations. A few buildings are, however, utilised:

- Sewing Circle and Craft centre. This occupies one of the disused Mine Compound buildings.

- Residence: One of the workers' cottages is occupied. This would make an ideal accommodation point for the gatekeeper or site manager.

- Liquor Store: this colourful establishment is right outside the existing gate, at the point where visitors must slow down to enter. Its frequenters are rowdy and boisterous and not exactly a good entrée to a World Heritage Site.

- Existing Gatehouse: This is the building next to the boom, at the existing entrance. From time to time, the gatehouse is manned by a gatekeeper.

- In the Blue Pool picnic site there is an ablution block, now totally vandalised (Figure 15).

- All the other buildings are standing empty, many of them in fairly good condition or easily restored. Encroaching dereliction of these in inevitable, as subsistence scavenging is ongoing.

Management issues

Steps should be taken to ensure that plunder of building materials such as roofing sheets is stopped. This will only happen with the co-operation of local residents and the presence and surveillance of a full time authority on site.

Buildings should be stabilised to prevent further deterioration.

Each building should be considered for an optimal possible future use, for example as:

- A reception area for visitors
- A showcase and sales point for local products
- A site Interpretive Centre (museum)
- A restaurant or tuck shop
- The craft centre – factory site
- The sewing group
- A performance venue for the dance group
- A schools educational environmental centre – dormitories may be required
- Ablution blocks, public toilets
- Gatekeeper's house
- First aid centre
- Outdoor lecture venue
- Lecture room
- Archive
- Info centre for regional tourism

The protection of the old mining infrastructure will be made easier by the erection of the security fence, and the provision of full-time supervision of the site.

8.12 Existing tourist-related infrastructure, pathways, hiking trails and their present use

Figure 8 shows an Existing Site Plan with the existing infrastructure marked and labelled:

- Gatehouse - see above.

- Ablution block. In the Blue Pool picnic site there is an ablution block. The ablution block has been completely vandalised and no longer serves any purpose. It is also insensitively sited and impacts on a scenically attractive area. Power and water has been supplied to the block.

- Picnic site at the Blue Pools. Braai and picnic facilities have been developed overlooking the Blue Pools. The sites can accommodate about 200 picnickers. They are made of natural stone and were in good condition with ground surfaces swept and clean.

- Pathways around Blue Pools. A network of walking trails leads around the Blue Pools area and up onto the adjacent escarpment. Most of the paths are in reasonably good repair although crumbling of the softer material is evident on steeper slopes and maintenance is required. Bird life was noticeably good on these walks.

- Parking bays and camp sites. Level camp-sites have been laid out in the shade of a number of trees on the road approaching the Blue Pools area.

- Cairn marking site of Taung Skull discovery. A pyramid monument (cairn) commemorating the discovery of the Taung child skull was erected in 1985 on what was thought to be the site from which the skull was removed. A brass plaque has been removed from the structure and there is no other reference to the purpose of the cairn.

- Parking area near cairn. Parking space for about 30 day-visitor vehicles has been levelled and marked out.

- Marked and graded pathway to upper Blue Pools viewsite.

- Equus Cave area picnic sites. Picnic and camping sites have been laid out under trees near the Equus Cave site and in reasonable proximity to the ablution block.

- Disused mining tunnel (dangerous). A tunnel leading into the tufa and dating from the time of lime mining has been renovated and is evidently

used for tourist interest. Steel gates are supposed to prevent unsupervised entry but these are broken and access is easy for any small person.

Management issues

- There is a total lack of interpretative facilities - no information for the visitor at all.
- The prevalence of vandalism and subsistence plunder indicates the need for access control and site supervision.
- There is no tourism accommodation on or near the site, no restaurant or refreshment facilities, no retail outlets for curious, maps, etc. and no functional toilet facilities.
- An assessment of potential tourist niches and their requirements may indicate a need for changes in the existing tourism resources.

8.13 Landscape and aesthetic qualities

The landscape possesses a stark and arid character with a particular appeal to visitors from other climates. The subterranean landscape includes the cave and the underground headwaters of the river.

The area is also rich in history and, if properly interpreted, has a significant sense of place.

Specific aesthetic points are:

- Long vistas of the Harts valley, embracing both its post and pre-colonial history.
- The interesting geomorphology and botany of the Ghaap escarpment.
- The stark, dazzling whiteness of the quarry and the spectacular views from the rim.
- The views overlooking Buxton, its industrial and domestic architecture and the history associated with the village.
- The Blue Pools riverscape and impressive cliff faces.
- The considerable interest and aesthetic appeal of the cave environment, remnant speleothems and the underground river.

- The “edge of the Kalahari” transitional zone – geologically, botanically and frontier history.

- The scrub-dominated vegetation created by the firewood trade with the Kimberley diamond rush a centaury and a half ago.

Management issues

Management issues include:

- Unregulated exploitation of subterranean environment
- Theft of and damage to speleothems
- Pollution of cave environment
- Disturbance of air flow
- Exposure to personal danger
- Exposure to histoplasmosis
- Disturbance of bat colonies and other cave-dwelling creatures
- Ignorance of palaeontological and historical significance.

8.14 Current tourist numbers and site use

In terms of the site use, this is uncontrolled, or only sporadically controlled. For this reason, current visitor numbers are unknown. According to P. Beaumont (pers. comm) a regular scientific user of the site, visitation is much lower than that recorded for the Wonderwerk Caves, an important archaeological site south of Kuruman. Wonderwerk Caves receive about 250 visitors per month.

Use of the site for purely recreational purposes by local people – for picnics, braais, and the like, can be quite heavy and large crowds of revelers gather at Christmas and New Year and on other public holidays. Many hundreds of visitors are reputed to congregate.

It was not possible to establish whether an entrance fee is charged on these occasions.

The authorities managing the site apparently do not maintain records of tourism and tourist numbers. Access is largely uncontrolled and past and current statistics are not available. The following table indicates the types of tourists who are, or have been visiting the site with presumed volumes. Growth/decline dynamics are based on informal discussions with parties familiar with the site over past decades.

Tourism market segment	Current volume p.a. (estimated)	Dynamics
Domestic (South African) market		
Day visitors especially at New Year and Easter.	3000 - 4000	Increasing
Specialist tours (history groups, bird clubs etc.)	100 - 200	Declining
School educational tours	500 - 1000	Declining
Independent tourists	100 - 150	Declining
International market		
Scientists and foreign independent travellers (FIT)	50 - 100	Static
Total	**3750 - 5450**	

8.15 Current use of the site by researchers and scientists

The impact of researchers and scientists is discussed fully in Appendix 4. Use of the site by scientists across many disciplines can be expected to be ongoing.

8.15.1 Research Plans

An attempt was made to solicit the research plans of the scientists who have been active at the site, or who plan to be active at the site in future. These have been mentioned in the CHRS wherever pertinent. The research plans have been included in the planning of the management of the site. The MacGregor Museum in Kimberley, the Bernard Price Institute, The Anatomy Department of the University of the Witwatersrand as well as Prof Louis Scott of UOFS and Prof Jeff McKee of University in the USA may all be contacted if necessary. Key areas with research potential have been listed in the State of the Environment report, together with a short indication of their research potential. Such areas should be treated with circumspection when planning development nearby.

8.15.2 Witness sections

Scientists will have to be reminded to leave adequate witness sections. These are required for independent verification of research results as well as future sampling and assay as new methods and technologies become available. The witness sections urgently need protection from the elements, percolating rainwater and bioturbation. The priority in this regards is the highly significant Equus Cave – see Executive Summary, CHRS and the SOER Report.

8.15.3 Maintenance of site significance

Without research there can be no story – it is only the research that has been done that has liberated the site significance. However, much of the heritage content of the many sites – the stone tools, fossils and other relics – have

been relocated to museums and other repositories competent to archive and curate them. The repository allocation is a SAHRA function and takes place at the time of permitting. This has meant that the heritage content of the site is not obvious to the average viewer, hence the importance of the witness sections and site museum and information boards, which is an indirect way of maintaining site significance.

Researchers should be requested to provide details as to how their research work or excavations will impact on site significance. This should be an integral part of the permitting process.

8.15.4 Return of site significance

This can be done by providing good casts of key fossils and original material in the form of bones and stone tools for the interpretive museum. Both three-dimensional and two-dimensional material is required for displays.

Management issues

- Researchers and their research efforts also have the potential to damage heritage resources and reduce site significance because excavation by its nature is destructive of palaeontological and archaeological deposits.

- Researchers should be asked to provide a survey of the envisaged impact that their research will have on any particular site prior to permits being granted. The impact of their proposed work plan can be assessed and adjudicated by SAHRA.

- Adequate witness sections need to be maintained to give visitors something to look at, to provide a source of material for independent verifications of research results and to make provision for ever-improving technology which allows new methods to provide new answers, provided that there is still well-provenanced material left to sample.

- Good material should be provided by repository institutions of material that was derived from Taung in order to return site significance to the site.

- Exposure and interpretations of the interesting results of research should be presented to the public.

9 ADDITIONAL CONTEMPORARY MANAGEMENT ISSUES

9.1 Site Safety and Stability

All abandoned mining and quarrying operations are inherently dangerous, containing steep drops, friable edges, unstable piles of rubble, concealed excavations and low, unstable ceilings where underground tunnelling has been undertaken.

By providing organised tourism in such a locality, one is knowingly inviting members of the public into a dangerous environment, and asking them to pay for the experience.

9.1.1 Field Scan: Some dangers observed

- The entire quarry margin has created drops of 10-30 m. (Figure 17). In places, the edges are friable or the overburden is loose and rubbly. It is not practicable to consider fencing or in other ways protecting the entire quarry. Therefore, there should not be free-range, self-guided tourism throughout the area, but visitors should be confined to defined areas of use or be taken on guided routes, or be obliged to stick to a laid out hiking trail.

- The Public Works and Safety Act requires that all reasonable precautions be taken to ensure public safety. This would necessitate such precautions being taken in all areas that are open to the public. Safety precautions would include the posting of warning notices, fencing, steps and hand rails at steep places in pathways, lighting in dark areas (if any) and ensuring that walking substrates are even and stable.

- The Mining Tunnel (Figure 18a,b) and Underground River (See Appendix to Tourism Report) should be subjected to an inspection by professional mine safety officer before these places are used for tourism. In the opinion of the team, the "underground river" has been rendered unsafe by the movement of heavy vehicles on surface, and disturbance of the substrate in the course of preparing the level surface for the picnic site. Until such time, these places should be placed off limits.

- Despite reasonable precautions being taken, accidents may happen, and the management authority of the site as well as private tour operators should carry a public liability insurance. This issue of insurance requires further discussion.

Figure 17: The removal of the limestone tufa from the escarpment edge has created drops of 10-80 m. In places, the edges are friable and because fencing of dangerous drops is impractical, visitors should be discouraged from free ranging and confined to marked pathways and hiking trials which can be made safe

- It is also necessary to ensure that tourist guides and site caretakers know how to and have the means to (e.g. cell phones) to summon help in the event of an emergency (e.g. heart attack, broken limbs, snake bites, etc.) and where such medical assistance is available.

- Site guides require training in first aid and a first aid station with stretcher and basic equipment should be maintained on site and subject to regular inspection.

- The possible presence of cave disease or histoplasmosis should be flagged by posting notices to this effect. Persons with compromised immune systems, such as HIV-positive and AIDS-infected people, as well as those on immuno-suppressive treatment are particularly susceptible. An infection with histo-plasmosis could prove fatal. The disease is the result of infection by fungal spores which are released by a coprophagous fungus growing on bat guano.

Figure 18a: The 150m-long "Old Mine Shaft" should be subject to professional inspection and written report by a Mine Safety Officer prior to its use as a tourist opportunity

Figure 18b: The disused "Old Mine Shaft" interior. This tunnel is home to a bat colony. Use of the tunnel by tourists may displace the colony. Besides this, Cave Disease or Histoplasmosis is a real risk

- The abandoned mine buildings are a source of electrical hazard, once power is reconnected. The safety on former electrical installations should be ascertained, e.g. are projecting loose wire live or not?

- Unprotected man-made vertical drops in the vicinity of the former ore-loading-bins and railway (see Figure 16b) should be placed off limits. Local children play in the steep powdery dump of line directly above the vertical drop, by running down slope and collapsing into the soft material. They should be excluded from this dangerous area.

- Personal physical safety from such hazards as muggings, hijacking, theft and rape are the work of criminal elements, and difficult for site managers to predict or control. However, the outcome of the public participation exercise seems to suggest that because of the rural ambience of the site, threats to personal safety are minimal. The presence of a parking attendant or picnic site guard could discourage such criminal elements.

- Bees, snakes, insects and other biological hazards are inevitably present and the first aider should be trained in handling cases of bites and stings, and possible rapid allergic reactions.

Management issues

- A regular and systematic safety assessment of the entire site, but in particular those areas that will be promoted for public access and tourism, needs to be undertaken annually.

- An assessment of injury risk should be undertaken and appropriate controls identified, such as warning signs, fencing, hand rails and steps and the diversion of visitors away from dangerous areas.

- Warnings should be posted on elevated areas overlooking the quarry not to throw stones or approach the edge.

- The underground “river” or solutional cave and the Old Mine Shaft require professional inspection by a Mine Safety Officer prior to their use.

- It is known that bats inhabit both the disused mine tunnel and the “underground river”. It is therefore likely that “cave disease” or histoplasmosis may be a factor. This is caused by a non-filterable fungal spore of a coprolytic fungus present on bat guano. People who are immune-compromised, such as HIV positive people, those on certain medications and diabetics, are particularly prone to this disease (see box), which can prove fatal. The public must be informed and

educated both at specific subterranean environments such as the tunnel or underground river (if such venues are to be incorporated in the tourist experience) and at the main entrance, that histoplasmosis is a factor in the subterranean environments. Warning notices must be posted.

- Tour routes must be planned to avoid steep drops, overhangs, unstable or undermined areas.

- Boardwalks and pathways should provide even walking surfaces.

- Dangerous places or archaeologically sensitive areas in places that are open to the public should be fenced off, or psychological barriers erected.

- Warning notices may be necessary.

- A first aid station with a trained first aider with telecommunications should be set up. The latter is essential on account of the remoteness from professional medical assistance. Such a safety precaution is an essential for professional tourism.

- The issue of public liability insurance needs to be addressed.

9.2 Fire Management

- The quarry environment creates a situation where it is unlikely that fires will pose a management problem. There is little vegetation to support veld fires. The islands of vegetation that do exist on bosses of travertine that have not been mined away are surrounded by areas which are bare of vegetation. The road network throughout the quarry acts as a series of fortuitous fire-breaks.

- When the fence is erected, a firebreak could be cut around the periphery, particularly on the west where the vegetation cover is close enough to warrant it.

- The abandoned mine buildings should be secured as well as possible to prevent vagrants from entering and lighting fires inside.

9.3 Drainage and Erosion Control

- Many of the dumps are unrehabilitated and eroding. Wind erosion and dust are important as water erosion.

- The dumps will ultimately require stabilization. Various strategies may be relevant.

- Drainage and erosion is not a serious problem on existing access roads, but where these occur on site, proper mitre drains must be provided and kept clear.

- Steps should be taken to ensure the even distribution of water flow over the landscape.

9.4 Water Management and Water Pollution

What is required is proper catchment management, considering the significance of the Thabasikwa water to local residents and livestock.

Possible pollutants from the Thabasikwa village upstream suggests that regular quality controls on the water may be necessary. In this way, the origin and nature of pollutants can be located, controlled and managed.

The Thabasikwa village falls outside the Buffer Zone.

9.5 Dust Control

The dust from vehicular traffic across the loose lime surface is a considerable environmental problem. In the short-term, the most frequently used sections of roadways could be surfaced with cinder or gravel. Less-used sections need to be compacted and wetted to create a less dust-yielding surface.

9.6 Pathways and Hiking Trails, preferred pathways

A system of well-marked pathways and hiking trails with comfortable walking surfaces needs to be laid out through the site, covering the most significant heritage sites and viewpoints. Visitors should be instructed to keep to the pathways so as to discourage free-ranging into dangerous areas (Figure 19). Pathways can be surfaces with crushed compacted lime and wetted to create a durable walking surface. The margins of the pathways could be marked with local stone. Some of the more level and accessible sections could be made wheel-chair friendly, to provide disabled access. Care should be taken to route such sections past labelled vegetation and outside interpretation boards, which should be positioned in such a way that they are readable.

Figure 19: Pathway construction. Compacted and wetted crushed lime, bounded with local stone. Pathways should be wide enough to accommodate wheelchairs for two people to walk abreast

9.7 Alien invasive species

Alien vegetation is abundant at the Taung Skull site due to past disturbances and continued overgrazing. Seven alien plant species are present (see Botanical Heritage Resources, CHRS. According to the amended regulations (March 2001) of the Conservation of Agricultural Resources Act (1983), it is the legal duty of the landowner or land user to control alien invasive plants occurring on the land under their control. The abundance of alien invader and weed species indicates that the state of the natural vegetation is poor.

As an alien invader, the pepper tree, *Schinus molle* is problematic in that it is by far the most abundant shade provider in an otherwise intolerably hot and glaring environment. If these trees are to be eradicated, it is suggested that a start be made to control unnecessary saplings, before systematically replacing this species with an equally shade-bearing species such as local *Rhus.* The simultaneous removal of all pepper trees should not be contemplated as it would leave a most inhospitable and unattractive environment.

The control and eradication of invasive species should be community-based programmes. A control programme should be drawn up and manual labour used to remove and do ongoing control of unwanted species.

9.8 Weed and shrub control

See above.

9.9 Red Data Species

The Taung Skull Fossil Site lies on the eastern edge of the Griqualand West Centre of Endemism. A centre of plant endemism is an area with high concentrations of plant species with very restricted distributions. Endemics and near endemics, which could be present on the Ghaap plateau in the vicinity of the Taung quarry, include *Rhus tridactyla* and *Aloinopsis orpenii.* Seventeen Red Data and protected species are known to occur in habitats along the Ghaap escarpment in habitats similar to the Taung quarry, but only one protected species was recorded at the site during the field visit.

The botany of the area and the natural heritage of the Griqualand West Centre of Endemism could be promoted in a museum or outdoor interpretative centre. The impacts of man on the Taung Site and information as to why we should conserve our natural heritage and live sustainably should be presented. Plants could be numbered or labelled along parts of hiking trails and pathways where they occur. Local learners and their teachers should be encouraged to use the site as an outdoor classroom, and outreach programmes geared to this end should be implemented.

9.10 Unsustainable wood collection

There is evidence of wood collection (Figures 20a,b). Harvesting of fuel wood from indigenous trees must be carefully managed so that it is done in a sustainable way for that area. Sustainable levels of wood harvesting must be determined and a system for regulation developed in consultation with local communities before harvesting continues. Wood obtained from eradication of alien invasives can be utilised or sold by the local community.

Figure 20a: Tree chopping inside the Heritage Site is becoming a problem. Sustainable levels will have to be determined and wood collection practices negotiated with the local community. Fencing and controlled access are prerequisites to the fuelwood gathering management strategy

Figure 20b: Fuelwood from the TS NHS on its way to the numerous local rural settlements. Buxton village is largely dependent on fuelwood for energy requirements

9.11 Unsustainable grazing by livestock

There is evidence of overgrazing. The free-roaming cattle, donkeys and goats are severely overgrazing the already sparse herbaceous cover. Bush encroachment is taking place on the eastern boundary of the site near the Powerhouse Cave due to overgrazing. The state of the natural vegetation on the intact portions of the escarpment and plateau above the site is in a better condition, but it is still overgrazed. A strip of this vegetation along the escarpment should be preserved within the Buffer Zone. The whole site should be adequately fenced off to prevent access of livestock to the site, except to defined watering places. If livestock grazing is essential to the local community, a grazing plan should be set up in consultation with local leaders. Grazing should be limited to defined areas which are not at risk to trampling or that have not already been denuded to unsustainable levels, and should be kept to levels below the grazing capacity of the veld.

9.12 Visitor behaviour: Management

Most of the visitor management issues can be attributed to the fact that, in terms of numbers, the principal use of the site is for holiday season recreation with no reference to its heritage significance vandalism, litter, graffiti, noise, pollution, etc.

Redirection of the use of the site to interpret and emphasise its heritage significance will help alleviate these issues.

9.12.1 Unwanted noise: noise control

- Unwanted noise from parked cars equipped with "ghetto blasters" destroys the sense of wilderness and can be a huge deterrent for many tourists. This should not be allowed to disturb the enjoyment of the site for other users. It will not be sufficient to set aside an area where sound systems may be used because the bass throb of such installations can be heard kilometres away.

- A pamphlet handed out at the gate should draw attention to the fact that this is not allowed on the heritage site. The same information should appear on a strategically placed notice board erected near the entrance which also announces other prohibitions, e.g. "Do not feed baboons".

- A uniformed picnic site monitor or "Heritage Park Ranger" should monitor and control the behaviour of site users.

9.12.2 Littering

- Place litter bins strategically at places where visitors might sit or picnic.

- Ensure litter bins themselves are not unsightly or visually obtrusive.
- Place the standard no littering sign in picnic area , also next to food and drink sales points, car parks (people clear out the accumulated rubbish in their cars before departing), and public buildings.
- Litter bins should be baboon and animal-proof.
- Ensure signage conforms to set site standards.
- Site caretaker to arrange for the clearing of bins and site cleaning on a regular basis.

9.12.3 Soiling of the site

- This appears to be a problem because the existing ablution blocks are non-functional and vandalised. The ablution block needs repair as a top priority (and relocation should be considered) and additional toilet facilities will need to be installed at the visitor reception centre and perhaps chemical toilets at the more remote picnic sites.
- The toilet buildings will require an attendant to ensure that they are properly used, cleaned and maintained. Depending on site use, this could be the picnic site monitor/Park Ranger referred to above.
- The quality of tourist facilities is often set against the quality and standard of the ablution facilities and without proper supervised and monitored toilet and ablution facilities at Taung, there can be no responsible tourism there (tour operators will not come) and certainly no world class tourism.

9.12.4 Graffiti

- The existing graffiti on the Schmidtsdrift shales in the Power House Cave area should be removed or camouflaged.
- This form of vandalism is very difficult to control peripheral to the site, but the Ranger should be able to deter such behaviour within the Heritage Site.

9.12.5 Vandalism

- No infrastructure will survive vandalism (Figures 15, 21) or subsistence plunder without full time supervision. A Heritage Site Ranger is recommended, in order to control this potential aspect of visitor behaviour as well as the other elements described above.

Figure 21: The future World Heritage Site. Vandals have removed the brass plaque commemorating the discovery site of Australopithecus africanus, type specimen of this world-famous genus of "ape-men" from the commemorative cairn in front of the "Dart Pinnacle"

- The use of not-easily vandalised or theft-worthy building materials is recommended (Figure 22).

9.12.6 Interference with biota

- The resident baboon troop is a looming management issue with regard to the above. Baboons soon become used to raiding dustbins, then to begging for food, then stealing it and then become aggressive in order to obtain it. This pathway has been demonstrated at the cape Point Nature Reserve, where the resident baboons have become a total menace and unafraid of humankind, to the point that they chase visitors away from their picnic lunches. Baskets and open cars cannot be left unattended.

Figure 22: Picnic site under the pepper trees at the Blue Pool area. The seats and tables have been made of dolomite slabs, the dimensions and weight of which make theft and vandalism difficult. The systematic removal of the pepper trees as "invasive aliens" would have disastrous consequences for the picnic site. Replacement of the pepper trees with indigenous equivalents will have to be carefully planned so that there is always sufficient shade.

- All dustbins should be baboon-proof (several designs are available) and visitors must be educated not to feed baboons by posting suitable notices to this effect. The Ranger must enforce the prohibition.

9.13 Management of Waste Lime Dumps

The existing lime dumps, especially the southern dump forms one of three major visual impacts of the site. Their size, scale and colour immediately impart a mining image. These dumps set the scene for the TS FS.

It is for this reason alone that the dumps need to be retained and protected.

Due to stock grazing and that no active re-vegetation programmes had been implemented in the past, the dumps are generally bare and exposed to natural erosion. The white reflective colour of the lime creates a bright glare.

Erosion is not obviously a problem. This is probably due to the arid climate and the fact that the lime tends to cement itself and form a hard crust. Once the crust is broken or disturbed the lime turns to power and can easily be eroded. This is often caused by stock trampling and, unfortunately, by children using the slopes as a slide.

Management issues

- Fence off the dumps from stock grazing.
- Prohibit uncontrolled access up and down the slopes by providing a dedicated pathway system.
- Develop a sustainable re-vegetation programme to stabilise the slopes and to reduce or tone down the glare off the dumps.
- Stabilise the erosion gulleys and drainage ways to prevent further erosion.
- Provide on-site monitoring and an education programme to inform the local communities on the need to protect the dumps.

9.14 Aesthetic considerations

The visual experience of the visitors along the access road is currently being diminished by the urban sprawl taking place alongside the road. The sense of travelling through rural wilderness is being compromised by all the new dwellings currently being erected.

The full visual experience only occurs as one turns the bend immediately before the old Power House. The impression is of a landscape totally devastated by mining activities. The old works and dumps are unrehabilitated and white in colour. This reflective white contrasts greatly with the surrounding landscape.

The old mine buildings, abandoned steel bridge and the building of Buxton Village add to the image of an old mining establishment.

Visually sensitive areas consist of:

- The approach area to the Power House, bridge and old mine offices. This image needs to be protected as it forms the first visual impression of the Site.

- The Thabasikwa River Valley and adjacent cliffs especially to the north and the east. This zone provides an unspoilt natural backdrop to the Site.

- The Ghaap Escarpment forms the major backdrop to the Site. It is important that the visual integrity of the escarpment is maintained as any scarring to it becomes highly visible.

The main visual detractions consist of:

- The Eskom Powerline that cuts across the Site immediately along the internal access road to the Blue Pool picnic site.

- The Blue Pool picnic site ablution facility. This building has been sited centrally within the Blue Pool amphitheatre and is highly visible from all the surrounding elevated viewpoints.

Management issues

- The visual quality of the view from across the river near the old Power House needs to be maintained.

- A lookout point near the Power House needs to be provided from where photos can be taken. This should allow cars to safely pull off the road.

- All unnecessary or visually distracting infrastructure such as the Eskom Powerline and the ablution facility needs to be relocated.

- The Ghaap Escarpment that falls within the buffer zone needs to be protected against surface disturbances such as housing, roads and overgrazing. Developments that break the skyline such as powerlines, communication towers, elevated water tanks and reservoirs needs to be prohibited.

- Any development that is visually intrusive must be excluded from the Thabasikwa River Valley. Only low impact development and activities such as hiking will be permitted.

- All new development within the Buxton Village must blend in with the existing architecture and visual quality.

- All signage and information boards shall not be visually intrusive, of inappropriate design and scale for the location.

9.15 Signage

It is essential that the TS FS be visually identified and promoted through various forms of signage. The signage must clearly project to the passer-by a bold image of what the TS FS is and where it starts and ends. This will be achieved by marking the points of entry or gateways and by providing clear and branded sign posts. This signage should also incorporate existing information into a unified design and not compete with it.

A sign system should also blend with all other accessories and help to unify the site. Fore these reasons, signs must exhibit these basic design principles:

- Uniformity of appearance
- Simplicity and clarity of expression
- Use of symbols in addition to text wherever possible
- Use of standard typeface, colours and supporting structures
- Appropriate design and scale for the location

Individual activities within the Taung Skull Fossil Site area should be clearly identified, and access to and from these activities should be easy, fast and safe. In addition to identifying major activities on the site, such as the hiking trails, several other important elements must also be clearly identified. These are:

- Public toilets
- Public rest stops or picnic areas
- Restricted areas
- Special handicapped parking and access routes; and
- Designated entrance / exit routes.

Signage material should be determined by cost, appearance (taking the setting / environment into consideration), durability, location, maintenance and vandal resistance.

- Signage such as billboards should be avoided at all costs as these form some of the worst forms of visual intrusion.

- Signage which includes the TS NHS logo shall also include the World Heritage and UNESCO emblems in terms of the requirements of the World Heritage Operational Guidelines.

- Selection of appropriate lettering is extremely important, as the signs will form a large part of the whole TS NHS. The typeface should correlate with that used in information brochures and other publications for the TS NHS and the larger tourism area.

9.16 Local expectations

Local expectations of the tourism potential are unrealistically high. These expectations fall into different categories:

- That the revenue potential of a World Heritage Site is such that local poverty will be relieved or eliminated, even in the short term.
- That the site will be developed for mass entertainment rather than for a more subdued heritage experience.
- That the original Taung Skull will “come home”.
- That enhanced tourism will create numerous jobs.
- These expectations will have to be sensitively managed.

9.17 The management of the cultural heritage assets themselves

These management issues are also detailed in the State of Environment Table in the CHRS and in the Management Table, Appendix 3.

Sites not specifically mentioned in the Table below are deemed not to require any specific management intervention at present.

HERITAGE RESOURCE	PRESENT THREAT AND RISK	MANAGEMENT INTERVENTION REQUIRED	RESPONSIBLE PARTY
Stromatolites		• Dolomite exposures at Taung Site require further field studies to locate good exposures for use in hiking trails	• Scientific community can be approached to help
Dart Pinnacle palaeontological deposits	• Site is vulnerable to vandalism (graffiti, tampering with exposed fossil bone). • Open excavations at foot of pinnacle are hazardous to pedestrians.	• Create a psychological barrier around site, e.g. partial handrail at cairn platform, to discourage entry to excavations. • Alternatively this site and the next (Hrdlicka's) to be under surveillance by Heritage site Ranger	• Management Agent, SAHRA (ultimate responsibility for Heritage Site Conservation is SAHRA's)
Hrdlicka's Pinnacle deposits	• Site is vulnerable to vandalism by chipping out of exposed fossils	• Create a psychological barrier around site, e.g. partial handrail at cairn platform, to discourage entry to excavations. • Alternatively this site and the next (Hrdlicka's) to be under surveillance by Heritage site Ranger	• Management Agent; SAHRA (ultimate responsibility for Heritage Site Conservation is SAHRA's)
Quinney Cave	• Vulnerable to chipping of fossils that is site noticed	• Use non-disclosure as a management tool. • Route trails and pathways away from the site	• Planners to ensure this happens
Black Earth Cave	• Vulnerable to chipping of fossils that is site noticed	• Use non-disclosure as a management tool.	• Planners to ensure this happens

HERITAGE RESOURCE	PRESENT THREAT AND RISK	MANAGEMENT INTERVENTION REQUIRED	RESPONSIBLE PARTY
		• Route trails and pathways away from the site	
Equus Cave	• Highly vulnerable • Loose fossils exposed everywhere • Sediments unroofed, exposed to percolating rainwater and weathering. This can affect dating results • Site prone to bioturbation • Site threatened by uncontrolled (access) sediment trampling and cascade, animal interference, subsidence and collapse • Site prone to scavenging of artefacts, fossils and other relics • The valuable residual witness section is at risk • The site runs the risk of losing research potential • The cave is situated in one of the most pleasant shady parts of the site and this attracts people	• A top management priority • Unconsolidated witness section to be stabilized (sandbags, wire and stone gabions) and roofed • Access to be controlled, raised walkway for authorized persons required • This will minimize trampling • Site required people-proof fencing • Monitor bone removal • Do not encourage braai-making, picnicking or camping close to site	• Responsible party to consult last permitted scientist (P.B. Beaumont, MacGregor Museum, Kimberley) • Management Agent, SAHRA
Satan Cave	• Site vulnerable to scavenging if discovered • Loose fossils exposed	• Use non-disclosure as a management tool • Do not advertise whereabouts	• Management Agent, SAHRA

HERITAGE RESOURCE	PRESENT THREAT AND RISK	MANAGEMENT INTERVENTION REQUIRED	RESPONSIBLE PARTY
Oxland Large Mammal Site	• Large fossils visible in rock, some loose • Site is protected by inaccessibility	• Use non-disclosure as a management tool • Do not make access easy	• Management Agent, SAHRA
Witkrans Cave	• Uncontrolled access allows artefact scavenging to occur, but sediments are calcified and hard	• Proclaim Buffer Zone • Unprotected cave, with uncontrolled access is problematic	• SAHRA: use “Protected Area” legislation
Powerhouse Cave	• No control on access • No control on artefact scavenging • Trampling of deposit • Use of cave by people, littering, fires blackening walls	• Raised walkway to protect deposit from trampling • Visitors would have to be accompanied by a guide • Gated fence necessary to control access • Site needs regular monitoring • Remove graffiti	• Management Agent, SAHRA
Ochre Cave	• Paintings are fading • Site is outside Heritage Area	• Record: trace paintings before further deterioration occurs	• SAHRA: use “Protected Area” legislation

10 EXISTING MANAGEMENT STRUCTURES

(See also section dealing with legal considerations).

10.1 Organizations

The five possible organisations that may be appropriate as the Overall Management Authority (OMA) are:

- NW DACE – they have initiated the project and are prominently involved with it. They probably have access to funding, although this kind of conservation (i.e. heritage resource management) is outside of their normal sphere of activities.

- NW Parks & Tourism Board– they are already managing the Site and the NW Provincial Government has placed the Site under their care. They already have staff on Site, are responsible for tourism in the province, and should be able to develop a tourism plan around the Site. The North West Parks and Tourism Board is currently examining the possible development of tourism products in and around Taung.

- SAHRA – they are legally responsible to protect and manage the Site.

- Gauteng DACEL – they are already managing the national heritage sites falling within the Cradle of Human Kind and have already established the infrastructure and facilities required to manage national and world heritage sites. Since the TS NHS is a serial nomination, and it may make sense if all world heritage sites fell under a single managing agent.

- The Greater Taung Municipality – they are the party that are closest to the Site and the project as a whole. They have a direct interest in ensuring the success of the Site and probably also have the ability to stimulate local small enterprises to undertake management and income generating functions at or in respect of the Site.

10.2 Responsibilities

These have been defined in the legal section.

11 EVALUATION AND OBJECTIVES: SITE ANALYSIS

11.1 Ecological criteria

The following ecological criteria are relevant in planning the location and nature of tourist-related infrastructure:

- Excessive glare off the excavated white lime surfaces.
- Heat.
- Dust and prevailing winds.
- The availability of shade.
- Preservation of local vegetation, especially the Acacia thorn thicket close to Equus Cave.
- Safety factors: unprotected drops, underground risks.
- Biological sensitivities such as the eagle nesting site, baboon troop, bat populations, etc.
- Alien vegetation.
- Catchment management and water quality.
- Access to watering points.
- Measures required to ensure sustainable use of grazing and fuelwoods.

11.2 Heritage Related criteria

- Incorporate and present geological assets into tourist routes.
- Consider viewpoints and site aesthetics when planning tourist routes.
- Do not place infrastructure where it is visually intensive, taking particular care in the vicinity of heritage sites.
- Incorporate stromatolitic exposures and tufa deposits into routes.
- Route around or away from sensitive heritage areas which are not earmarked for presentation.

- Incorporate mining heritage into site interpretation.
- Plan to include “outside” assets, e.g. Buxton Village, into tourist experience.
- Site significance and heritage asset conservation to receive prime consideration in planning.

11.3 Socio-economic criteria

The area surrounding the TS NHS is a territory with extremely high unemployment figures and a budget which can do little to alleviate those suffering under extreme poverty. Tourism, especially the presumed flow of tourists which will materialise when the site is proclaimed a World Heritage Site, is expected to alleviate poverty, and great care should be taken not to raise false hopes and expectations. The area is off the tourist route and there is little in the immediate vicinity to attract either local or foreign tourists. The site is relatively unknown and undermarketed, and a drop-off in tourist numbers has been reported. At best, tourism will have to be built up from base levels, once the necessary infrastructure, both managerial and developmental is in place. The first marketing should be aimed at the informed local traveller and themed specialist tours.

Good accommodation already exists in the near vicinity and local communities might be interested in opening up “Bed and Breakfast” type enterprises. The provision of overnight accommodation is therefore not seen as a top priority.

11.3.1 Potential value as a tourist venue and World Heritage Site

Taung has the potential to become an attractive tourism destination as a World Heritage site. However, that potential can only be realised after the implementation of three major initiatives:

- Determination of tourism demand and the needs of tourists.
- Development of tourism products that specifically meet the tourism demand.
- Development of a tourist route that incorporates Taung.

11.3.2 Determination of tourism demand

Tourism is demand driven. It is not a spontaneous consequence of the construction of tourism facilities. Market research is required to establish what tourists require. The use of Dephi technique interviews with current

tourism practitioners and experts to establish demand patterns, key market segments, potential volumes, growth and economic impact, key sensitivities such as price and travelling distances, etc. is recommended. Delphi technique is more accurate and less expensive that large scale quantified public opinion surveys.

Some tourist trends that have become evident and may be appropriate for Taung are:

- Heritage tourism involving an element of learning, personal involvement and experience.
- Events tourism - annual or seasonal festivals, often linked to heritage and culture.
- Cultural tourism - seeing and learning about the qualities that make a country or community distinct.
- Adventure tourism - a degree of physical excitement in tours.

Careful product development and market analysis needs to be directed to all of the above.

11.3.3 Development of tourism products

Once demand patterns have been identified, there are a wide variety of possible tourism products that could be developed to meet that demand. Many of these are appropriate for black economic empowerment and SMME development. Examples of some that might fit demand needs are:

- A variety of accommodation for specialist and incidental tours.
- Interpretation centres with exhibitions of palaeontology, archaeology and history.
- Guided and/or self-guided trails of the site and of Buxton village and lime works. Tours could be conducted on donkey carts. This would make the experience more enjoyable and it would be in keeping with local culture and provide employment.
- Specially supervised tours of the existing cave and subterranean stream, the lime works tunnel and Equus Cave.
- Interpretation boards.
- Literature including pamphlets, books, audio-visual material etc.

- Retail outlets including restaurants, souvenir and craft shops, filling station, groceries, casual clothing etc.

- Specialist tours in fields other than palaeontology (birds, botany, geology, mining, bats, caves).

- A cave lies upstream from Blue Pools. It is presently partly closed.

- A controlled entrance with facilities for gate takings and visitor records.

- First aid post and emergency safety centre.

- Entertaining methods of touring the site, such as donkey-carts might be introduced.

- Re-construction of kilns and lime works should be undertaken and presented together with the social and industrial history of the site.

Nearby are further tourist attractions:

- Taung Dam
- Boipelo Game Reserve
- Dikwaneng San engravings
- Mmabana Cultural Centre
- Taung Marble
- 4X4 trails

11.3.4 Development of tourism routes

The Taung site is unlikely to generate the tourism numbers that are be needed to make a significant impact on the local economy. In order to achieve this, Taung must be integrated into a regional tourist route that draws visitors from one attraction to the next offering a cumulative tourism experience that is greater than the sum of its parts.

Tourist routes need three components:

A tourism **hub,** which is the focal point from which tourism flows are generated, information is disseminated and central tourism infrastructure and facilities are provided. Kimberley and Vryburg are the logical hubs for this region.

Tourism **nodes,** which provides a cluster of tourism experiences. Taung itself can be developed into a tourism node with a range of tourism products such as those described above. Other nodes in the region may be Kimberley, Kuruman, Harts River Valley, Vaal River, etc.

The **route** itself could be a circular trip connecting Kimberley, Kuruman and Vryburg embracing a great deal of historically interesting sites and tourism attractions:

- Kimberley: Big Hole diamond mine and museum village; SA War history and battlefields; McGregor Museum.
  - 70kms

- Warrenton: Vaal River
  - 25kms

- Jan Kempsdorp: Vaal-Harts Museum; WW II internees escape tunnel.
  - 15kms

- Hartswater; Centre of Vaal-Harts irrigation Scheme (largest in southern hemisphere.)
  - 24kms

- **Taung**
  - 68kms

- Vryburg: Boer-Tlaping-Korana history; original capital of Stellaland; hunting and game farming.
  - 88kms

- Dithakong: Pre-colonial history and archaeological site; Mfekane battlefield.
  - 92kms

- Kuruman: Robert Moffat Mission Station; pre-colonial and frontier history; Kuruman Eye.
  - 84kms

- Danielskuil: Great Pan; Wonder Cave
  - 118kms

- Barkley West: Diamond history; Griqua frontier history; Nooitgedacht glacial paving; rock engravings; Canteen Koppie.
  - 31kms

- Kimberley.

11.3.5 Potential events tourism products

To enhance visitor numbers, a series of seasonal or one-off events could be arranged. Examples are:

The ceremonial return of the Taung Child. Provincial authorities have irresponsibly created expectations that the original skull should be returned to the site, presumably as a tourism draw card. This would be impossible for scientific and security reasons, but a ceremonial return with dignitaries, media coverage etc. could be arranged to draw public attention to the site. The skull could then be returned to safe-keeping at Wits and a cast exhibited permanently at the site.

Other possible events might include:

- Annual pageant depicting human evolution
- Annual donkey-cart and/or mountain bike race through non-sensitive parts of the quarry
- Cultural exhibitions
- Music festival/choirs
- New Year festival with site-related entertainment (see above)
- School events.

12 DEVELOPMENT GOALS: IDEAL OBJECTIVES FOR THE SITE

12.1 Principles guiding development proposals

- Emphasis on the preservation of site significance.
- Promotion of site significance locally, nationally and internationally.
- Improvement of quality of life of local and regional community, including consideration of job creation wherever possible (local labour on building projects, tourist guide training, excavators, heritage monitors, etc).
- Re-development work to be labour intensive, using local materials, contractors and labourers where feasible (skills inventory of local community needs to be assessed).
- Self-sustaining development initiatives, attempt to avoid subsidies (Business Plan and Feasibility Study required).
- Consideration of regional development priorities.
- Presentation of the site.
- Consideration of the needs and requirements of the local community.
- Consideration of local and regional planning initiatives.

- Consideration of previous projects and development initiatives.
- Presentation of the site.

12.2 Possible development arenas: ideal development objectives

- Tourism, with related educational and interpretative facilities, e.g. upgraded mining infrastructure, visitor centre which includes a museum, etc.
- Recreational facilities, e.g. revamp of existing picnic and braai facilities.
- Low-key accommodation: Camping and caravan sites.
- Business facilities e.g. showcase for local crafts.

12.3 Constraints or modifiers

12.3.1 Modifiers outside the site

- Distance from major transport routes (Figure 6)
- Distance from major tourist routes (Figure 7)
- Lack of marking and visibility
- Skills and funding to manage site and initiate tourism initiatives and sustain them are thin on the ground in the North West Province.

12.3.2 Modifiers inside the site

- Sensitivity of several archaeological and fossil localities
- Ecologically sensitive areas, e.g. Equus Cave
- Total lack of infrastructure to support tourism
- Lack of interpretation
- No site guides
- No staff to service tourist needs.

12.4 Conservation issues affecting planning

- The preservation of site significance: all cultural heritage sites
- Conservation of the natural environment
- Consideration of the important past role of mining operations at the site
- Conservation of the historical built environment.

12.5 Defining realistic, reachable development opportunities and goals

- Entrance statement: sense of arrival, an entrance gate
- Parking close to entrance
- Reception area: Information centre
- Interpretative centre
- Public toilets
- Sales point for local crafts
- Sales point for food and drink
- Routes through site
- Selection of sites for interpretation: criteria
- Stopping places and view sites
- Recreational facilities: picnic sites (exist already), play park
- Low-level accommodation: camping sites and caravan park
- Hutted accommodation, alternatively Bed & Breakfasts in Buxton
- Researchers' requirements to be considered
- Routes through site: roads, pedestrian pathways, cycle tracks, parking
- Accommodation for projects noted during community interactions: sewing project, craft centre and shop
- Special theme tours such as birding, botanical, mining, archaeological, mining history
- Innovative site tours, e.g. mountain bikes, donkey carts, tractor and trailer.

13 TOWARDS A DEVELOPMENT PLAN: SITE LAYOUT

13.1 Site Analysis

The site has been drastically modified over the years by mining activity. Relatively little remains comparatively undisturbed.

The areas left undisturbed are those unaffected by lime deposits which consists predominantly of the Thabasikwa River Valley and cliffs along the northern and eastern boundary.

Smaller patches of undisturbed areas occur adjacent to the ancient stream cutting in the proximity to Equus Cave.

Areas where development should be excluded or avoided include:

13.1.1 Naturally sensitive areas

These areas consist of:

- The Thabasikwa River Valley
- The cliffs above the Blue Pool area where a pair of Black eagles nest
- The mine tunnel which houses a colony of bats
- The Acacia thickets (see botany Section CHRS).

13.1.2 Visually sensitive areas

The visually sensitive areas consist of:

- Horizon lines.

- The S-bend road section before the abandoned Power House to the Old Mine Office buildings which presents the first views of the site to the visitor.

- The Thabasikwa River Valley.

- Panoramic views of Buxton from the main road and from within the site.

- The Ghaap Escarpment within the Buffer Zone.

- The existing mine infrastructure and dumps. The visual evidence of mining activity helps to establish the character of the site.

13.1.3 Research sensitive areas

These include:

- All the archaeological / palaeontological sites, Blue Pool Tufa area, old excavation dumps.

- Unsafe or unstable areas

  These include:

  - Areas near the base of unstable mine dumps
  - The mine tunnel
  - The steep edge above the old kilns area
  - The haulage cutting to the south of the kiln area
  - Loose rubble or unconsolidated dump material.

13.2 Site zoning

The site has been zoned into areas that have common characteristics or potential land uses. This plan sets the basic structure for future planning and development of the area.

The zones are briefly described as follows. See Figure 9 Zoning Plan.

13.2.1 Ghaap Escarpment and Thabasikwa River Valley

The Ghaap Escarpment and Thabasikwa River Valley form the northern and eastern edge of the site. It is currently the least disturbed and provides a natural backdrop. It offers outdoor recreation activities such as hiking, picnicking, swimming, bird watching, etc. All attempts should be made to limit development in this zone to low impact activities that will not leave permanent scarring.

It is proposed to limit developments to the south and west of the Thabasikwa River to prevent human interference with the Black eagle nesting site and any other sites along the cliff face.

13.2.2 Natural and less disturbed areas

These areas are situated centrally and on the north-western edge. They still provide some natural vegetation cover that can be utilized for picnic, caravan and environmental educational purposes. Hiking trails can link these areas with the Thabasikwa Valley.

13.2.3 Research zone

The research zone consists of those areas that contain most of the heritage sites and where future research can potentially take place. It is recommended to limit visitor access within these areas. Access will only be permitted to dedicated routes and viewing sites.

13.2.4 Tourism development zone

These zones have been identified as having the greatest potential for tourism development. These zones have been divided into three categories as each have different degrees of tourism potential.

The main zone (4a) lends itself to high impact tourist development. It contains much of the existing abandoned lime buildings and infrastructure. Most of the structures are still sound and can be re-used for tourism related purposes such as the main arrival point, interpretive centre, museum, craft sales, etc.

A camping and caravan site is proposed to be developed in zone 4b as this provides sufficient shade and screening. These facilities need to be sensitively planned so as not to disturb the Acacia woodland near Equus Cave.

The Blue Pool picnic area forms zone 4c.

13.2.5 Abandoned mining area

This highly disturbed area is located in the south-western corner. It has at this stage potentially the least to offer in terms of tourism development. It is recommended that for the time being only landscape rehabilitation measures be implemented in this zone.

13.2.6 Historic Buxton Village

This zone consists of the older part of Buxton Village where the buildings are generally older than 60 years. Development and promotion of Buxton Village will boost the tourism attraction of the local area.

13.3 Site Planning and Conceptual Layout

The proposed conceptual site layout is based on the outcome of the site analysis that includes a review of previous studies to date, and the preceding site zoning.

The Layout Plan does not attempt to set out in detail but rather describes the proposed facilities and land uses as follows (See Figure 10):

13.3.1 Gatehouse / Reception / Interpretive Centre

The existing entrance is at the traditional entrance to the quarry and is not appropriate.

The existing abandoned mine offices are well located next to the main road in that they are visible for some distance, are centrally located and provide ample parking.

Advantage can be taken of the ghost town mine buildings, the lime burning kilns and the existing office and display space within the buildings.

It is appropriate that the Interpretive Centre is located here as it can be combined with the mine buildings and thereby bring to life the history of the mine activity and the discovery of the Skull.

It will be necessary to re-establish some of the mining infrastructure with old cocopans, kilns, etc.

13.3.2 Access and Circulation

The only entrance to the Site will be via the gatehouse at the old mine offices. It will be necessary that the gatehouse be manned fulltime to control access at all times to maintain security and to keep visitor records.

It will be necessary to preserve and enhance the quality of the main access road from Taung. It will be necessary that the local authorities curtail strip development along this road to preserve the rural ambience of, and sense of arrival to the TS FS.

The quality of the road section from approximately 500 m east of the old power house must be preserved and enhanced as these sections provide the first full panoramic views of the Site.

A viewing area east of the Power House off the main road must be provided so that visitors can pull off the road and view / photograph the Site.

It is proposed that the vehicular circulation will begin and end at the main reception area.

Movement will be past the mine offices across the old railway line and then split east and west. The eastern route will wind up the slope to the parking area at the Dart and Hrdlicka's Pinnacles. The western route will be via the old mine compound area that houses the sewing circle and the craft centre. These two main access routes meet near the Equus Cave area and continue as one to the Blue Pool picnic area.

Visitor transportation through the site can be in the form of:

- Self drive (own vehicle)
- Guided safari type 4x4 vehicles
- Donkey carts
- Mountain bikes
- On foot / hiking.

A pathway network throughout the site needs to be established. This network should link all points of attraction, be well signposted and give access to the recreation areas within the Thabasikwa River Valley. No access should be provided to the northern side of the River and cliffs.

13.3.3 Parking

Parking will only be at dedicated areas. Random parking, as is the current situation, will not be permitted. The dedicated parking areas are proposed at the main reception area, the craft centre at the old mine compound, the Dart and Hrdlicka's Pinnacle area, the camping area and the Blue Pool picnic area.

13.3.4 Signage

It will be important that a suit of signage systems be introduced (the concepts are dealt with elsewhere in this report). The main areas to include:

- The road from Taung to the TS FS need to be well signposted
- The main reception / arrival area at the old mine offices
- Interpretive and information signage throughout the site
- Warning and prohibition signage at dangerous areas such as near the lime kiln tipping area, the old mine tunnel / shaft.

13.3.5 Existing old mine buildings

In order to protect the existing buildings it will be necessary to re-use them. It is proposed that the following buildings be restored for optimal re-use:

- The mine offices for:

  - Reception area for visitors
  - Site Interpretive Centre (museum)
  - Restaurant or refreshment shop
  - Showcases and sales point for local products
  - Gatekeepers control room
  - Archive
  - Information Centre.

- The mine compound

  - The sewing circle
  - Craft centre
  - Schools, environmental education centre with possibly dormitories
  - Lecture room
  - Outdoor lecture venue
  - Performance venue for the dance group.

- The Old Power House

  - This stone building is located south of the main road. Although it requires extensive renovation it is proposed that it be re-used to house the local Department of Agriculture, Conservation and Environment (DACE). It can also be an information centre for regional tourism.

13.3.6 Services and utilities

- Water

  There are two reservoirs on site. Further investigation is required to determine the condition and location of pipework and from where the reservoirs are receiving and dispatching water.

The reservoir above the Blue Pool needs to be screened as it is highly visible. It is recommended that loose rock be mounded to form a berm and some trees planted. Water will be required from these reservoirs for drinking fountains and the ablution facilities.

- Electricity

  Power will be required at the main reception area (mine offices), the craft centre / sewing circle (mine compound), the caravan park and the ablution facilities at the Blue Pool.

  The existing overhead powerline to the Blue Pool area needs to be moved as it is visually intrusive along the main visitor axis. It should either be placed underground or moved closer to the western edge where the backdrop of the escarpment provides a visual screen.

- Ablution facilities

  Toilets need to be provided at the main reception area, the craft centre and the Blue Pool picnic area.

  The existing ablution facility need to be re-built in a less obtrusive position as currently it is very visible and forms the main focus within the enclosed space of the Blue Pool area. It needs to be re-built as it is totally vandalized. It is recommended that only toilets be provided here.

  A facility that provides toilets and bathing / showers needs to be provided at the caravan park area.

13.3.7 Picnic, camping and caravans

The current picnic facilities at the Blue Pool need to be extended in the same robust format.

The picnic and camping area near Equus Cave needs to be removed as it is too close to this important site. The associated camping needs to be relocated as it too is in a sensitive area, namely the Acacia thicket.

It is recommended that the Equus Cave, picnic and camping area be relocated further south (Figure 10 Site Layout Plan) and be developed together with a caravan park. A full ablution (toilets and showers) will need to be provided.

13.3.8 Fencing

The main perimeter fencing proposals have been discussed elsewhere. However, as part of the site planning, internal fencing proposals are made.

It is recommended that the main perimeter fence be moved from the southern boundary around the abandoned mining area and be placed along the shortcut pathway the school children use to get to school. A small stock fence should be erected on the southern boundary to keep goats, cattle and donkeys out. At either end of the pathway a style will need to be provided to allow access over this stock fence.

It is further recommended that some of the more important heritage sites also be fenced off to prevent uncontrolled access to these sites.

It is recommended that the perimeter fence be adjusted at the Thabasikwa River bridge to cut back to the Power House weir to allow the local communities to water their stock.

It is further recommended that the perimeter fence move behind the liquor store so that the building can still function as a shop.

13.3.9 Environmental education

Some of the old mine compound buildings can be converted for re-use to serve as an environmental education centre aimed primarily at school children. This concept will need to be workshopped with the Department of Education, local schools and the Department of Agriculture, Conservation and Environment.

Some of these buildings can be converted into hostels for overnight accommodation.

An area north of the quarry is relatively undisturbed that can serve as an outdoor environmental classroom as can the Thabasikwa River Valley.

13.3.10 Outdoor crafts display and sales

It is proposed that the open space diagonally across the road from the proposed main entrance be set aside for an informal crafts display and sales area. Although the area falls outside the demarked heritage area it is alongside the road that will afford the sellers higher visibility and exposure.

13.4 Site clearance

The ambience or sense of place of the site is created by the image left behind by the mining activities. It is essential that this image be maintained.

However, it will be necessary to rehabilitate some of the disturbed areas so that those areas can be used for other activities or to enhance the visual / aesthetic qualities.

Areas that will require rehabilitation are those selected for picnic, camping and caravan sites, the main entrance, viewpoints, parking and the outdoor environmental education areas.

The rehabilitation will consist mainly of reshaping, topsoiling and landscaping and erosion control.

14 THE MANAGEMENT OF TOURISTS AND TOURISM AND OTHER FUTURE MANAGEMENT REQUIREMENTS

- All tourist-related infrastructure erected on site would require protection from vandalism and constant surveillance.

- This cannot be contemplated without full-time site supervision and controlled access. The latter implies fencing and control of vehicular access, and personnel to man the entrance gate and patrol the grounds. Past experience has indicated that such staff will themselves require surveillance.

- Free range tourism should be discouraged by the use of a network of laid-out pathways and hiking trails. These need to be routed past identified places of interest (see CHRS) with suitable interpretative material.

- Site interpretation is currently non-existent. For responsible tourism to take place, the following interpretative measures are needed:

    - Interpretative museum
    - Outside information boards at identified stopping places and view sites. Many of these have been identified in the CHRS
    - Labelled trees, shrubs and medicinal plants
    - Labelled rock specimens and interpreted statigraphic sections exposed by mining or excavation
    - Well-trained articulate site guides
    - Pamphlets, brochures and books
    - Well-sited information boards with maps and diagrams

- This little-known and hard-to-find site will have to be properly marketed.
- Tour guiding and tourism aspects pertaining to the TS NHS are included in Appendix 5.

15 SITE MONITORING AND REVIEW

15.1 Strategy

Monitoring and review of the implementation of the management plans should take place at regular intervals. Monitoring should include audits of all the aspects of site management (site monitoring) as well as audits of the overall management structure and its performance in implementing the management plan (management monitoring). Aspects of good governance, such as performance, adherence to official or agreed procurement policies, financial management, inclusivity of relevant stakeholders and co-operative governance should be monitored and reviewed from time to time.

It is the responsibility of the management authority to establish key indicators against which the above management monitoring can be undertaken, such as costs vs. benefits on resources available and to people, tourism targets, job creation, etc. Such a monitoring programme is beyond the scope of the Terms of Reference of this project, which is confined to a Monitoring and Evaluation Programme for the site itself.

15.2 Monitoring and Evaluation Programme for the site

- Economic activities such as enhanced tourism inevitably have an impact on the quality of the natural, biological and cultural environment on which the economic activity itself ultimately depends. The environmental and heritage embodied in the Taung site are national assets that represent the “capital” on which the success of any economic project depends: These assets must be used sustainably in order to build a better life for the people of the area.

- The “State of the Environment Report” (see CHRS, Section 5) which needs to be amplified by the addition of visual material in order to become fully functional, is the staring point for the Monitoring and Evaluation Programme. Its purpose is to provide concise but adequate information that can be used as a “baseline”.

- It provides the framework against which changes in the natural or cultural environment can be identified and monitored. Deviations from the baseline state need to be investigated in order to determine why such change has occurred. Once this is known, it can be determined what should be done. Solutions or mitigations – the results of the monitoring exercise – need to be communicated to the decision-makers.

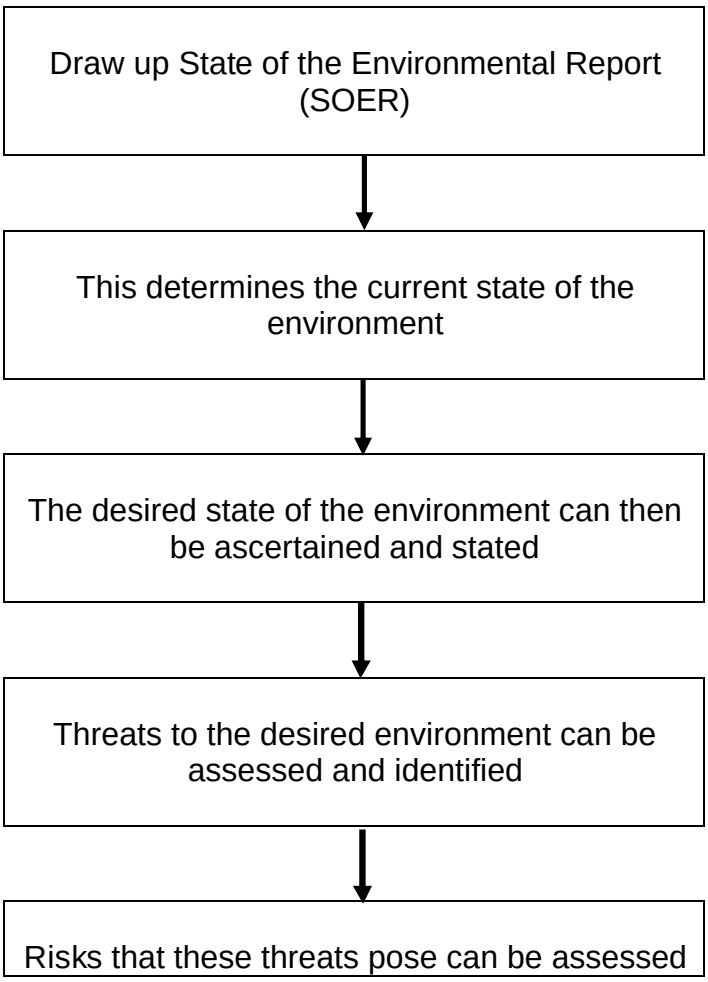
- Economic, social and developmental initiatives and decisions should be guided by the State of the Environmental report, and the Monitoring and Evaluation Programme which uses the SOER as a baseline.

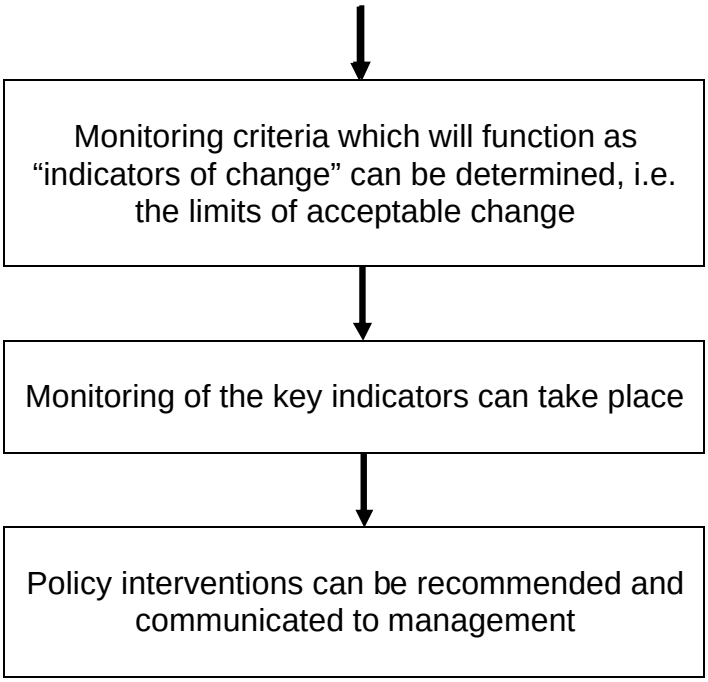
15.3 Determining the key issues that affect the environment

In the SOER Report Table, these issues have been listed as Threats (what are the factors that are impacting on the environment?) and Risks (in what way will the factor affect the environment?). The desired state of the environment is the status quo (if this is acceptable) or a better, defined desirable state. The SOER Report should be seen as a "living document" and be subject to annual review, which indicates such desirable states.

15.4 Monitoring and evaluation

This is a method for observing and measuring change, as assessed against the framework of the SOER. The method involves a process which begins with the State of the Environment Report and proceeds as follows:





"Water" is used as an example of a monitoring and evaluation exercise:

15.4.1 Water

- **Desired state**

  - Water quality that falls within acceptable standards as laid down by DWAF.

- **Threats to desired state**

  - Chemical pollutants.
  - Biological pollutants, untreated sewage from upstream and pathogens, such as bilharzias parasites.
  - Degradation and trampling of wetland and riverine margins by excessive livestock impact.
  - Diminution of water supply by excessive off-take upstream. This will also affect the growth of tufa deposits.
  - Pollution of water by tourists and visitors.
  - Lack of catchment management.

- **Risks**

  - Unpotable polluted water.
  - Health risks to water users
  - Loss of adequate supply

- **Key indicators**

  - Stagnant pools (indicates loss of flow).
  - Excessive algal growth (indicates possible pollution with agro-chemicals, untreated sewage or both).
  - Scum (as above).
  - Reddish or orange “blooms” (bacterial contaminants).
  - Dead fish, frogs and other aquatic biota (pollution: chemical or biological).
  - Trampled wetlands, reed beds and riverine thicket (undesirable livestock impact).
  - Unpleasant odour (pollution).

- **Monitoring procedure**

  - Monitor water quality by sampling and assay on a regular basis, or when visual appraisal gives cause for concern.

- **Action**

  - Report results to management authority so that causes of environmental change can be addressed.
  - The Monitoring and Evaluation Plan for the TS NHS has been included, in the form of a table, which appears at the end of Appendix 3.

16 GLOSSARY OF TERMS

BCK – Bapela Cave Klapwijk
BNPB – Bophuthatswana National Parks Board
CHRS – Cultural Heritage Resources Survey
CMP – Conservation Management Plan
COH – Cradle of Humankind
DACE – Department of Agriculture, Conservation and Environment
DEAT – Department of Environmental Affairs and Tourism
DSSACS – Department of Social Services, Arts, Culture and Sport
DWAF – Department of Water Affairs and Forestry
FHSSSKE – Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai and Environs
GTM – Greater Taung Municipality
IDP – Integrated Development Plan
NEMA – National Environmental Management Act
NHRA – National Heritage Resources Act
NHS – National Heritage Site
OMA – Overall Management Authority

PPC _ Pretoria Portland Cement
SAHRA – South African Heritage Resources Agency
SDF – Spatial Development Framework
SDI – Strategic Development Initiative
SMME – Small, Medium and Micro Enterprises
SOER – State of the Environment Report
TS FS – Taung Skull Fossil Site
TS NHS - Taung Skull National Heritage Site
UN – United Nations
WHC – World Heritage Committee
WHCA – Word Heritage Conservation Act No 49 of 1999
WHS – World Heritage Site

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17.2 Additional descriptive material

17.2.1 Maps

Figure 1: Taung Skull Heritage Site Locality Map
Source: BCK
Scale:

Figure 2: Taung Skull Heritage Site Provincial Locality Map
Source: ENPAT Environmental Tourism and Potential Atlas
Scale: 1:2 500 000

Figure 3: Taung Skull Heritage Site Regional Locality Map
Source: BCK
Scale:

Figure 4: Taung Skull Heritage Site, Site Boundary
Source: Surveyor General Map Sheet 2724 DA and 2724 DB
Scale: 1:100 000

Figure 5a and 5b: Taung Skull Heritage Site, Buffer Zone
Source: BCK
Scale: 1:60 000

Figure 6: North West Spatial Development Initiatives and Major Transport Routes
Source: North West Department of Economic Development and Tourism 2001
Scale: 1:100 000

Figure 7: North West Tourism Nodes and Corridors
Source: Department of Tourism, Environment and Conservation 1998
Scale: 1:100 000

Figure 8: Taung Skull Heritage Site, Existing Site Plan
Source: BCK
Scale: 1:7 500

Figure 9: Zoning Plan
Source: BCK
Scale: 1:8 500

Figure 10: Site Layout Plan
Source: BCK
Scale: 1:7 500

17.2.2 Photographs

Photographic material is currently archived at the offices of Bapela Cave Klapwijk.

18 COMPILOR OF THE CONSERVATION MANAGEMENT PLAN

Judy Maguire
Project Manager
P O Box 100
Prince Albert
6930
REPUBLIC OF SOUTH AFRICA
Tel/Fax 023 5411 713
E-mail: questar@icon.co.za

APPENDIX 1

TENTATIVE WORLD HERITAGE LIST SUBMISSION SERIAL SITE

TENTATIVE WORLD HERITAGE LIST SUBMISSION - SERIAL SITE

STATE PARTY: South Africa

DATE OF SUBMISSION: September 2003

Submission prepared by:
Name: J. M. Maguire
Address: P O Box 100
Prince Albert
6930
South Africa

E-mail: questar@icon.co.za
Fax: +27 (0) 23 5411 713
Tel: +27 (0) 23 5411 713

Institution:
For South African Heritage Resources, Northwest Province (SAHRA)

Name of Property: The Taung Skull Fossil Site

1. Property and Geographical Location:

Country:	Republic of South Africa
Province, Region:	North West Province, Taung district
Name of Property:	The Taung Skull Fossil Site, in the Buxton Limeworks, situated on the remainder of the property Taung 894-HN
Geographical Location:	For the Taung Skull Site itself: S 27°37'10" E 24°37'59"

DESCRIPTION:

The Taung Skull discovery site is situated within a vast abandoned limestone quarry excavated into a series of ancient tufa deposits which have formed along the flank of the Ghaap Escarpment, just west of the Harts River, near the town of Taung in the North West Province. The skull was blasted out by Limeworkers from a pink, bone-rich breccial fissure-filling in the oldest of the tufa deposits, the Thabaseek Tufa, in 1924.

The proposed World Heritage Site boundary includes the entire Buxton Limeworks area, because there remain numerous other fossiliferous deposits, some of them as yet unexplored, within the fenced area defining the quarry. This has a rather complex outline, necessitating co-ordinates for over 40 survey points.

JUSTIFICATION OF UNIVERSAL VALUE:

The now abandoned Buxton Limeworks quarry is the type locality of the world-famous and universally significant genus and species of the extinct hominid *Australopithecus africanus.* The discovery and recognition of the significance of the Taung fossil skull and the remarkable insights and revolutionary claims of Raymond Dart created not only a new genus and species of hominid, but a series of new fields of scientific endeavour, including African palaeoanthropology. The discoveries made at Taung wrought ground-breaking changes in scientific thought in several scientific fields, and set in motion a chain of events which would lead to the discovery of the important hominid sites in the Sterkfontein Valley as well as the Makapansgat Limeworks in the Limpopo Province,

The seminal discovery and recognition of the infant Taung skull established Taung as the starting point for the study of palaeoanthropology on the African continent, and re-focussed the spotlight from Asia, where early researches had begun, to Africa, where it remains, now established as the undisputed Cradle of Humankind.

The justification of universal value resides in the fact that the site has type locality status, while the fossil skull itself is the type specimen of the genus and species *Australopithecus africanus*, as well as defining the characters of the Subfamily Australopithecinae.

Criteria met:

i)	ii) ✓	iii)	iv) ✓	v)	vi)	vii)	viii)	ix)	x)

As a proposed serial site, the nomination needs to be consistent with the original Fossil Hominid Sites nomination, which was inscribed only under criteria (ii) and (iv). As a serial site, in the statement of site significance, the nomination has to clearly state why the site should be considered as an extension of the "Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai, and Environs"

The criteria under which inscription was proposed for the "Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai and Environs" was as a **cultural property**, in particular conforming to that part of Article 1 of the Convention that reads:

"sites: works of man or the combined works of nature and of man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view" (Nomination Dossier 1998, p. 7)

Cultural criterion (ii)

See above. The Taung Skull Fossil site likewise conforms to this criterion.

Cultural criterion (iv):

Taung Skull Fossil Site is an outstanding example of a site which encapsulates a significant stage in the unfolding pattern of human evolution, in the form of the Taung Skull, in which anatomically both ape-like and human-like characteristics are present. The skull embodies an early stage in anatomical hominization, and established Africa as the locus of the earliest beginnings of this process.

As an extension of the "Fossil Sites of Sterkfontein, etc., and Environs":

The Taung Skull Fossil Site may be considered as an extension of the above nominated site for the following reasons:

i) It has particular significance as the Type Locality of the important hominid genus *Australopithecus*; also found in the "Fossil Sites" hominid-bearing cavern deposits,
ii) It has particular significance in that the fossil remains have been recovered from tufa rather than from cavern deposits,
iii) The site is well to the south of the "Fossil Sites of Sterkfontein", being the southernmost of all australopithecine-bearing fossil deposits, and its geographical location and elevation represent an environment now and in the past that was different from hominid sites elsewhere,
iv) The taphonomic agents that were active in the vicinity if the Taung fissure deposits appear to have differed in some respects to those of the Sterkfontein area

Assurance of authenticity or integrity:

Nearly 80 years of research has proven high levels of authenticity and integrity. The fact that the specimen is a type, will ensure a permanent universal significance for itself and the discovery site, and the specimen will always remain a standard of comparison in taxonomic publications.

Although, as indeed is the case with all excavated fossils and artefacts, the original connection of the Taung Skull with its host breccial fill has been destroyed by mining, enough of the original deposit remains in the close vicinity of the find to provide site authenticity. Fossil fragments *in situ* in the remaining fissure breccias can be demonstrated. Associated fossils of a wide range of animals, particularly those of fossil baboons, provide intriguing insights into the palaeoenvironment and mode of accumulation of the fossil deposits.

The evocative ambience of the vast abandoned quarry, throughout the length and breadth of which not a single other Australopithecine has been found, provides an impressive sense of the uniqueness of the find, as well as a special kind of site authenticity.

Although, as the type, the original skull cannot be stored or displayed on site, excellent casts of it exist which can be returned to the site, as a form of restoring site significance. In this way, the features which render the site of universal significance may be represented in their entirety on the property.

The quarry was abandoned in 1977, and since that time, no further destruction of fossiliferous deposits has occurred. Mined faces provide interesting insights into the mode of formation of the series of tufas, and have exposed several other breccial deposits, some of which remain unexplored

Comparison with other properties:

The Taung Skull Fossil site is the only tufa deposit which has yielded hominid remains to date. Other hominid-bearing sites on the African continent and elsewhere are either cavern deposits or open sites close to fluvial or lacustrine systems, where bones are often dispersed. There is thus no comparable hominid locality on the African continent or elsewhere.

APPENDIX 2

LEGAL CONSIDERATIONS

LEGAL CONSIDERATIONS

1 LAND OWNERSHIP AND RELATED ISSUES

1.1 Land ownership issues

The Taung Skull National Heritage Site ("the TS NHS") is situated on a portion of the immovable property described as the remainder of the farm TAUNG No. 894-HN, district of Taung, Province of the North West ("the Main Property"). The Main Property currently measures 132 522,3445 hectares in extent and predominantly falls within the municipal area of the Greater Taung Local Municipality.

The Main Property was originally registered in the name of the Republic of South Africa in terms of a Certificate of Registered State Title No.T 57/ 1969 issued to the Republic of South Africa on 31 January 1969. On the same date, and immediately after the Certificate of Registered State Title was issued to the Republic of South Africa, the Certificate was endorsed to the effect that the Main Property thereafter vested in the South African Development Trust in terms of the provisions of the Development Trust and Land Act No. 18 of 1936, to be controlled and administered in terms of the said Act.

The next endorsement that appears on the Title Deed is an endorsement made on the Title Deed on 20 December 1983 to the effect that on 2 December 1977, the State President of the Republic of South Africa published a Proclamation in the Government Gazette (being Proclamation No. R347/1977 published in Government Gazette No. 5820 dated 2 December 1977) to the effect that all land situated in certain specified districts, and all rights to minerals found in, on or under such land , were transferred to and vested in the Government of Bophuthatswana with effect from 2 December 1977.

Proclamation No. R347/1977 specifically stated that:

- All land situated in the districts or Bafokeng, Ditsobotla, Ganyesa, Lehurutshe, Modikwe, Mankwe, Mololo, Moretele, Odi, Taung, Thaba Nchu, Thlaping-Tlhara, the ownership or control of which is vested in the Government of the Republic of South Africa or the South African Development Trust, shall vest in or is hereby transferred to the Government of Bophuthatswana;

- All mineral rights held by the Government of the Republic of South Africa or the South African Development Trust in and to such land, shall vest in or is hereby transferred to the Government of Bophuthatswana.

The Main Property was land to which this Proclamation applied with the result that the Title Deed of the Main Property was then endorsed by the

Mmabatho Deeds Office to the effect that, as from 2 December 1977, ownership of the Main Property vested in the Republic of Bophuthatswana. All minerals found in, on or under the Main Property also at this time vested in the Republic of Bophuthatswana.

The South African Development Trust was finally disbanded in 1992.

What is interesting is that the Deeds Office at this time allocated a new Title Deed number to the Main Property (being Title Deed No. T. 623/1983), but notwithstanding this, continued to use the old Title Deed (i.e Title Deed No. 57/1969) on which to record all future transactions that affected the Main Property subsequent to 20 December 1983. Consistent with this, the details of future transactions in terms of which various small portions of the Taung Farm were subsequently transferred to various individual landowners, have been endorsed on the original Title Deed of the Main Property. The remainder of the Taung Farm (after these portions of property were transferred to various transferees) has continued to remain registered in the name of the Republic of Bophuthatswana. As mentioned before, the Taung Skull National Heritage Site is situated on a portion of the remainder of the Main Property.

With the advent of South Africa's new democracy in 1994, and the re-incorporation of the former independent homelands back into South Africa, provision was made in our first Constitution, being the Constitution of the Republic of South Africa Act. No. 200 of 1993 (the "old Constitution") for the vesting of the various assets held by the former homelands, back in the National Government of the Republic of South Africa, alternatively in the various Provincial Governments appointed for the various provinces in South Africa. *And this is where some debate may comes in.*

The view is currently that the Taung Farm vested in National Government at this time, and everyone has accepted this as a fact. However, in simple terms, section 239(1)(b) of the old Constitution provides for instances in which the assets (which include immovable property) of the former homelands can vest in and be registered in the name of a particular Provincial Government. Such assets include assets applied or intended to be applied for or in connection with any matter listed in Schedule 6 of the old Constitution (which is not a matter referred to in section 126 (3)(a) to (e) of the old Constitution). Schedule 6 of the old Constitution provides for matters such as cultural affairs and tourism, and in my view a good argument could be made that the entire Main Property, or at least the portion of the Main Property on which the Taung Skull Site is found, in fact vests in the North West Provincial Government to the extent that it can be shown that the Main Property or at least the part on which the Taung Skull was found, was applied and it is intended to continue to apply the asset for and in connection with cultural and tourism matters for the Province.

Item 28 of Schedule 6 of the Constitution of the Republic of South Africa Act No. 108 of 1997, provides that on the production of a certificate by a competent authority that immovable property owned by the state is vested in

a particular government in terms of section 239 of the old Constitution, a registrar of deeds must make such entries or endorsements in or on any relevant register, title deed or other document as may be necessary to register that immovable property in the name of that government.

We understand from our correspondent attorneys in Vryburg that the Deeds Office in Vryburg (the Mmabatho Deeds Office has subsequently been amalgamated with the Vryburg Deeds Office) have not yet received a certificate from either National Government or the North West Provincial Government in terms of item 28 of Schedule 6 of the new Constitution requesting that ownership in the Main Property be registered in the name of either of them in terms of the provisions of section 239 of the old Constitution. Their records still show that the Republic of Bophuthatswana is the registered owner of the Main Property.

The aspect of ownership of the Taung Farm and/or that portion on which the Taung Skull Site is situated, should be discussed and resolved between the National Department of Public Works and the Provincial Government of the North West Province, and the necessary steps be taken to update the records of the Deeds Office in Vryburg. At this stage, it is conceivable that either National Government or the Provincial Government of the North West Province could be the legal owner of the Main Property. It is critical to this Project and to the Heritage Agreement that will eventually be prepared as part of this Project, that the legal owner of the Main Property be identified and recorded as such at the Deeds Office in Vryburg.

One may find that National Government will insist on being recorded as the legal owner of the Main Property by virtue of the fact that the TS NHA is only a small portion of the Main Property and National Government would prefer to retain ownership of and control of the Main Property for the purpose of discharging its responsibilities for land issues under the Constitution.

Notwithstanding this, National Government may well be amenable to have the portion on which the TS NHS is situated, and a portion of the surrounds (if this is required), sub-divided and transferred to the Provincial Government of the North West Province, alternatively, to DEAT, or even to SAHRA, should this be beneficial to and required by any of these parties. We may mention that section 21(5) of the NHRA specifically provides that SAHRA can acquire any right in and to immovable property. Section 29 of the WHCA also provides that the Minister of DEAT can purchase any property and reserve it for purposed contemplated in the WHCA in relation to World Heritage Sites, if the purpose is in the public interest.

It would therefore seem that National Government (through the Department of Public Works), the National Department of Land Affairs, the Provincial Government of the North West Province, the Minister of DEAT, and SAHRA, may all have an interest in matters concerning ownership of the Main Property and/or that portion on which the TS NHS is situated, the intention to declare the Taung Skull Site a National Heritage Site in terms of section 27 of the NHRA, or any intention to designate any portion of the Main Property

surrounding the Site as a Protected Area in terms of section 28 of the NHRA. There should accordingly be communication between these parties on each of these aspects.

We have for the purpose of this initial report however proceeded on the basis that ownership of the entire Main Property (and therefore the TS NHS) vests in National Government. We may mention at this point that the immovable property of National Government is administered by the National Department of Public Works and that National Government, through this Department, will have to be consulted on any proposal to formally declare the Taung Skull Site a National Heritage Site on the basis and within the time periods provided for in section 27 of the NHRA. National Government will also have to be represented by the National Department of Public Works in the Heritage Agreement that will ultimately be prepared for the TS NHS.

1.2 Occupier issues

Insofar as existing occupants of the Main Property is concerned, we understand from Mr Ntzisi November of SAHRA - North West, that the occupants of the Main Property are essentially all members of the Batlapeng tribal community and that they have for some years now occupied various portions of the Main Property. We understand further that this tribal community is represented by a traditional tribal authority for the area called the Batlapeng Tribal Authority, and that land use and planning for the Greater Taung Municipality municipal area occurs in consultation between the Minister of the Department of Land Affairs, the Greater Taung Local Municipality and the Batlapeng Tribal Authority. We also understand from Mr Ntzisi November that this community wholly supports the initiative to proclaim the Taung Skull Site as a National Heritage Site.

Since all of the above persons have an interest in the Main Property and therefore the Taung Skull Site, and since all of them will be affected by any decisions to declare the Taung Skull Site to be a National Heritage Site, and thereafter, a World Heritage Site, the Department of Land Affairs, the Greater Taung Municipality and the Batlapeng Tribal Authority will all have to be notified of SAHRA's intention to declare the Site to be a National Heritage Site. Section 27 of the NHRA requires that these parties should be given at least 60 days within which to make submissions regarding the proposed declaration, although the Landowner is entitled to longer notice and additional consultation with SAHRA on this (see section 27 of the NHRA for full details on this).

It would be helpful if the written consent to the proposal to declare the Site to be a National Heritage Site in terms of the NHRA specifically could be obtained from all of the above parties during the course of and as part of this process, although the NHRA does not require that the consent of the Landowner or any other particular interested or affected party must be obtained before the proposed declaration can be made by SAHRA. It is however preferable that such consent be obtained so as to ensure support for all future initiatives proposed for the Site.

The declaration of the Site as a National Heritage Site has a number of consequences for the local community, not least of all for those members of the community that currently cross over the Taung Skull Site for the purpose of daily and expedient access to the nearest schools and surrounding settlements, as well as for those members that water their cattle at the pools situated on the Taung Skull Site. Since SAHRA is responsible to suitably protect all National Heritage Sites and since it is likely that the Taung Skull Site will ultimately be fenced off in order to afford the Site adequate protection as required by the NHRA and the WHCA, this aspect will have to be carefully and properly managed and provision for a reasonable alternative made. Whilst the unrestricted access over the Site can be restricted and prohibited by SAHRA in terms of the NHRA, the more sensitive issue will be that of curbing or eliminating the existing access that the community has to the water on the Site. Whilst SAHRA may be entitled to fence the Site off in discharge of its obligations under the NHRA, this should not result in the community being denied access to water for subsistence purposes and a workable alternative will have to be provided for. The National Department of Water Affairs and Forestry should be consulted on this issue.

1.3 Mineral rights issues

The history of mineral rights in and to the Main Property indicates that the mineral rights initially vested in the Government of the Republic of South Africa, then in the Republic of Bophuthatswana by virtue of the Proclamation made by the Government of the Republic of South Africa on 2 December 1977, and finally in the National Government of the Republic of South Africa in 1994 by virtue of the provisions of section 239 of the old Constitution.

There is some record of mining activities that took place on the Main Property and there is an endorsement on the Title Deed of the Main Property to the effect that a Notarially executed Prospecting and Mining Rights Agreement was registered against this Title Deed on 15 July 1970 in terms of which the South African Government granted the South African Development Trust the right to dig for and mine any minerals on the Main Property, subject to the payment of certain royalties to the South African Government. This agreement was abandoned by the South African Development Trust on 22 October 1979 at which time the mineral rights in the Main Property then vested in the Republic of Bophuthatswana.

A second mining lease over a small portion only of the Main Property was granted by the Government of Bophuthatswana to Southern Spheres Mining and Development Company (Pty) Limited in 1987,and this lease was ceded to Bop Diamonds at a later stage. It is not evident from the Title Deed of the Main Property as to when this exactly took place, and whether or not this is still in place.

From a purely historical perspective, we understand that prospecting and mining for limestone took place on the Main Property, and particularly in the area where the Taung Skull Site is situated, for many decades, but that all mining and prospecting operations ceased by the end of 1977.

The Site at which these operations were conducted has never been rehabilitated, and in terms of the old Mineral Rights Act No.73 of 1964, this law did not require restoration or rehabilitation of a Site. Notwithstanding this, there may well be a responsibility on the mining companies to restore or to rehabilitate the Site, either in terms of the new Mineral Rights Act, alternatively, in terms of the provisions of the section 28 of the National Environmental Management Act No. 107 of 1998, which requires remediation of past environmental damage by the persons responsible for such environmental damage.

The view is however currently that rehabilitation of the Site is not required as this would detract from the character of the Site, but that notwithstanding this, an approach to PPC (Pty) Limited, being the company that we are told were the last company to mine limestone in this area, for a financial contribution towards the future preservation, conservation, development and management of the Taung Skull Site, may well be considered.

1.4 Servitudes, title deed conditions and other restrictions

No servitudes are currently registered against the Title Deed of the Main Property. There are also no conditions of title attaching to the Main Property. We are not aware of any land use planning, zoning or other restrictions which apply to the Main Property or more specifically that portion of the Main Property on which the TS NHS is situated.

1.5 Protecting the Taung Skull Site under section 27 of the NHRA by declaring the Site a National Heritage Site

The Taung Skull Site has been surveyed by Saaiman & Pieterse Land Surveyors of Vryburg and a surveyors diagram for the Site has been prepared for the purposes of formalizing the intended declaration by SAHRA of the Taung Skull Site as a National Heritage Site. The site measures 158,7429 hectares in extent and the diagram depicting the exact location of the site on the Main Property has been approved by the Surveyor General's Office under reference number S.G. No. 4496/2002. A copy of this is annexed.

It is common cause that the Taung Skull Site qualifies to be graded as a Grade I heritage resource as defined in section 7(1) of the NHRA, and management responsibility for this Site therefore vests in the South African Heritage Resources Agency ("SAHRA") in terms of the provisions of section 8(2) of the NHRA.

We understand from Mr November that SAHRA is in the process of following the necessary procedures set out section 27 of the NHRA to declare the Taung Skull Site to be a National Heritage Site, and it must be born in mind that the Taung Skull Site will only acquire the status of a National Heritage Site after SAHRA has followed all of these procedures and upon SAHRA formally declaring the site to be a National Heritage Site by publishing a notice to this effect in the Government Gazette.

Immediately after such declaration, a copy of the notice published in the Government Gazette, the particulars of the protection, a copy of the survey diagram referred to above, and a copy of the Heritage Agreement (if there is one for the Site at this time – this can always be registered with the Deeds Office at a later stage when actually executed), will have to be lodged with the Registrar of Deeds in whose Deeds Registry the land in question is registered (in this case being the Deeds Registry situated in Vryburg), and similar information must be furnished to the Surveyor-General's office. If possible, the original Title Deed of the Main Property should also be lodged with the Registrar of Deeds at this time, but if this is not available at this time, this can be lodged with the Registrar for endorsement of the declaration at a later stage.

Upon receipt of this documentation, the Registrar of Deeds will then endorse the Title Deed of the Main Property filed with the Deeds Office and make appropriate entries in the registers of the Deeds Registry recording the declaration of the Taung Skull Site as a National Heritage Site, recording that the site is protected in terms of the provisions of section 27 of the NHRA, identifying the exact location and extent of the Site, and clearly stating the particulars of any Heritage Agreement that has been concluded in respect of the Site. The Surveyor General's offices will also make similar entries into its records.

We mention at this stage that, as far as we are aware, SAHRA has not yet published a declaration in the Government Gazette in terms of section 27 of the NHRA declaring the Site to be a National Heritage Site, that the Taung Skull Site has therefore not yet been formally declared a National Heritage Site, and that the Deeds Office have not yet been approached to record such a declaration against the Title Deed of the Main Property. This procedure needs to be completed <u>before</u> any Nomination Dossier can be submitted to the UN for recognition of the Site as a World Heritage Site.

We also mention at this stage that the parties that must be notified by SAHRA of its intention to declare the Taung Skull Site to be <u>National Heritage Site protected as such under the provisions of section 27 of the NHRA</u> are:

- National Government through the National Department of Public Works (as registered owner of the Main Property);
- The National Department of Land Affairs;
- The Greater Taung Municipality;
- The Batlapeng community and the Batlapeng Tribal Authority (as occupiers of the Main Property); and
- All conservation bodies which have registered their interest in the geographical area of the Main Property with SAHRA as required by section 25(1)(a) of the NHRA.

There are certain time periods that apply to such notification that need to be complied with before any formal declaration can be made by SAHRA, and SAHRA needs to be vigilant that such time periods are complied with. The Landowner is entitled to a longer notification period than the other affected parties (see section 27 of the NHRA for specific details). One needs to note that the process envisaged in section 27 is one of notification and consultation, and that the actual consent of these parties is not required under the NHRA for SAHRA to ultimately be able to declare the Site to be a National Heritage Site. Notwithstanding this, consent would be preferable if any initiatives proposed for the Site are to be supported by the affected parties and one may well find that SAHRA would prefer to obtain the consent of these parties prior to publishing any such declaration.

We mention that section 27(8) of the NHRA states that the landowner of the property concerned shall be entitled to negotiate conditions under which the proposed action will be acceptable. SAHRA should therefore establish whether or not the landowner wishes to propose conditions that are to apply to the proposed declaration.

We also mention that one of the stakeholders in the Taung Skull Site Project has enquired as to the purpose of the "Heritage Line" that has been drawn around the Taung Skull Site, and we have assumed that they are referring to the formal survey and delineation of the Site for the purpose of our preparing a response to this.

The purposes of having the Site formally surveyed and demarcated is to formally identity the exact location and layout of the Site that is being protected in terms of section 27 of the NHRA, and to record this fact, as well as the fact that the Site has been declared a National Heritage Site, into our property registration system. Once this fact is recorded in our property registration system, any person who intends to deal in any way with the Main Property will be publicly informed of these facts, and any future dealings in respect of the Main Property will be subject to the terms and conditions of the declaration. Anybody therefore proposing to purchase all or any part of the Main Property will be alerted to the fact that the Taung Skull Site, and possibly also a formally demarcated area around this, is formally protected under the NHRA, and that neither the Site, nor the particular area around the Site, nor the Main Property, may be used in a way that infringes on any of the rights and protections afforded to the Taung Skull Site, or any area surrounding the Site, under the NHRA. Such a third party will also be alerted to the existence of any Heritage Agreement that may have been concluded in respect of the Site.

In addition to this, the Registrar of Deeds is obliged to inform SAHRA of the particulars of registration of any property rights transactions, such as transfers or subdivisions of the Main Property, within 14 days of such registrations taking place. In this way, SAHRA will always be advised of any property transfers or subdivisions that have been concluded in respect of the Main Property, and will be able to gauge the extent of property developments occurring in the area and the extent to which these may impact on any rights

of protection afforded to the Site or any area surrounding the Site in terms of the NHRA.

Finally, in terms of section 27(15) of the NHRA, once a Site has been declared a National Heritage Site in terms of the provisions of section 27, SAHRA becomes wholly responsible for the protection of a National Heritage Site in accordance with the provisions of section 27, and can, in terms of section 27(18) of the NHRA, exercise some control over activities that may affect the Site to the extent that this section provides that *"…no person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage site without a permit issued by SAHRA".*

There are a number of further rights that vest in SAHRA in terms of section 27 of the NHRA as from the date that the Site is declared a National Heritage Site, and these include inter alia, the right to safeguard the Site, to regulate the conditions of use of the Site, to regulate the conditions of any development on the Site, and to regulate the admission of members of the public to the Site.

1.6 Extending protection to the Taung Skull Site by way of designating an area around the Site as a protected area under section 28 of the NHRA

We may also mention that it is possible to extend the protection of the Taung Skull Site to an area of land surrounding the Site. To the extent that it may be reasonably necessary to ensure the protection and reasonable enjoyment of the Site, or to protect the view of and from the Site, it is possible, with the consent of the landowner, for SAHRA to publish a notice in the Government Gazette in terms of which a portion of the Main Property surrounding the TS NHS (for example the area comprising a radius of 5 kilometers from the formerly surveyed boundaries of the TS NHS), can be declared and designated a " protected area" in terms of the provisions of section 28 of the NHRA. As with the procedure under section 27 of the NHRA, this procedure also requires that a formal surveyors diagram be prepared for the protected area, that the area be declared a protected area by notice in the Government Gazette, and that this fact be recorded against the Title Deed of the Main Property.

The benefit of doing this would be to ensure some sort of control by SAHRA over the type of development that can occur within the protected area as well as the types of activities that may be conducted in the protected area. In terms of section 28(3) of the NHRA *"…no person may damage, disfigure, alter, subdivide or in any way develop any part of a protected area unless, at least 60 days prior to the initiation of such changes, he or she has consulted the heritage resources authority (in this case SAHRA) which designated such area in accordance with the procedures prescribed by that authority…".* In addition to this, a heritage resources authority may, in terms of section 28(5) make regulations providing for specific protections for any protected area, including the prohibition or control of specified activities by any person in the designated area.

These provisions can therefore be relied on to provide a protective buffer zone around the Taung Skull Site if necessary.

To the extent that it is not practically possible to put the formalities of this type of protection in place immediately, it is possible to provisionally protect a protected area in terms of section 29 of the NHRA, with almost immediate effect, and for a maximum period of two years, by SAHRA notifying the landowner accordingly and publishing a notice to this effect in the Government Gazette. If this occurs, then no person may, for the period of the provisional protection *"…damage, deface, excavate, alter or remove from its original position, subdivide or change the planning status of a provisionally protected place without a permit issued by a heritage resources authority responsible for the provisional protection (i.e. SAHRA)".*

2 EXISTING DEVELOPMENT AND LAND USE PLANNING ISSUES

We have spoken to Mr Ndoda of the Greater Taung Municipality (the "GTM") and he has indicated that there is currently a Spatial Development Plan as well as a draft Development and Land Use Planning Guidelines document in place for the GTM municipal area, but that there is not an official Development and Land Use Planning Scheme or Zoning Scheme in place which regulates land use for the GTM municipal area at this stage. It is however envisaged that these will be prepared and adopted by the GTM in due course and that the Main Property will fall to be developed and utilized in accordance with the Spatial Development Plan as well as the Development and Land Use Planning Scheme and the Zoning Scheme that will ultimately be adopted for the GTM municipal area. Even though the Main Property would currently have an undetermined zoning by virtue of the fact that no official Zoning Scheme is in place for this area, this will in due course be allocated a zoning and a land use consistent with the Zoning Scheme that will be adopted for the GTM municipal area.

We understand that the GTM would like to capitalize as much as possible on the opportunities that tourism to the area could facilitate and the draft Development and Land Use Planning Guidelines document has as one of its specific goals, the establishment of bed and breakfast facilities through the utilization of residential accommodation in rural and urban areas. The said Guidelines document also provides for the promotion and management of ecotourism in the Taung Dam, the Spits Kop Dam and the Taung Skull Site areas specifically.

We understand however that the draft Development and Land Use Planning Guidelines document as well as a Development and Land Use Planning Scheme and Zoning Scheme for the GTM municipal area will not be finalized until some time in 2004, as this process will apparently have to be informed by the process which is currently underway at Provincial Level for the development of a Provincial Policy Framework and Plan for land use planning and development for the North West Province as a whole. It is therefore not expected that any Development and Land Use Guidelines or

Schemes for development and land use in the GTM area will be capable of finalization before the necessary Provincial Policy Framework and Plan is in place.

From a purely legal perspective then, the draft Development and Land Use Guideline document referred to above can at this stage only serve to inform stakeholders of the current thinking of the Greater Taung Municipality on land use and planning issues for the GTM municipal area.

Since a number of proposals will be made for the development of the Taung Skull Site, we mention that the practical implementation of such proposals will have to be considered in the light of the fact that the implementation of such proposals will inevitably require co-operation between the various government spheres and government departments by virtue of the fact that each government sphere or department has varying levels of responsibility and competency by virtue of the structures created in and the provisions of the Constitution of the Republic of South Africa Act No. 108 of 1996 ("the Constitution").

The question as to who is responsible for what can be a complex matter, and as a starting point, it may be worth mentioning what types of responsibilities have been allocated to the different spheres of government in terms of the Constitution. These are essentially summarized in Schedules 4 and 5 to the Constitution, and we have set out below, a list of areas of responsibility that could be impacted upon by the development proposals that will be made. This list will help to determine which sphere of government will be responsible to implement or to facilitate the implementation of any particular aspect of the development proposals that will be put forward.

In terms of section 44 of the Constitution, read with Part A of Schedule 4 of the Constitution, responsibility for inter alia, cultural matters, environment, nature conservation (excluding national parks, national botanical gardens and marine resources), pollution control, population development, public transport, regional planning and development, road traffic regulation, soil conservation, tourism, urban and rural development, tourism, are functional areas of national and provincial legislative competence. In other words, both national and provincial government are entitled to pass legislation regulating these matters, and any proposal made for the development of the Taung Skull Site that may impact on these areas of responsibility, will be regulated in terms of existing national and/or any provincial legislation passed for such matter. To the extent that national legislation is in conflict with provincial legislation, provincial legislation will generally prevail. There are very specific instances in which national legislation will prevail, but we do not think it necessary to go into this aspect in any great detail at this point.

In terms of section 44 of the Constitution read with Part A of Schedule 5 of the Constitution, responsibility for inter alia, museums other than national museums, provincial planning, provincial cultural matters, provincial recreation and amenities, and provincial roads and traffic, are the exclusive

legislative competence of provincial government, and are thus subject to regulation by provincial government.

National and Provincial Government also have the necessary executive authority to administer those areas of competency in respect of which they have legislative authority, and any proposals for the development of the Taung Skull Site that may impact on these different areas of competency will have to be implemented by or in consultation with the particular government department responsible for the administration of that particular competency.

In terms of section 156 of the Constitution, local government has exclusive executive authority in respect of and the rights to administer the local government matters listed in Part B of the Schedules 4 and 5 of the Constitution, being inter alia, building regulations, local tourism, municipal planning, municipal public transport, storm water management systems in built – up areas, water and sanitation services limited to potable water supply systems and domestic waste water and sewage disposal systems. Local municipalities also have the power to make by-laws for the effective administration of the matters that it has the right to administer, provided that should any such by-laws be in conflict with either national or provincial legislation, such by law shall be invalid.

To the extent that any proposals for the Taung Skull Site may impact on any competencies allocated to local government, such issues will have to be implemented and managed in consultation with Greater Taung Municipality.

Interestingly, the Constitution does not allocate legislative competency in respect of matters relating to land, minerals, forestry and water, to any particular person, with the result that legislative and executive competency for these matters vest exclusively with National Government.

By way of practical example then, any matters affecting the Site that deal with land, mining, forestry or water, will have to be managed in consultation the relevant national department. Thus, issues concerning the restriction of access to water on the Site by the local community will have to be resolved in consultation with the National Department of Water Affairs and Forestry.

The proposal to market the Site as a national and world heritage site is a matter which will require input from national, provincial and local government, whilst issues concerning access roads to the Site and the provision and maintenance of water and sanitation services on and to the Site, will have to be negotiated with the GTM. The management of the Site is a matter that is subject to regulation at national level, although management of the Site is not possible without co-operation between all the different government departments that have a role to play in making effective management possible. Co-operative government will therefore be key to the successful management of the TS NHS.

3 EXISTING STRUCTURAL ARRANGEMENTS

3.1 Background

We understand from Mr November of SAHRA, North West Province, that responsibility for the conservation and protection of the Taung Skull Site was initially delegated to and assumed by the Bophuthatswana National Parks Board and thereafter the North West Parks & Tourism Board. We also understand that the Government of Bophuthatswana intended to initiate the process to officially declare the Taung Skull Site a National Monument under the old National Monuments Act, but that this process was never completed, with the result that the Taung Skull Site was never officially protected under the old National Monuments Act. This Act has now been repealed by the NHRA.

We understand further that the intention is now to take all steps necessary under the NHRA to formally protect the Site as a National Heritage Site under the NHRA and to put in place the necessary structures required for the future management, conservation and protection of the Site on the basis proposed in the NHRA. Whilst the right and responsibility for the management of the Site has previously vested in the parties mentioned above, the provisions of the NHRA provide for structures that are intended to supersede this, with the result that SAHRA is now vested with the responsibility for this.

It has been stated in the Terms of Reference provided for this project, that SAHRA, together with the North West Provincial Department of Agriculture, Conservation and Environment ("DACE") as well as the North West Provincial Department of Social Services, Arts, Culture and Sport ("DSSACS"), are responsible for managing the project to conserve and appropriately develop the TS NHS, and we were wondering if there is a formal agreement between these parties in terms of which they have agreed to accept responsibility to manage, conserve and protect the TS NHS. Mr November should clarify this for us. We have in any event attempted to evaluate how this can be implemented within the parameters set by the NHRA and our views on this are set out below.

3.2 Appointing a Managing Agent

Whilst responsibility for the conservation, maintenance, presentation and management of the Taung Skull Site is vested solely in SAHRA in terms of the NHRA, it is possible for SAHRA to enter into a contract and to appoint a managing agent to whom it can delegate some of this responsibility to a competent authority on an agency basis ("the SAHRA Managing Agent"), alternatively, to enter into a contract with an independent third party or authority ("the Independent Managing Contractor"), in terms of which some or all of SAHRA's responsibilities to protect and manage the Site can be contracted out to a third party on the basis that such party is an independent contractor and not an agent of SAHRA.

We mention at this point that the Heritage Agreement for the Cradle of Human Kind is structured on the proposal that SAHRA followed the delegation route and appointed a Managing Agent to whom it has delegated its responsibilities for the protection and management of the national heritage sites falling within the Cradle of Human Kind, rather than an independent contractor, and our report set out below is based on this.

If a SAHRA Managing Agent is appointed for the TS NHS ("the Managing Agent"), then the purpose of the Heritage Agreement will be to record the basis of the managing agent relationship between SAHRA and the Managing Agent, as well as to regulate that relationship between SAHRA/ the Managing Agent and any other third parties as may be required to be a party to the Heritage Agreement e.g. the landowner or a local municipality (to the extent that certain rights and obligations for the management of the site are to be contracted out to such local municipality). In other words, the Heritage Agreement serves to:

- Regulate the relationship between SAHRA and the Managing Agent in respect of the management of the TS NHS;

- Regulate the relationship between SAHRA, the Managing Agent, the landowner and any other independent contractors as may be required to be a party to the Agreement.

We believe that if SAHRA intends to delegate its responsibility to protect and manage the TS NHS to both DACE and to DSSACS, then the Heritage Agreement will have to be very specific as to exactly what rights and responsibilities are being delegated to each of these parties. This could make the Heritage Agreement quite cumbersome and it may be more practical to simply appoint one Managing Agent for the TS NHS who in turn will have the right to conclude separate agreements or memoranda of understanding with various government authorities or independent third parties in terms of which the Managing Agent will secure all the necessary resources, assistance and services, that it will require to properly and effectively protect and manage the TS NHS.

The question that needs to be asked and evaluated is to whom such responsibilities can and should be delegated and/or contracted, and on what terms.

The decision as to who the ultimate SAHRA Managing Agent, alternatively, the Independent Managing Contractor, of the TS NHS will be, will have to be made, and the necessary structures for this put in place, as a matter of some urgency, as the UN requires this to be formalized before any Site can be recognized by them as a World Heritage Site.

This decision should be taken after proper consideration of the structures proposed in the NHRA for the protection and management of National Heritage Sites, as well as the structures proposed under the provisions of the World Heritage Convention Act No. 49 of 1999 ("the World Heritage

Convention Act") for the protection and management of the Site as a World Heritage Site.

Whilst the NHRA places various responsibilities on SAHRA and therefore its Managing Agent for the management and protection of National Heritage Sites, in contrast, in the terms of the WHCA, more wide-ranging responsibilities can be delegated to the Managing Agent. The first-mentioned agent is selected by SAHRA and derives its powers from SAHRA, whilst the last-mentioned agent is selected by the Minister of DEAT and derives the powers that it requires under the WHCA from the Minister of DEAT.

We mention this because the appointed Managing Agent for the Site should really be an organ of state that will have the capability and competency and infrastructure not only to comply with the requirements of the NHRA, but also to comply with the requirement of the WHCA. This person should probably therefore also be a person that is acceptable to the Minister of DEAT.

We understand that proposals for the nomination of the Taung Skull Site to the World Heritage Committee of the United Nations Education, Scientific and Cultural Organization ("UNESCO") for recognition as a cultural site of outstanding universal value and inclusion of this site in the UNESCO World Heritage List of such sites, will in due course be completed and submitted to the World Heritage Committee by the offices of the Minister of Environmental Affairs and Tourism, and that the process in terms of which the UN will eventually include the TS NHS on the list of World Heritage Sites, could apparently take about 2 years to be completed. Since the proposals to the UN will need to show that the person identified as the managing agent for the TS NHS is able to protect and manage the Site in accordance with the provisions of the WHCA, the Convention Concerning the Protection of the World Cultural and Natural Heritage and its Operating Guidelines. It therefore makes sense to work towards setting up a structure at this stage which facilitates the appointment of a Managing Agent under the NHRA that can ultimately be declared an Authority under the WHCA. Until such time as the Site is declared a World Heritage Site however, this Site will have to be protected and managed in terms of the provisions of the NHRA.

3.3 Possible contenders

The most likely contenders for the appointment to the position of Managing Agent for the TS NHS are the following:

- NW DACE – they have initiated the project and are prominently involved with it. They probably have access to funding, although this kind of conservation (i.e. heritage resource management) is outside of their normal sphere of activities;

- NW Parks & Tourism – they are already managing the Site and the NW Provincial Government has placed the Site under their care. They

already have staff on Site, are responsible for tourism in the province, and should be able to develop a tourism plan around the Site;

- SAHRA – they are legally responsible to protect and manage the Site;

- Gauteng DACEL – they are already managing the national heritage sites falling within the Cradle of Human Kind and have already established the infrastructure and facilities required to manage national and world heritage sites. Since the TS NHS is a serial nomination, and it may make sense if all world heritage sites fell under a single managing agent;

- The Greater Taung Municipality – they are the party that are closest to the Site and the project as a whole. They have a direct interest in ensuring the success of the Site and probably also have the ability to stimulate local small enterprises to undertake management and income generating functions at or in respect of the Site.

Whilst there are advantages that go with being appointed the Managing Agent for the Site, one must not forget that this project will require the investment of a substantial amount of investment capital, operating capital, as well as human capital, in order to be successful. There are numerous and ongoing responsibilities that go with ensuring the proper protection and management of the Site. Financial and capacity constraints, as well as the skills and experience constraints of the various contenders, will have to be identified and evaluated in order to establish who is best placed to take on the management of the TS NHS. A wide range of skills such as business and financial management skills, operational skills, on-site management skills, human resource skills, and the like, will be required of the Managing Agent in order for it to be able to properly manage the Site.

Whilst it is probably difficult at this stage to identify any one single entity that would currently possess all the capital, capacity and skills, necessary to protect and manage the TS NHS, one should not lose sight of the fact that notwithstanding this, it should be possible for the Managing Agent to acquire capital, capacity and skills, through concluding memoranda of understanding with various other relevant government authorities, alternatively, through concluding agreements with independent consultants/ third parties.

4 STRUCTURAL ARRANGMENTS PROPOSED IN THE NHRA

It is important to have a general understanding of the provisions of the NHRA in order to appreciate who is responsible for what in terms of this Act, and what competencies and capabilities are required in terms of the NHRA before any authority can take responsibility for any functions assigned or to be assigned to it under the NHRA.

An appreciation for these provisions will in due course inform the process in terms of which one can ultimately decide who is best placed to take on the

responsibility for the management, presentation, development, and marketing of the Site. We have therefore set out below, a summary of the more important and relevant provisions of the NHRA for consideration.

4.1 Purpose and application of the NHRA

The purpose of the NHRA is to introduce an integrated and interactive system for the management and protection of our heritage resources. The NHRA came into operation on 1 April 2000, on which date those heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations became and must be considered part of the " national estate " and fall within the sphere of operations of heritage resource authorities (see section 3(1) of the NHRA).

Section 3(2) and 3(3) of the NHRA sets out a number of criteria for identifying places and objects which shall be included in the national estate and which shall therefore be subjected to the protections afforded by the NHRA, the intention being to bring as much of our cultural heritage as is possible within the ambit of the NHRA and therefore subject to control and protection as provided in the NHRA.

Section 4 of the NHRA states that the national system for the management of heritage resources set out in the NHRA:

- applies throughout the Republic;
- applies to the actions of national, provincial and local authorities;
- serves as guidelines by reference to which any heritage resources authority or other competent authority must exercise any discretion or take any decision in terms of the NHRA or any other law dealing with heritage resources management;
- serves a general framework within which heritage resource authorities must perform its functions;
- establishes the South African Heritage Resources Agency ("SAHRA") to co-ordinate the management of the national estate and to manage national heritage resources;
- makes provision for the establishment of provincial heritage resources authorities to manage provincial and local heritage resources.

4.2 What does "responsibility for heritage resource management mean"?

The term "to manage heritage resources" is defined in section 1 of the NHRA and includes the conservation, presentation and improvement of a place protected in terms of the NHRA. The term "conservation" is defined in the Act as including the protection, maintenance, preservation and sustainable

use of places and objects so as to safeguard their cultural significance, whilst the term “improvement” of a heritage resource includes the repair, restoration and rehabilitation of a place protected in terms of the NHRA. The term “presentation” is defined as including the exhibition or display of; the provision of access and guidance to; the provision, publication or display of information in relation to; and the performances or oral presentation related to; heritage resources protected in terms of the NHRA.

This inevitably implies that money and other resources are going to have to be invested in the TS NHS in order for it to be properly managed as required by the NHRA.

The NHRA places the responsibility for management of the Taung Skull Site on SAHRA, although SAHRA is entitled to delegate responsibility for the protection and management of the TS NHS to a competent authority, provided that such delegation will occur on the basis that such managing agent will be fully accountable to SAHRA for its acts. The NHRA also states that this managing agent will for all purposes of the NHRA be deemed to be the agent of SAHRA and that the acts of such managing agent will at all times be deemed to be the acts of SAHRA. SAHRA is also entitled to contract some or all of these responsibilities out to an independent third contracting party or authority.

Notwithstanding any delegation of its responsibilities to a managing agent, there is still an obligation on SAHRA to ensure that the management of the Site, either by SAHRA personally, or by its managing agent, or by its independent contractor, will take place in a manner which will at all times uphold the general principles of heritage resources management set out in the NHRA and comply with the provisions of the NHRA in all respects.

4.3 General principles of heritage resources management

Section 5 of the NHRA sets out the general principles for heritage resources management, and these in broad terms require:

- appreciation for the value of heritage resources, and the placing of a moral obligation on every generation to act as a trustee of our national heritage for succeeding generations and an obligation on the State (which includes provinces – see section 1 of the NHRA) to manage heritage resources in the interests of all South Africans (section 5(1));

- capacity building and skills development in heritage resources management (section 5(2));

- that laws, procedures and administrative practices must be simple and accessible to all (section 5(3));

- consultation with and participation of affected communities in heritage resources management (section 5(4));

- presentation of our heritage resources for research, education and tourism purposes in a way that ensures the dignity and respect for cultural values (section 5(5));

- integration of heritage resource conservation into urban and rural planning as well as all social and economic development (section 5(6));

- consistent identification, assessment and management of our heritage resources according to the criteria and for the purposes set out in section 5(7) of the NHRA.

4.4 System of grading heritage resources and allocating responsibility for their management

Section 7 of the NHRA provides for the establishment of a grading system by SAHRA in consultation with the Minister of Arts, Culture and Heritage, and the MEC of every Province, in terms of which places and objects can be graded as Grade I heritage resources – being heritage resources with qualities so exceptional that they are of special national significance; Grade II heritage resources – being heritage resources which, although forming part of the national estate, can be considered to have special qualities which make them significant within the context of a province or a regions; or Grade III heritage resources – being other heritage resources worthy of conservation.

Section 8(1) of the NHRA specifically states that there is a three-tier system for heritage resources management, in which national level functions are responsibility of the South African Heritage Resources Agency ("SAHRA"), provincial level functions are the responsibility of Provincial Heritage Resources Authorities, and local level functions are the responsibility of Local Authorities.

Section 8(2) specifically allocates responsibility for the identification and management of Grade I heritage resources to SAHRA. The Taung Skull Site has been identified as a Grade I heritage resource and therefore falls to be managed by SAHRA. Section 8(3) allocates responsibility for the identification and management of Grade II heritage resources and heritage resources that are deemed to be a provincial competence in terms of the NHRA, to a provincial heritage resources authority.

4.5 Capability and competency to manage heritage resources

In terms of section 8(6), a provincial heritage resources authority or a local authority shall not perform any function in terms of the NHRA or any other law for the management of heritage resources, unless it is competent to do so. The capacity of a provincial heritage resources authority or local authority shall be assessed in terms of criteria prescribed by the Minister, including the availability of adequate staff, expertise, experience and administrative systems. These criteria shall then be applied by SAHRA, in the assessment of the capacity of the provincial authorities to perform specific functions in

relation to prescribed categories of heritage resources; and by provincial heritage resources authorities, to establish the capacity of local authorities to perform any function under the NHRA.

If an authority at provincial or local level does not have the capacity or is not competent to perform a specific function for which it is responsible under section 8, that function shall be performed on an agency basis by an authority at a higher level or a competent authority on the same level. It is incumbent upon the provincial heritage resources authority or a local authority to apply to the relevant authority for an assessment of its competence in the manner prescribed by the assessing authority. The assessing authority shall at least every two years, reassess the competence of a subordinate authority and review the assumption of function and powers under the NHRA.

4.6 Formal protection of the Taung Skull Site and its declaration as a National Heritage Site

We have dealt with this aspect previously in this report, but would like to add some more detail in this regard.

Once the site is declared a National Heritage Site, SAHRA will be entitled:

- to make regulations pertaining to safeguarding of the site from destruction, damage, disfigurement, excavation or alteration; regulating the conditions of use of the site or the conditions for any development thereof; regulating the admission of members of the public to the site and the fees that will be payable for such admission;
- to conserve or improve the site;
- to construct fences, walls or gates around or on the site;
- to acquire or construct and maintain an access road to the site over any land and construct upon such land fences, walls or gates;
- to erect signs on or near the site;
- to grant permits in respect of rights to reproduce the site;
- to enter into a Heritage Agreement with a managing agent or third party as contemplated in section 42 of the NHRA for the conservation, improvement and presentation of the site;
- to regularly inspect the site;
- to produce, acquire and market products relating to the site or enter into arrangements for the production, acquisition and marketing of such products.

It is interesting to note that in terms of section 27(23)(b) of the NHRA, no person, other than the owner of the property, shall be entitled to make any reproductions of the site for profit, unless such person has obtained a permit from SAHRA authorising this. If such permit is granted, then SAHRA shall be entitled to stipulate a fee to paid for such permit, which fee shall be deposited in a trust fund dedicated to the conservation of the site or of heritage resources in general.

It is also interesting to note that section 44 of the NHRA states that heritage resource authorities (in this case SAHRA) and local authorities must wherever appropriate, co-ordinate and promote the presentation and use of places of cultural significance and heritage resources which form part of the national estate and for which they are responsible in terms of section 5 of the NHRA for public enjoyment, education, research and tourism, provided that where the heritage resource in question is a formally protected heritage resource (which the site will be if declared a National Heritage Site), then any person wishing to undertake such presentations must, at least 60 days prior to the institution of interpretive measure or manufacture of associated material, consult with the heritage resources authority responsible for the protection of such heritage resource (in this case SAHRA) regarding the contents of interpretive material or programmes.

Section 25(2)(e) of the NHRA also requires that if the heritage site is owned by the State, is the case for the TS NHS, the National Department responsible for arts, culture and heritage, must be consulted before any arrangements can be made by and person can present the TS NHS in any way whatsoever.

4.7 Delegation of responsibilities to another authority

To the extent that it is proposed that the protection and management of the TS NHS should be delegated to another person, one needs to assess how this is to be done and to whom such responsibilities can be delegated.

In terms of section 26 of the NHRA, SAHRA can only delegate its functions and powers under the NHRA relating to the protection and management of the TS NHS to, a provincial heritage resources authority (“the PHRA”), provincial government, a local authority, or any other authority which shows competence to perform such functions. This section also requires that the delegation be in writing and the agreement of such authority or person to the delegation must be obtained.

In addition to this, a delegation of this nature is only possible after the Minister has made regulations to enable a heritage resource authority (in this case SAHRA) to delegate these functions or powers under the NHRA to some other authority. By implication then, SAHRA can only delegate its responsibility to protect, manage and control the Taung Skull Site, to one of the authorities mentioned above, if the Minister has made regulations authorizing this, and then only in writing and by agreement with the authority concerned. SAHRA will have to assess this authority in terms of the

provisions of section 8 of the NHRA in order to establish whether or not such authority is capable and has the capacity to perform the functions that are to be delegated to it.

In terms of section 26(2), any power delegated under section 26(1), when exercised by the delegate, shall for the purposes of this Act be deemed to be exercised by the heritage resources authority concerned. Thus any power delegated to a competent authority, when exercised by that authority, will be deemed to be a power exercised by SAHRA. This essentially creates a type of agency arrangement in terms of which SAHRA will continue to be responsible to the public for the fulfilment of its obligations under the NHRA, whilst being entitled to hold the delegate fully accountable to SAHRA for all actions performed by it during the period of the delegation.

In terms of section 26(4), a delegation of any power by SAHRA to a PHRA can only be revoked by SAHRA with the consent of the Minister, and after SAHRA has consulted such PHRA. All other delegations are revocable by SAHRA at will.

It is important to note that section 26(3)(e) of NHRA states that a heritage resources authority may not delegate power to adopt any statement of general policy or conservation management plan under section 47 of the NHRA. Section 47(2) of the NHRA states that each heritage resources authority must adopt for any place which is protected in terms of this Act and is owned or controlled by it or vested in it, a plan for the management of such place in accordance with the best environmental, heritage conservation, scientific and educational principles that can reasonably be applied taking into account the location, size and nature of the place and the resources of the authority concerned, and may from time to time review any such plan.

Since SAHRA is responsible for the management of the Taung Skull Site, SAHRA is by virtue of the provisions of section 47(2) of the NHRA responsible to prepare or to have prepared, and to adopt, a conservation management plan for the Taung Skull Site. By implication, any conservation management plan prepared for the Taung Skull Site either by SAHRA or by any other party, must first be adopted by SAHRA before this plan can be implemented. It is also the right of SAHRA to determine whether or not the conservation management plan is to be operated solely by SAHRA or in conjunction with an environmental or tourism authority or under contractual arrangements, on such terms and conditions as SAHRA may determine.

4.8 Concluding a Heritage Agreement

We have briefly dealt with this above, and are not going to deal with this aspect in any great detail for now. It may well be more appropriate to discuss this after sufficient detail concerning the proposals for the protection, conservation, presentation, management and development of the Site is available. The participation by various key stakeholders in this process of negotiating a possible Heritage Agreement for the Site, their rights and responsibilities in this regard, the costs and benefits of their participation, and

the contributions (financial and otherwise) that each of the participants will have to make towards implementing the proposals, will become apparent in due course, and it is only after there is clarity on these issues that one can assess whether or not a Heritage Agreement should be concluded for the Site, and if so, with whom and on what terms .

We mention a this stage, and only for the purpose of providing a brief background to Heritage Agreements, that section 42 (9) of the NHRA sets out some of the issues that can be regulated in a Heritage Agreement and these include:

- the maintenance and management of the site;
- the custody of the place and the duties of any person who may be employed in connection therewith;
- the occupation or use of the place by the owner or otherwise;
- the restriction of the right of the owner or occupier to do certain acts of things on or near the place;
- the facilities of access to be permitted to the public and to person deputed by the guardian to inspect or maintain the place,
- the presentation of the place;
- the notice to be given to the guardian of the place in case the owner intends to offer the land on which the place is situated for sale, lease or other disposal, and the right to be reserved to the guardian to have first refusal of such sale or lease or other disposal;
- the payment of any expenses incurred by the owner or by the guardian in connection with the maintenance of the place;
- any other matter connected with the protection and management of the place which is agreed to by the owner and the guardian;
- the duration of the agreement, with provision for the earlier termination thereof by any party thereto; and
- the procedure for the resolution of any dispute arising out of the agreement.

5 STRUCTURAL ARRANGEMENTS PROPOSED IN WHCA

In view of the fact that it is intended that the Taung Skull Site be nominated for inclusion in the UNESCO World Heritage List and will in due course be recognized as a World Heritage Site as defined in the WHCA and therefore

subjected to the provisions of and the protections granted to World Heritage Sites under the WHCA, it obviously makes sense to consider the provisions of the WHCA to the extent that the ultimate protection, conservation, presentation, maintenance and management of the Site will have to take place in accordance with the provisions of the WHCA, the World Convention for the Protection of Cultural and Natural Heritage ("the Convention") as well as the Operational Guidelines prepared by the World Heritage Committee for the implementation of the Convention, and all other applicable legislation.

In terms of section 5 of the WHCA, the Minister of the Department of Environmental Affairs and Tourism, is responsible to enforce and to implement the WHCA and the Convention in the Republic.

In terms of sections 7,8, and 9 of the WHCA, the Minister may, after a process of consultation, by notice in the Government Gazette, appoint an existing organ of state already lawfully managing or involved in a World Heritage Site, alternatively establish a completely new body, which shall be an Authority as defined in the WHCA, and which shall have such powers and duties to protect and manage the World Heritage Site as is provided for in the WHCA.

The Minister may also, in terms of section 43 of the WHCA, by notice in the Government Gazette, delegate any of its functions, powers and duties under the WHCA, excluding the power to make regulation, to certain persons, inter alia, a provincial government, a local government or an organ of state.

Practically, this would mean that whichever authority is appointed the managing agent of the Taung Skull Site in terms of the provisions of the NHRA, could be declared the appropriate Authority under the WHCA, alternatively, could assume rights, duties and functions under the WHCA to the extent that the Minister of DEAT would delegate such rights, duties and functions to such authority by notice in the Government Gazette.

Any Site which qualifies to be a World Heritage Site as defined in the WHCA, will have to be protected and managed in terms of the provisions of this Act, taking into consideration the objectives of the WHCA.

The most important of these are briefly summarized as follows:

- to provide for the cultural and environmental protection and sustainable development of, and related activities within, World Heritage Sites;

- to ensure that everything done in terms of the provisions of the WHCA conforms with the obligation of the Republic in terms of the Convention and the Operational Guidelines;

- to encourage investment and innovation in connection with World Heritage Sites;

- to encourage job creation in connection with World Heritage Sites;

- to promote the development of culturally, environmentally and economically sustainable projects in connection with World Heritage Sites;

- to promote empowerment and advancement of historically disadvantaged persons in projects related to World Heritage Sites.

Section 4 of the WHCA essentially repeats most of the provisions set out in NEMA and in the NHRA that are relevant to the fundamental principles of heritage resource management and conservation, being inter alia that;

- cultural and natural heritage management must be sensitive to the people and their needs and must equitably serve their physical, psychological, developmental, cultural and social interests;

- development must be socially, culturally, environmentally and economically sustainable;

- equitable access to World Heritage Sites must be pursued and special measures taken to ensure access thereto by historically disadvantaged persons;

- the participation of all interested and affected parties in the governance of cultural and natural heritage must be promoted;

- participation by vulnerable and historically disadvantaged persons must be ensured;

- decisions must take into account the interest, needs and values of all interested and affected parties;

- there must be intergovernmental co-ordination and harmonization of policies, legislation and actions relating the cultural and natural heritage;

- considerations of cultural heritage resource management must be integrated into all provincial, urban and rural planning, as well as social and economic development.

In terms of section 21 to 28 of the WHCA, all World Heritage Sites must be protected and managed in terms of an Integrated Management Plan prepared for the Site and approved by the Minister of DEAT. This Plan must seek to integrate and harmonize its policies, principles and objectives with those set out in:

- the Convention and the Operational Guidelines;

- any plans made or approved in terms of National Environment Management Act No. 107 of 1998, the NHRA, the Cultural Institutions

Act No. 119 of 1998, the Development Facilitation Act of 1995 and the National Parks Act No. 57 of 1976;

- provincial government planning and development plans;
- regional planning and development plans;
- local government planning and development plans;
- existing planning and development plans of an existing organ of state already lawfully managing or involved in a World Heritage Site; and
- any directives issued by the Minister of DEAT for Integrated Management Plans.

If it is intended that the Conservation Management Plan prepared in terms of the provisions of section 47(2) and (3) of the NHRA, is ultimately to serve as the Integrated Management Plan in terms of the provisions of the WHCA, then the Minister of DEAT should be approached for his inputs into the Plan, since such Plan will ultimately have to be approved by DEAT.

6 CONCLUSION

There is clearly much that still needs to be discussed and debated. Hopefully this section will highlight some of the issues in this regard.

The primary decision that needs to be made from a legal point of view is where ultimate responsibility for the protection, management and development of this Site is to rest. Once this has been decided, one can work towards creating and implementing legal structures that can facilitate this.

APPENDIX 3

MANAGEMENT ISSUES AND STRATEGIES
AND
MONITORING OF THREATS AND RISKS
TO SITE SIGNIFICANCE

TAUNG SKULL FOSSIL SITE:
MANAGEMENT ISSUES AND STRATEGIES

STRATEGY	WHAT TO DO	WHY DO IT	PRIMARY RESPONSIBILITY	HOW TO DO IT	PRIORITY	EXPECTED OUTCOME	ACTUAL OUTCOME
Issue: Protection of World Heritage Values and meeting Convention Obligations (as stated in the World Heritage Convention Act No 49 of 1999 ('the WCHA")							
• Develop and maintain an effective framework for protection and management of World Heritage and associated social values	• Maintain and extend existing institutional arrangement and establish good linkages between them	• To provide integrated organizational framework	• SAHRA, DSSACS World Heritage Convention Committee (local)	• Designate the overall site Managing Agency • Create the Joint Management Committee for the Serial WHS Cluster • Ensure institutional linkages between above to management bodies	High	• Effective implementation of decisions taken by Management Authorities	
• Meet South Africa's obligations under the World Heritage Convention	• Ensure all stakeholders understand Convention obligations	• To provide certainty remove ambiguity • Inform	• SAHRA, DSSACS World Heritage Convention Committee (local)	• Prepare plain English summary of Operational Guidelines of the WH Convention • Provide Greater Taung Municipality, overall Managing Agent, Local Community, Tribal Authority and other stakeholders with copies	High	• All stakeholders will understand the obligations and responsibilities attaching to WH status	
	• Meet all reporting obligations to World heritage Committee	• Required to maintain status as a WHS, as per world Heritage Guidelines	• SAHRA • World heritage Convention Committee (RSA)	• SAHRA and local WHCC to request necessary reporting • Involve overall Managing Agent	High (Nomination Dossier due February 2004)	• Reporting obligations met	

STRATEGY	WHAT TO DO	WHY DO IT	PRIMARY RESPONSIBILITY	HOW TO DO IT	PRIORITY	EXPECTED OUTCOME	ACTUAL OUTCOME
	• Develop education and information programmes	• To meet obligation to present World Heritage properly	• SAHRA to coordinate other management agents and stakeholders	• Range of publications such as pamphlets, on-site signage, information programmes, project kits for school children, public workshops, museum	High	• Meet requirements for presenting site, increased public awareness	
	• Promote market and facilitate tourism and related development at the site	• Uphold principles of heritage resource management as set out in the WHCA	• SAHRA, DSSACS, Management Agent, North West Tourism Board, Greater Taung Municipality	• Utilise earmarked funding to go ahead with planned Visitor Centre and interpretative Museum and other tourist-related infrastructure	High Must wait site progress then ongoing	• Responsible tourism at the site will be facilitated. Increased visitor numbers	
	• Encourage job creation in connection with the site	• To encourage a sense of ownership of the project amongst local communities • To alleviate local poverty • To involve local expertise and people with the site	• All those responsible for writing tender documents for contracts • SAHRA, DSSACS, overall Management Agent, Greater Taung Municipality	• Write local community projects and labour use into tender documents • Make use of free government training programmes when building projects implemented • Use local people as site monitors, caretakers and tourist guides, etc.	High	• Local people employed • Skills transfer • Project 'ownership' by local communities • Promotes empowerment of disadvantaged persons	
Issue: Compliance with National Heritage Status and World Heritage Status requirements							
• To proclaim a buffer zone around the TS NHS in terms of Section 28 of the NHRA	• Create a buffer zone on protected area around the Heritage Site	• To comply with requirements of the NHRA and World Heritage Act • To ensure some control over the type of development that	• SAHRA	• Obtain permission of landowner to publish notice in Government Gazette • Ensure GTM and OMA are kept informed • Notify planners of	High	• Protection of site environs and those archaeological sites that fall outside heritage boundary	

STRATEGY	WHAT TO DO	WHY DO IT	PRIMARY RESPONSIBILITY	HOW TO DO IT	PRIORITY	EXPECTED OUTCOME	ACTUAL OUTCOME
		can occur, and activities that can take place • Protect heritage assets outside site boundary • Prevent undesirable land use • To preserve vegetation along escarpment and Red Data species habitat • Protect visual integrity of skyline • Preserve visual aesthetics of a vulnerable area • Preserve ecological interactions which exist inside / outside site		IDP process; SDF planners and GTM, other local administrative structures • Proceed with application for buffer zone status for area provisionally shown in Figure 5. • Compile a set of special regulations pertinent to buffer zone			
Issue: Heritage Site Boundary and Fencing							
• Formalise the legal status of the surveyed Proclamation Diagram (Figure 4 CMP)	• Finalise process to have site proclaimed as a National Heritage Site	• To secure the necessary legal protections for the site	• SAHRA	• Follow guidelines in NHRA • Secure a gazetting • Lodge Proclamation Diagram with Vryburg Registrar of Deeds • Ensure boundary points are permanently marked	High	• Declared National Heritage Site with well-marked designated boundary	• Survey Diagram complete

STRATEGY	WHAT TO DO	WHY DO IT	PRIMARY RESPONSIBILITY	HOW TO DO IT	PRIORITY	EXPECTED OUTCOME	ACTUAL OUTCOME
• Provide for controlled access to the site • Pedestrian access across site to be considered • Livestock watering points to be considered	• Erect a perimeter fence (See Fig. 10 CMP)	• To enable access to site to be controlled • To provide for site security • To protect site from unauthorized visitors, artefact scavenging, trampling of sites by livestock, unauthorized use of facilities, overgrazing, unsustainable fuelwood gathering etc. (see separate entries under specific issues)	• SAHRA, OMA	• Consult with resident community on "preferred pathways" • Security fence can be adjusted to accommodate non-intrusive pedestrian traffic • Include embayments in fence where livestock watering points are needed • Obtain a budget for ± 8 km of fencing (R400 000 – R500 000)	High	• Controlled access • Site safety • Controls on non-sustainable grazing and fuelwood collection • Allows pedestrian access • Allows livestock watering • Protects site from trampling • Allows for control on use of site	
Issue: Linking Management of TS NHS to existing Management structures and previous initiatives							
• Integrate existing funding into project	• Integrate existing local government structures into project management	• Source existing funding, maximize what can be done with scarce funds	• SAHRA, DEAT	• SAHRA to help create the OMA, which should include the EXCO of the GTM • The OMA to inform local structures of its funding priorities • Ensure that responsible management exists	High	• Access funds which have been set aside for Taung Site and deploy effectively (See Section 3.4)	
• Collation of information concerning previous initiatives for Taung	• Collect information concerning all former and ongoing initiatives	• To increase the knowledge of the site • To avoid duplication and effort and	• SAHRA, OMA	• Obtain copies of previous initiatives documentation listed in section 3.5 • Create an archive for information	High, then ongoing	• Streamlined planning without duplication of effort • Compliance with government regulations	

STRATEGY	WHAT TO DO	WHY DO IT	PRIMARY RESPONSIBILITY	HOW TO DO IT	PRIORITY	EXPECTED OUTCOME	ACTUAL OUTCOME
		funding applications • To streamline efforts • To create an archive of information on Taung		concerning the site		regarding co-operative governance	
Issue: Heritage Assets: Protection, presentation and related management issues							
• Geological and Landscape resources • SEE ALSO SOER REPORT, CHRS AND HERITAGE MANAGEMENT TABLE, CMP	• Present, protect and interpret the geological and geomorphological assets of the site	• To create understanding and enhance the enjoyment of the heritage assets of the site • To protect and enhance geological assets	• Management Authority, SAHRA	• Identify good geological exposures and contacts, good viewpoints for landscapes • Incorporate geological assets into hiking trail • Provide interpretative site panels • Provide geological interpretation as part of museum display • Train and employ site guide • Clean graffiti off rock faces wherever possible • Use buffer zone regulations to control unwanted developments and protect visual assets of the site	Medium	• Well-protected, well interpreted and well displayed geological assets • Enhanced understanding of the value of the assets	
• Precambrian fossil resources • SEE ALSO SOER	• Protect, present and interpret the Precambrian fossil	• To create understanding and enhance the	• Management Authority, SAHRA	• Identify good exposures of stromatolites in the	Medium	• Well-protected, well interpreted and well displayed	

STRATEGY	WHAT TO DO	WHY DO IT	PRIMARY RESPONSIBILITY	HOW TO DO IT	PRIORITY	EXPECTED OUTCOME	ACTUAL OUTCOME
REPORT, CHRS AND HERITAGE MANAGEMENT TABLE, CMP	resources of the site	enjoyment of the Precambrian fossil assets of the site • To protect and enhance these assets		field • Incorporate good exposures in hiking trails • Provide interpretative panels next to good examples • Provide a well-trained site guide to explain asset to visitors • Incorporate Precambrian fossils in museum display • Ensure that theft of "garden feature rock" is not occurring		Precambrian assets • Enhanced understanding of the value of the assets	
• Palaeo-anthropological and palaeontological assets • SEE ALSO SOER REPORT, CHRS AND HERITAGE MANAGEMENT TABLE, CMP	• Protect, present and interpret the palaeo-anthropological and palaeontological assets of the site	• To create understanding and enhance the enjoyment of the palaeontological assets of the site • To protect and enhance these assets	• Management Authority, SAHRA	• Provide protections for individual palaeontological sites as described in SOER Report (CHRS) and Heritage Management Table, CMP • Do not disclose whereabouts of vulnerable localities • Route hiking trails past key sites once protected (Equus and Power House) • Provide on-site signage • Employ well-trained site guide	Medium	• Well-protected, well interpreted and well displayed palaeontological assets • Enhanced understanding of the value of the assets	

STRATEGY	WHAT TO DO	WHY DO IT	PRIMARY RESPONSIBILITY	HOW TO DO IT	PRIORITY	EXPECTED OUTCOME	ACTUAL OUTCOME
				• Incorporate palaeontological themes into museum displays			
• Archaeological assets • SEE ALSO SOER REPORT, CHRS AND HERITAGE MANAGEMENT TABLE, CMP	• Protect, present and interpret the Archaeological assets of the site.	• To create understanding and enhance the enjoyment of the Archaeological assets of the site • To protect and enhance these assets	• Management Agent, SAHRA	• Provide protections for individual Archaeological sites as described in SOER Report (CHRS) and Heritage Management Table, CMP • Do not disclose whereabouts of vulnerable localities • Route hiking trails past key sites once protected (Equus and Power House) • Provide on-site signage • Employ well-trained site guide • Incorporate Archaeological themes into museum displays, e.g. human origins and evolution, stone tool technologies, the San and Khoi, Rock Art, past climates and dating • Ensure that sites falling outside the heritage boundary are incorporated	Medium	• Well-protected, well interpreted and well displayed archaeological assets • Enhanced understanding of the value of the assets • Buffer zone protects sites outside boundary	

STRATEGY	WHAT TO DO	WHY DO IT	PRIMARY RESPONSIBILITY	HOW TO DO IT	PRIORITY	EXPECTED OUTCOME	ACTUAL OUTCOME
				and protected in a buffer zone			
• Palynological and phytolith assets • SEE ALSO SOER REPORT, CHRS AND HERITAGE MANAGEMENT TABLE, CMP	• Protect, present and interpret the palynological assets of the site.	• To create understanding and enhance the enjoyment of the palynologicalical assets of the site • To protect and enhance these assets	• SAHRA	• Provide protections for sensitive sites as described in SOER Table and Heritage Management Table in CMP • Contact specialist to provide story line for museum display • Incorporate themes on dating and climatic change using palynology and phytoliths • Provide on-site information at sites that have yielded data • Incorporate such sites in hiking trail and provide knowledgeable guide • Protect the deposits from bioturbation, erosion, percolating rainwater, collapse and trampling as described in the SOER Table (CHRS) and Management Table, CMP • Ascertain that no further speleothems are removed from the underground	Medium	• Well-protected, well interpreted and well displayed palynological assets • Enhanced understanding of the value of the assets • Sites protected • Deposits preserved for future sampling as new techniques become available • Speleothems available for dating studies	

STRATEGY	WHAT TO DO	WHY DO IT	PRIMARY RESPONSIBILITY	HOW TO DO IT	PRIORITY	EXPECTED OUTCOME	ACTUAL OUTCOME
				cave as they may be required for dating or palaeoclimatic studies			
• Historical assets	• Protect, present and interpret the historical assets of the site. • Assemble archive of Oral Traditions	• To create understanding and enhance the enjoyment of the historical assets of the site • To protect and enhance these assets • To collect oral traditions, e.g. the opposition history to the Mangope Regime before those knowledgeable pass on • To create an archive of oral traditions	• Manage Authority to point out gaps in historical knowledge to Universities so that students can do research • Young local people can be commissioned for training to undertake the task	• Contact specialist or interview oral history practitioner to provide story line for site museum • Make an effort to collect oral traditions as these may be at risk	Medium to high	• Gaps in knowledge filled • No corpus of collated traditions exist, new contribution to historical knowledge made • Training and work opportunities for young people • Enhance knowledge of history	
• Mining history	• Protect, present and interpret the mining historical assets of the site. • Stabilize and restore old mining infrastructure • Contact PPC as suggested in CHRS to assist with displays and restorations of mining	• To create understanding and enhance enjoyment of the historical mining assets of the site • To emphasise the role that mining has played in liberating the palaeontological significance of	• Management Authority to source funding, SAHRA to stabilise	• Stabilize and restore selected mine buildings to serve as reception area, site museum, arts and crafts showcase and sales point	Medium	• Greater understanding of the role of mining in the discoveries at the Taung site	

STRATEGY	WHAT TO DO	WHY DO IT	PRIMARY RESPONSIBILITY	HOW TO DO IT	PRIORITY	EXPECTED OUTCOME	ACTUAL OUTCOME
	infrastructure as suggested in the CHRS	the site • To provide tourists with a more complete and interesting experience					
• Architectural heritage assets	• Encourage the refurbishing of restoration-worthy buildings in the historical Taung village	• To provide additional value to the tourist experience • To service tourist needs at Taung • To provide opportunities for SMME's and entrepreneurs who could provide interesting accommodation, tea garden, sales points, general dealers and off-site caravan park	• Management Authority to initiate	• Stabilize and restore selected mining village • Identify restoration-worthy buildings • Involve local residents with planning			
• Biodiversity: Plants	Protect the integrity of the plant communities at the site from degradation	• To maintain plant diversity • To prevent bush encroachment • To prevent unsustainable impacts of grazing, fuelwood gathering and traditional plant collection	• Management Authority to initiate plant diversity projects • Approach "Working for Water" for help with alien vegetation and weed control • SAHRA to encourage new research on ethnobotany • Overall	• Create a buffer zone to preserve the Kalahari Thornveld plant community on the Ghaap Escarpment crest • Do not allow development in the ecologically sensitive Equus Cave area • Preserve rare and endangered species habitats • Monitor wood	Medium	• Preserved Kalahari Thornveld vegetation • Prevention of bush encroachment • Management of grazing to sustainable levels • Control of wood gathering to sustainable levels • Preservation of rare and endangered plant habitats	

STRATEGY	WHAT TO DO	WHY DO IT	PRIMARY RESPONSIBILITY	HOW TO DO IT	PRIORITY	EXPECTED OUTCOME	ACTUAL OUTCOME
			Management Authority (OMA) to initiate the public participatory programme in order to manage those aspects of biodiversity management which impinge on the local resident community	gathering to ascertain sustainable levels, restrict wood-collection to planned areas • Encourage local woodlot programmes • Control grazing to sustainable levels by identifying grazing areas, or exclude cattle completely except from watering points • Ascertain and control the gathering on ethnobotanically important species to within sustainable limits • Plan and lay out a hiking trail (using expert advice) which exposes the botanical heritage of the Taung site • Label trees and woody shrubs • Provide on-site information boards at or near interesting features, especially in the vicinity of a special "outdoor classroom boma" • Create a programme for the		• Eradication or control of alien vegetation • Increased awareness and appreciation of botanical heritage of site • Increased knowledge of traditional healing plants and ethnobotanical uses	

STRATEGY	WHAT TO DO	WHY DO IT	PRIMARY RESPONSIBILITY	HOW TO DO IT	PRIORITY	EXPECTED OUTCOME	ACTUAL OUTCOME
				eradication and control of alien vegetation • Use local labour in control programmes • Approach an expert to provide a story line for the museum			
• Biodiversity: animals	• Preserve, protect and present the zoological heritage resources of the site	• To provide greater understanding of animal biodiversity • To retain opportunities to study living communities of animals, e.g. resident baboon troop, nesting black eagles, bat colonies, and amphibians, etc.	• Management Authority to initiate animal biodiversity projects • SAHRA to encourage new research on animal ecology, e.g. baboon troop, bats, eagles and other significant species • OMA to initiate the public participatory programme in order to manage those aspects of biodiversity management which impinge on the local resident community	• Initiate baboon troop survey to determine territorial range • Establish impacts of fencing the site on wild baboon populations • Post warning signs about feeding baboons • Provide site ranger to see that instructions are obeyed • Establish likely impacts on bat colony before allowing tourists into old mine shaft and underground cave • Establish likely impacts on resident black eagles and do not route hiking trails above the nesting site	Medium	• Preservation of animal biodiversity • Maintenance of baboon troop • Continued use of eyrie by black eagles • Continued use of old mine shaft and underground cave as bat colony roosts • Enhanced quality of visitor experience	
Issue: Management of Biodiversity - general							
• Manage the fauna and flora of the heritage property in	• Identify rare and endangered plant and animal	• To assist in species protection	• OMA, National Parks Board, Department of the	• Field surveys • Create a buffer zone for animals	Medium, then ongoing	• Improved protection for rare and endangered	

STRATEGY	WHAT TO DO	WHY DO IT	PRIMARY RESPONSIBILITY	HOW TO DO IT	PRIORITY	EXPECTED OUTCOME	ACTUAL OUTCOME
order to ensure and maintain biodiversity while allowing and maintaining sustainable land use	communities and develop action plans to maintain such species, communities and their habitats • Consider local eagle baboon and bat colonies • Provide animal-proof litter bins and clear litter and rubbish regularly • Provide information on such species	• To prevent animals such as baboons, crows, starlings, etc from becoming problem animals • Improve public awareness and appreciation of biodiversity	Environment	and plants around site • Assess vulnerability of plant and animal communities before planning tourist infrastructure • Clear litter regularly • Place appropriately worded notice boards about feeding animals • Provide animal-proof litter bins • Provide information on biodiversity		species • Safe use of the site by people and animals • Improved public awareness, appreciation and enjoyment	
Issue: Biodiversity: Alien vegetation							
• Minimize the impact of invasive aliens and weeds within the site and enhance the integrity of its values	• Note: The commonest and best shade tree in an otherwise unbearably stark, arid and sun baked quarry environment is the alien *Schinus molle* This tree is one of very few that does well in the harsh quarry environment. They should be noted as part of the cultural landscape. If eradication is contemplated, this should be done gradually • Identify and allocate priorities to	• To identify and prioritise key problem areas • To prioritize a strategy for the management and control of weeds	• OMA, Site manager, Working for Water (DWAF)	• Field scans, consultancies, reporting • Submission of control proposals to "Working for Water	Medium	• Alien and weed problem identified and assessed • Production of alien and weed control plan for the site • Reduction in numbers of weeds and alien invasive plants	

STRATEGY	WHAT TO DO	WHY DO IT	PRIMARY RESPONSIBILITY	HOW TO DO IT	PRIORITY	EXPECTED OUTCOME	ACTUAL OUTCOME
	the control of problem alien species and weeds • Produce an alien and weed control management plan for the entire heritage property						
Issue: Site-specific protection and maintenance							
• Actively manage each heritage asset to ensure the protection of its values (I)	• Undertake site recording for the entire NHS and environs • Identify priority sites for immediate protection • Use site protection techniques appropriate to each resource. E.g. fencing and roofing for Equus Cave, non-disclosure for sensitive areas, etc.	• To complete the site inventory • Some sites are more vulnerable and at risk than others • To assess the State of the Environment vis-à-vis heritage assets • For effective site protection • To prevent further site deterioration	• SAHRA, DSSACS,OMA	• Site surveys by experts in various heritage areas, record in a cultural heritage resources survey and archive • Assessments of the SOER by archaeologists and palaeontologists • Discuss appropriate measures with scientists familiar with the heritage problem • Plan interventions required • Obtain quotes and funding • Obtain permission from SAHRA prior to erecting anything • execute plan	High	• Completed CHRS • Completed and regularly updated SOER for heritage sites • Sites properly protected	• Done, this project • Done, this project
• Actively manage each heritage asset to maintain the protection of its values (ii)	• Involve local community in projects to provide site protection, e.g. fencing • Control access to heritage area with	• To ensure community ownership and benefits from project • To enhance understanding of	• OMA, SAHRA	• Consultation, planning, training, doing • Negotiation and consultation with local community about fencing	High, then maintenance, and ongoing	• Clear conservation guidelines established in local community • Involvement in project, education and training of	

STRATEGY	WHAT TO DO	WHY DO IT	PRIMARY RESPONSIBILITY	HOW TO DO IT	PRIORITY	EXPECTED OUTCOME	ACTUAL OUTCOME
	a perimeter fence, gate, inner fencing, etc • Provide on-site staffing to control visitor access and protect sites	the heritage values of the site amongst local people • To ensure appropriate access • To minimize adverse impacts such as • Vandalism • Scavenging of artefacts and fossils • Trampling by livestock and people • Graffiti • Overgrazing • To improve local community and visitor understanding of the heritage values		• Provide fence, gatehouse • Provide gatekeeper, site supervisor, heritage monitor. • Employ local community members		appropriate staff	
Issue: The Management of Research							
• To accommodate the research needs of scientists into planning • To manage the impacts of research on site significance • SEE ALSO APPENDIX 4-THE MANAGEMENT OF RESEARCH AND RESEARCHERS	• Establish what the research requirements of active scientists across the various disciplines are, both current and future	• To ensure that research opportunities are not compromised or sterilized by not taking them into account in site planning	• SAHRA; this document	• Request that scientists submit outlines of future research plans with permit applications to SAHRA • SAHRA to liaise with OMA regarding the requirements of scientists • Avoid areas deemed sensitive by scientists for	Scientific assets of site secured	• High, if developments are planned	

STRATEGY	WHAT TO DO	WHY DO IT	PRIMARY RESPONSIBILITY	HOW TO DO IT	PRIORITY	EXPECTED OUTCOME	ACTUAL OUTCOME
				development • Take necessary steps to protect scientifically sensitive sites (see SOER, CHRS and Heritage Management Table, CMP			
Issue: Access route							
• To maintain the quality of the transit experience	• Ensure that the standard of the tarred road does not deteriorate	• To allow comfortable and safe access to the site in a standard vehicle	• SA Roads Agency, Greater Taung Municipality (GTM), OMA	• Regular inspection and maintenance	Ongoing	• Good all-weather tarred road	
	• Preserve the rural ambience of the route	• Visitor interest • To encourage and preserve vernacular architectural styles and building methods	• OMA to liaise with GTM, Ward Councillor and Local Community Forum	• Inform local residents of the cultural value of their architecture • Encourage use of traditional buildings as accommodation • Ensure traditional style, building materials and authenticity	Ongoing	• Route on which local building styles can be seen	
	• Ensure that signage is adequate, informative and aesthetically designed and placed	• To provide good directions to site and information to tourists • To provide certainty that tourists are following correct route • To prevent people from becoming “lost”	• SAHRA and Tourism Board to decide on content and design of signs • GTM to organize for placement	• Permission to erect signs in road reserve is required from SA Roads Agency • Avoid too many, too large, obtrusive signs which cause a negative visual impact	Ongoing	• Well signposted route • Tourists can find the Taung Site without problems or delays	

STRATEGY	WHAT TO DO	WHY DO IT	PRIMARY RESPONSIBILITY	HOW TO DO IT	PRIORITY	EXPECTED OUTCOME	ACTUAL OUTCOME
	• Regulate informal signage erected by local inhabitants, if this becomes obtrusive or confusing	• To maintain quality of transit experience	• OMA, GTM, SAHRA, Roads Agency	• The aim is not to be prescriptive or impose uniformity but to preserve visual aesthetics	High	• No confusing or obtrusive signs	
• To maintain road safety for users of the access road	• Impose and enforce a speed limit because of large numbers of children, pedestrians and stray animals	• In the interest of road users and local inhabitants	• GTM, Roads Agency	• Speed limit needs negotiation • Speed limit needs enforcement • Keep stray animals off the road	High	• Safe transit route	
• To provide a safe lay-by from which the Heritage Site may be viewed	• Create a lay-by on the approach to the Thabasikwa Bridge (see Fig. 9 CMP)	• To provide a safe viewpoint from which the entire site can be viewed	• GTM, Roads Agency	• Negotiated the construction (scraping, clearing) of an embayment where a car can be safely parked • Site must be chosen with respect to the most informative view	Low	• Safe off-road parking at view point	
• Ensure that all roads and associated infrastructure do not detract from World Heritage values, and are sympathetic to the social, cultural and natural values of the area	• Develop and establish a process for early assessment of new proposals • Include mechanisms for stakeholder input in the process of proposal assessment	• To facilitate a process which avoids duplication of effort and minimises expenditure whilst controlling quality • To ensure that social, natural and cultural values are addressed	• OMA,GTM, SA Roads Agency, identified stakeholder input	• Liaison and linkage of relevant stake-holders into project management • Develop a process for consultation with relevant stakeholders	Medium, then ongoing	• Linkages with local and provincial government and project management • No adverse impacts on identified values	

STRATEGY	WHAT TO DO	WHY DO IT	PRIMARY RESPONSIBILITY	HOW TO DO IT	PRIORITY	EXPECTED OUTCOME	ACTUAL OUTCOME
Issue: Water resource management							
• Provide access to water with minimal impact on heritage values	• Identify all stock watering places • Identify preferred access routes for people and livestock • Develop solutions for each problem watering place • Assess possibilities for alternative water infrastructure • Contact local traditional healers concerning the frequency, times and nature of the use of Blue Pools for ritual purposes	• To allow multiple uses of site which do not affect the heritage values • To foster and support traditional practices if they do not impact on heritage values	• OMA, Public Participation team or specialists	• Create a communities forum and allow OMA to establish direct linkages with it	High, then ongoing	• Authorized and controlled use of site and water for ritual purposes	
Issue: Waste management							
• Manage waste so that there is minimal impact on the heritage site and surrounding	• Review current waste disposal methods • Develop an environmentally acceptable and ethical waste disposal management practice	• to protect the natural, environmental and heritage values of the heritage site	• OMA, GTM	• Assess types of waste, volumes • Identify appropriate waste disposal methods • Implement preferred waste disposal procedures – attempting recycling	Medium, high if development	• Improved and environmentally sound waste management	

APPENDIX 4

THE MONITORING OF RESEARCHERS AND RESEARCH

TITLE OF REPORT

APPENDIX 4: THE MONITORING OF RESEARCHERS AND RESEARCH

THE MANAGEMENT AND MONITORING OF RESEARCH AND RESEARCHERS AT THE TAUNG SKULL FOSSIL SITE

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SUMMARY

This report is based on a similar report that one of the project team prepared for the cradle of Humankind. As the site cluster of the "Cradle" sites, the Makapan valley in Limpopo and the Taung Skull Fossil Sitein North West will ultimately have to be managed conjointly, it makes sense to consider the management of research and researchers in much the same way across the site cluster.

- This report provides an outline of the roles played by research and researchers in transferring important aspects of site-significance from the sites themselves to various archives and repositories.
- It outlines the status quo regarding current research procedures.
- The reasons for the need for a management and monitoring process are outlined.
- A management and monitoring process for all research is proposed.
- Various problems associated with managing research are outlined.
- The areas of competence required by Heritage Site Inspectors is outlined.
- A suggested structure and composition of a Research Management Committee and its terms of reference is provided.
- The need for a central registry of research projects is debated. Finally, an alternative system, successfully in operation for some time at an equivalent World Heritage Site, (Olduvai Gorge in Tanzania), is outlined, and its advantages and disadvantages are discussed.

1 INTRODUCTION

- There is at present no overarching management structure (besides SAHRA for archaeology and palaeontology) which deals with the issue of research in the Taung Skull Fossil Site. Many areas of research deficiency have been identified as "gaps" in the Cultural Heritage Resources Survey (CHRS, this report), and several areas of research have been recommended in "The Way Forward" and Executive Summary sections. These gaps will all require scientific research in the near future
- Future research is likely to embrace a broad spectrum of topics including geological, geomorphological, hydrological, biological, ethnobotanical, historical, oral traditions, political history and other areas. Only archaeological, palaeontological and to a quite limited extent, geological research, is regulated by SAHRA. Even so, there are areas of heritage research that are not being managed and monitored. The SAHRA clearly does not have the capacity to manage the full spectrum of research which the Taung Skull Fossil Site will ultimately generate.
- For this reason, research in the TS WHS will require regulation by a Research Management Committee or other similar structure. SAHRA is not the appropriate organisation in which to position such a structure. The reasons for recommending that a Research Management Committee be brought into being are discussed more fully in section 3.

- The successful nomination of the Taung Skull Fossil Site rests entirely on the demonstrable site significance of its Key Fossil Sites. Such significance resides in the information encapsulated in the weathering remnants of ancient tufa deposits and their calcified infills, which contain fossilized bones, teeth, stone tools and sometimes, vegetal remains.
- The potential significance of any fossil site is only realised by the time-consuming, painstaking, expensive and inherently destructive process of scientific excavation. Until such time, the scientific significance and educational value of a site remains only an unrealised potential, e.g. Black Earth Cave

- Through this specialist process, site significance, or a substantial portion of it, is gradually transferred, in the form of fossils, stone tools and information-yielding residues, from the site itself to off-site repositories such as museums and Universities. Here, processes such as preparation, identification, description and publication, curation, storage and display, usually follow.
- Eventually, all that remains is a series of holes in the ground, or pinnacles of tufa deposit with calcified remnabts od cave deposits, the heritage significance of which is by no means obvious - particularly to uninformed observers. Residual significance is retained in the "sense of place", i.e. the knowledge that the remote quarry sites are the source of "ancestral fossils".
- Clearly, the process of excavation, no matter how scientific, has the potential to damage, destroy or diminish site potential, and permanently impact on significance. As such, it requires management and monitoring. It is of crucial importance that researchers are adequately trained in field excavation techniques and particularly the specalist techniques required for the excavation of concrete-hard heavily calcified breccia. (The original breccial samples were obtained by the simple expedient of blasting them out)
- The repositories, which are designated by SAHRA, ultimately become the custodians of valuable heritage objects and the guardians of site significance.
- As custodians, the repositories are responsible for the preparation, cataloguing and accessioning, curation, storage, display, access to and loans of the heritage material from the Taung Skull Fossil Site.
- These duties involve many processes which may impact on heritage significance. Even studying fossils may have negative impacts: for example, the Taung fossil, the teeth of which have become worn with oft- repeated measuring with metal calipers.
- As final guardians, repositories also require monitoring, particularly in view of the fact that SAHRA's jurisdiction over the fossils does not extend into the repository, which is autonomous in its decisions regarding preparation techniques, etc. SAHRA does, however, retain the right to designate repositories for excavated Heritage objects. However, there is no guarantee that repositories that initially meet the minimum standards required by SAHRA are permanently in the position to preserve minimum standards. Fossils and artefacts collected prior to the 1999 Heritage Act legally belong to the repository, those collected since that date belong to the State. This means that underfunding of repository institutions may ultimately result in loss of significance due to poor preservation and presentation
- Site significance also resides in the number and quality of scientific publications that research on fossils, lithic artefacts and sediments generates. It is only at this stage that site significance reaches full fruition. It is only through publication that site significance becomes established and entrenched, and part of the scientific and public psyche.
- Peer review of the results of research, often by the most stringent of critics, takes place at this point. The recovery process and sampling procedures by which the results are obtained are not, however, subject to similar scrutiny, either by peers or formal monitors.
- As things stand at present, it is usually impossible to verify the results of e.g. palaeomagnetic dating or other radiometric dating techniques because there is no arrangement to preserve witness samples in a public archive. Other workers are prevented from such verification of results by the exclusivity of the site permitting system: they have no access to the original sample, and they may not be able to acquire an independent sample. The permitting system offers the possibility to indefinitely renew permits which effectively means that one person or a team can occupy a site indefinitely to the exclusion of others. This is an apparent weakness in the permitting system. A solution might be to provide for a category of permit entitled "Independent Verification Sampling permit " or something like it.
- The conservation of site significance is therefore a process which needs to encompass the management and monitoring of all the processes entailed from the removal of an in situ artefact or fossil in a site, to a specimen in a museum collection or display, as well as the publication of research results.

- The promotion, facilitating, and funding of research ought to be seen as an integral part of ensuring site significance. Without it, there would be no story to tell.
- The promotion and funding of research is thus crucial to the continued vitality of the TS NHS and its universal significance.
- To add value and to ensure a meaningful tourist experience of the depleted TS NHS fossil sites, some significance, in the form of casts and original fossils, should be returned (on loan) to site the museum and interpretative centre.

2 THE STATUS QUO

There is at present no overarching management structure that deals with the issue of general research in the Taung Skull Fossil Site. Only archaeological and palaeontological research is to a certain extent managed and monitored by SAHRA. This chapter outlines the Status Quo, and the role of repositories in conserving heritage significance. This is followed by an identification of problem areas which exist in the present system.

2.1 Researchers and their activities: research falling largely under SAHRA

Legislation regarding the protection of archaeological and palaeontological material in sections 35, 36 and 32 of the National Heritage Resources Act requires that permits are obtained from the relevant heritage resources authority for any disturbance or intervention (NHRA Act, 1999). The purpose of the permit is to keep a record of the excavation (an inherently destructive technique) and collection of archaeological and palaeontological material to ensure that proper scientific standards are maintained.

2.1.1 The Permitting System

The following guidelines to permitting policy have been established:

- There must be a legitimate reason for doing the work (Note that there may be differences of opinion as to the term "legitimate". Also, SAHRA will not be in the position to assess whether or not research topics outside its Heritage brief are "legitimate")
- Permits for archaeological and palaeontological research will only be issued to those whom SAHRA deems to be qualified archaeologists, palaeontologists or geologists who have the necessary expertise to do the work as well as the subsequent analysis. If the applicant is not suitably qualified, it will be necessary for that person to obtain the services of a qualified person. A qualified person for archaeological digs would be one who has a recognised MA or MSc degree in archaeology, plus at least three years' experience in the field.
- The PI or the excavator or a suitable member of the team should have appropriate experience in the specific area of specialization, e.g. palaeoanthropology, Acheulean, Middle or Later Stone Age, early Herder or early Farmer or Historical archaeology.
- The research proposal and permit application must be accompanied by a full motivation giving reasons for the work, the nature of the work and the extent of the work.
- Recovery methods that ensure the greatest possible amount of information must be used. Conservation of all recovered objects and associated data and records must be provided for (This aspect not monitored. The author knows of a case (in Gauteng) of discarded collections because the corresponding catalogue had been lost. Monitoring of repositories is not done)

- Repository Institution and researcher have to make arrangements regarding the preparation, curation and field records associated with that material. Thereafter, the material is to be managed by the institution and not the permit holder (SAHRA does not have the capacity nor the trained human resources to perform this function. The repository institution is responsible for a wide range of processes which impact on fossil and artefactual material and on the archiving of field data)
- The excavator or collector must obtain permission from the landowner to undertake the work, and the HRA is not responsible for the actions of the permit holder on site.
- The Investigator must fill in all excavations made and fence the site for the safety of persons and animals. This, and the stabilization of the site has to be done to the satisfaction of both SAHRA and the landowner. The SAHRA guideline is quite specific in this regard: the PI is responsible for fencing the site and for the safety of persons and animals. This requirement may not apply in the case of hard-breccia palaeontological sites, because the sections exposed are in themselves of significance.
- Stabilization should minimally include lining the deposit with geotextile, or sandbagging of sections with army bags containing 2% cement/sand and sewn into large sausages of geotextile. (This has not usually been done and there are many unstable sections in the TS NHS sites)
- Researchers to supply the HRA with the written consent of the landowner indicating that the landowner has understood the nature and duration of the project.

2.1.2 Issues that need to be addressed

Aspects of access

- Access arrangements: gate keys and their limits of distribution
- Arrival-departure announcements
- Appropriate hours of visiting and working on site
- Type of vehicle permitted, registration numbers, use of roads: speed-limit and no-go areas
- Numbers of guests, visitors and workers allowed on site
- Conditions for residing on the property (e.g., no camping, no open fires, etc.)
- Fire management and control
- Trespass beyond confines of heritage Site
- Positioning, erection, maintenance and demolition of structures on site
- Use of firewood
- Access to water, electricity
- Waste management: containing wind-blown waste. Excavation areas as well as support staff accommodation to be monitored. Sorting and removal of waste.
- Arrangements for sanitation
- The management and control of researcher's support staff resident on the property: controls necessary
- Positioning and maintenance of waste dumps
- Provision of fencing where researcher's activities cause a risk to landowner's livestock or game
- Disturbance in any way of livestock or resident game
- Disturbance of flora or substrate

Aspects of research and excavation

- Rehabilitation of site: researcher's plans

- Researcher's EIA plan for his activities on site
- Positioning and maintenance of waste dumps
- Provision of fencing where researcher's activities cause a risk
- Disturbance in any way of livestock or resident game
- Disturbance of flora or substrate
- Rehabilitation of site: researcher's plans
- Changes made to the contours of the hillside by the sorting, re-distribution and removal of breccia dumps so that decisions about re-filling of trenches, placement of new dumps and contouring can be taken jointly. The question of refilling would also have to be discussed with SAHRA and the Research Management Committee
- Researchers' future research plans

2.1.3 Standards of Excavation and Removal

- The permit holder is at all times responsible for the excavation work and the objects recovered and he/she or the authorized representative (names to be furnished to the SAHRA) must be present at all times during the work. The work done by the "Field Schools" students utilizing the heritage sites also requires monitoring.)
- The permit holder must supervise all excavations, castings, removals, sieving and sorting and ensure that when sieving, the smallest mesh suitable for the particular deposit is used. This is not always the case. The smallest suitable mesh at the Fossil Sites would be one which would ensure the recovery of isolated microfaunal teeth, when working decalcified or soft breccias.
- Permit holders must not excavate or remove more than 50% of the original in situ deposit.(We recommend that part of the research motivation should be an assessment of the impact the researcher's study will have on site significance, and that no more of the deposit be removed than is necessary to answer valid research questions. The 50% recommended in the guidelines document (SAHRA 2000a) could remain as an upper limit, and the need to retain adequate witness sections is vital. Recently (in Limpopo), the whole of a particularly significant portion of a witness section was removed by a worker who wanted to "take a sample". This type of action supports our recommendation that the sampling procedure and permitting system currently required by SAHRA needs to be more stringently applied and monitored.
- Excavators need to keep full field notes. Copies of field note books, surveying records, maps and photographic records must be lodged with the repository, where it should form part of the permanent archive. This type of record is quite distinct from the annual progress report. In the past, this guideline has seldom been enforced and no such archive is in the making.
- The format for curation, marking, cataloguing, boxing, storage, accessioning as well as the preparation methods need to be discussed with the repository. There are fairly onerous financial implications for repository institutions in accepting collections.
- The positional recording of archaeological finds both spatially and in three dimensions needs to be recorded. These records must be housed in the repository archive. They must be forwarded to the central database which maintains the cultural heritage resource register and inventory.(The manner of recording finds in three dimensions needs to be monitored).
- The heritage site needs diagrammatic and photographic recording. These data must also reach the archive.
- The onus is on the researcher to leave the site neat and tidy both during and after an excavation. The researcher has to fill in the excavation or stabilize the sections unless granted exemption by SAHRA.
- Where there is to be public access to the site, the researcher has to take steps to arrange for the protection and interpretation of the site, for example by providing boardwalks and

interpretive signage and pamphlets. This does not imply that the researcher need be financially responsible for such provisions.

2.1.4 Report Back System

- Every permit holder must submit to SAHRA an annual interim progress report.
- Within one year of the expiry of a permit, the permit holder must submit to SAHRA a systematic final report.This has to include:
    - A detailed site plan
    - Accurate drawings of the stratigraphy
    - Descriptions and table of objects removed
    - Written summary of the work and the conclusions reached
    - Illustrations and photographs
    - A statement that the site record form has been submitted to the relevant regional archaeological and palaeontological recording centre
    - The name and address of the repository institution and a receipt furnished by that institution.
    - Publications generated by the research for which the permit was issued have to be submitted for the SAHRA National Heritage Library.

2.1.5 Rehabilitation requirements

- It is the responsibility of the excavator to fill in or otherwise stabilise the trench (see section 2.1.1)
- This has to be done to the satisfaction of the landowner and SAHRA
- Stabilisation may be done by lining the trench with geotextile, or by sandbagging (see section 2.1.1)

2.1.6 Monitoring System

The Heritage Resources Authority does have a monitoring function which

- Should monitor work done in terms of permits issued for excavation, removal, etc
- May cancel or refuse to renew a permit if conditions are not met
- May submit for peer review unpublished reports if it is not satisfied that the information has been adequately reported

However, actual inspections of work in progress on site and monitoring of all the requirements of excavators has not been hitherto carried out by SAHRA. (We recommend that such work be made "anonymous" and "credible" by a de-personalised, de-institutionalised Monitoring team comprising SAHRA, DACE, DSSACS and a monitor appointed (even if on an ad hoc basis) by the proposed central Research Committee. SAHRA and DSSACS will not have the capacity to monitor general research, e.g. on cave sedimentology and radiometric dating, on their own).

2.1.7 Issues arising from the present system

There are a number of problems which arise from the current system of conducting research, many of which could be circumvented by having a dedicated central Research Management Committee:

- Permitted excavators assume the right to exclude all others from even visiting the site.
- The permitting guideline allows the researcher to expect that the permit may be renewed for further periods where the research justifies this, except where there has been bad practice or contravention of the code of ethics. While this seemingly perpetual renewal clause may ensure the necessary continuity of purpose at any site, it also leads to the establishment of non-assailable "territories" to the exclusion of other researchers who may have research interests. The SAHRA guideline states that permits should not be given to other workers on the same site, while the first permit holder is working there.
- Some permit holders manage to maintain their security of tenure this way for excessive periods, during which time "maintenance research" allows them to maintain their exclusive rights. The solution would be to link tenure to demonstrable products in the form of publications.
- The permit licence to "sole rights" applies just as much to specimens (individual important fossils) as it does to the sites themselves, and researchers report that "sitting " on fossils is a problem - the Taung Skull itself is a case in point..
- The situation has arisen where large volumes of breccia can be generated in the pursuit of target taxa. There is a bottleneck in the preparation of this material which is accumulating. New researchers also prefer to work on in situ breccias where the provenance of recovered materials is certain and there is a tendency to ignore ex situ blocks. In the past, the miner's dumps were seen as containing a large part of the story and were also carefully worked through. This important aspect of the sites should not be allowed to be overlooked, and there is a special case for proposals which undertake to work up this material first, as it does not require invasive techniques.
- Recovery methods are not stipulated by the permitting system - the researcher is not expected to rationalize these in the application. The guideline mentions that "SAHRA expects qualified persons to know what recovery methods are best' (SAHRA 2002 p.2). This expectation is sometimes not met in reality. There is a need in the permitting system for the applicant to detail how he or she intends approaching the destructive process of excavation and exactly what recovery techniques will be employed. The appropriateness or otherwise of the proposed recovery method is best decided at the Research Management Committee level.
- There appears to be no monitoring in the field of whether or not recovery methods are appropriate, or whether stabilising methods are appropriate.
- Inappropriate methods can result in loss of irrecoverable information.
- "One-Man Shows" are possible, even encouraged by the terms of the permitting system. This means that there is no need for the researcher to ensure that "all research stops are covered". There is no need, for example, for a specialist sedimentologist to check the changes in sediment matrix, or for samples to be taken whilst work is proceeding, or for scientists from other disciplines to become involved. The one-man show simply gets on with the process of taking out deposit and searching for the target taxa (usually hominids first, and then identifiable mammalian fragments).
- "One Man Shows" tend to focus the excavation in particular areas for which the P.I. is specially qualified rather than spreading the research inputs across the areas of expertise provided by a comprehensive team, covering all the areas of possible information extraction.
- "One Man Shows" allow the excavation to become extended into areas for which the P.I. is not qualified.
- There is no independent and overarching management structure to oversee, manage and counterbalance the difficulties caused by interpersonal frictions. This body needs to be one to which all researchers are answerable. The frictions polarize departments and institutions and create hostile camps into which innocent students are inevitably drawn, impacting unfairly on

the research choices they are free to make. The hostilities are counterproductive and need strong and impartial management from above.

- In the permitting system, the very real differences between the conditions of an archaeological type of excavation as opposed to a hard breccia type of excavation need to be borne in mind. An additional factor is that the archaeological training in recovery technique is far more strongly developed in undergraduate and other preparatory courses whereas training in palaeontological recovery techniques, particularly that of hard breccia recovery, has not yet been adequately developed.

3 THE OBJECTIVES IN MONITORING RESEARCH AND RESEARCHERS AT THE TAUNG SKILL FOSSIL SITE

- To ensure the preservation of site significance, whether on-site or transferred.
- To ensure that proper scientific standards are maintained
- To ensure that valid key questions are being asked
- To ensure research quality: appropriate peer review of work undertaken on a public asset, and a National Treasure
- Ensure progress in scientific discovery and reportage: realizing and recovering site significance
- To ensure responsible and sustainable excavation techniques:
  - Some material left to preserve site significance (50% maximum removal allowed by SAHRA
  - Some material left to serve as scientific witness material, to ensure and enable results to be independently verified
  - To ensure that not more material is removed than is required to prove the point of the research programme
- The prominence of a World heritage Site and the universal importance of the sites and their contents demands such solicitousness.
- The need to promote the attitude that excavation is a privilege, not a right. Fossil material is not simply there for the taking
- The need to nurture the idea that sampling is also destructive, and that it is a privilege, not a right
- To insist on the need to consider environmental impacts of research
- The need to define a formal modus operandi for researchers and landowners, and the OMA. This aspect has been neglected in the past.

4 THE MANAGEMENT AND MONITORING OF RESEARCH: A PROCESS

The following process would be appropriate if a conjoint, central Research Management Committee could be brought into being:

1. A researcher comes up with a research proposal, either as an individual - a "one-man - show", or as a "team proposal" The SAHRA guideline document for archaeologists favours, by preference, one person (p. 3., 2.1 SAHRA 2000a). However, in the case of palaeontological Research, this means that "not all the stops are covered", and certain significant materials remain unresearched - see section 2.1.1

2. The proposal is submitted to an ad hoc Screening Committee (a sub-committee of the Research Management Committee) where it is screened and either
   - rejected outright
   - referred back to the researcher for modification
   - accepted and referred forward for funding by one of a number of funding bodies, followed by serious consideration by the Research Management Committee for the Taung Skull Fossil Site

   Proposals would have to be prepared for consideration on an annual basis, and submitted in time to secure funding before being submitted to the full Research Management Committee. This could convene at the same time each year to consider the scientific merit of a batch of proposals rather than be disturbed at sporadic intervals throughout the year.

3. The Research Management Committee then evaluates and adjudicates on the following areas of consideration:

   - bona fides and professional status and competence of the individual, or if it is a team proposal, a consideration of
   - the bona fides of the Principal Researcher and all co-researchers on the team for the particular research areas stipulated, according to SAHRA's permitting requirements (SAHRA 2002a)
   - Experience in project-related areas: does experience support the project and predict success?
   - Skills, either individual or collective
   - The nature of the key questions being asked
   - The methods proposed to answer them
   - The precise excavation and recovery methods to be used
   - Capacity of team members and fossil preparators to support the research programme
   - The committed time available to accomplish the task
   - The funding available: is it adequate to cover all aspects of the work programme? It is important to remember that research funding is hard to come by and extremely limited. The budget for items peripheral to research naturally cuts into the budget available for productive research. This very easily reaches the points where digs become unsustainable, at least for local researchers. This has the potential to undermine scientific development of the TS NHS. There is already a tendency for foreign researchers to take research kudos, primarily because of the relative ease with which funding can be obtained in, for example, the United States or the United Kingdom.. However, this is not in keeping with ideas of African Rennaissance. Research funding is an integral part of ensuring continued site significance.
   - The structuring of the research proposal to build capacity and transfer skills by including

    - Local team members
    - Local students
    - Local communities
    - It would be humanitarian if disabled persons could be considered, as far as possible, e.g. for employment as fossil preparators although this obviously could never a condition of granting or witholdoing a permit.

- The quality of the environmental plan, including rehabilitation of the site.
- A statement of the impact that the research programme will have on the integrity of the site
- The plans to provide for a witness section and/or a demonstration stratigraphic profile with motivations for choice. This may well require modification as work proceeds
- A statement as to the use of ex-situ as opposed to in-situ breccias
- Post-excavation stabilization of work area and the techniques to be used to accomplish this
- Plans to deal with residues: dig and dump no longer permitted
- A discussion of the sampling to be undertaken, and sampling techniques.
- A nomination of the investigating laboratory, together with a letter of acceptance for responsibility
- A nomination of the repository of the tested samples, bearing in mind that some processes are destructive. Sample results are part of the site record
- A nomination of the repository for the "witness sample" - all good scientific research must be independently verifiable. SAHRA retains the right to approve the nominated repository or otherwise. Witness samples are part of the site record.
- A proposal regarding the excavated fossils and artefacts, etc. Once again, SAHRA retains the right to designate the repository
- The submission of a time-frame to complete the investigation and reportage on the excavated material (the problem is "sitting" on fossils for decades. This has the potential to hamper the progress of research)
- An application for the necessary permits: from SAHRA, where appropriate
- Letter of acknowledgement from the landowner, concerning the notification of excavation plans and notificationof the nature and duration of the proposed project
- The researcher-landowner or researcher-OMA "Memorandum of Agreement" The items to be addressed in this document have been outlined in section 3.1.1 above

The project is assessed and then either referred back to the researcher direct, or sent forward to SAHRA (as well as to the Overall Management Authority). As with the Screening Committee, there would be no need for this Committee to convene more than once or twice annually, during which time new research proposals as well as report backs from researchers and research inspectors could be dealt with..

4. Consideration of the project proposal by SAHRA

- SAHRA will receive a proposal that is thoroughly assessed in a number of respects.
- SAHRA approves the researcher-landowner or researcher-OMA "Memorandum of Agreement"
- SAHRA then approves or refers the proposal back to the Research Management Committee and researcher for modifications
- If approved, SAHRA provides the necessary Excavation Permit and names the repository for artefacts and samples

- There is a need for SAHRA to clarify the criteria for this stipulation, i.e. the reasons for appointing one repository rather than another.

5. The researcher then proceeds with the dig

   There is a problem in that the funding and approval of the project are often linked: funding will not become available until after research proposal acceptance, hence the need for provisional approval by the screening committee.

6. Report Back Procedures

   - Researchers submit an annual progress report, both to the central Research Committee and SAHRA
   - Researchers submit an annual proposed work plan to the Research Committee and SAHRA
   - These two reports should be submitted to SAHRA, to the Research Management Committee for the Taung Skull Fossil Site, to the Overall Management Authority. The Institution hosting the researcher should also receive copies.

7. There should be a process for and right of appeal. Who will fulfill the role of the ultimate arbiter, in the situation where dispute arises?

5 THE MONITORING OF RESEARCH AND RESEARCHERS: PRACTICAL CONSIDERATIONS

This section details a process for the review and monitoring of research activities taking place on the fossil sites as well as laboratory procedures. The cataloguing, curation and display of heritage items should also be subject to review. This falls under the Monitoring and Review of Repositories.

5.1 The Competencies required of Heritage Site research Monitors

- Knowledge of the procedures involved in excavation calcified (hard) breccias
- Knowledge of the procedures involved in the excavation of decalcified breccias
- Knowledge of appropriate recovery techniques for both types of excavation
- Excavation of sediment
- Sieving techniques, both wet and dry
- Sieving residues (e.g. for micromammalian and other microfaunal teeth)
- Knowledge of the appropriate and smallest mesh suitable for different deposits
- Three-dimensional control of the excavation: traditional as well as high-tech methods
- Recording techniques: excavation progress
- Recording techniques: removed breccia blocks and heritage objects
- Maintenance and stabilisation of excavation edges
- Maintenance and stabilisation of excavation walls and hanging walls
- The processing of hard breccia
- The appropriate use or otherwise of power tools such as Pioneer Drills, "Jackhammers"
- Feather and wedging techniques
- The need for and utilization of explosives (professional peer review, by a non-project related independent party, of the techniques used is required)

- The treatment and processing of the overburden: this may well represent decalcified breccia and its atrefactual and fossil content. It must not simply be discarded without careful examination.
- The storage of the overburden
- The treatment and storage of residues derived from the excavation (hopefully sterile)
- The appropriate storage, temporary or otherwise, of breccial blocks
- The preparation of breccias, both wet processes (chemical) and dry (mechanical)
- The selection of witness sections and their appropriateness
- Sampling techniques: protocols when taking samples
- Marking of sampling sites
- The recording of sampling sites
- The assessment of environmental impacts of excavations (DACEL might be involved with this aspect as well)
- The impact of the excavation on site significance
- The impact of the excavation on surface drainage
- The management of erosion caused by alterationof the surface topography
- The adequacy of the researchers safety interventions
- The impacts on site stability
- The impacts on site safety - professional input will be required
- The impacts of researchers' infrastructure
- Waste disposal, solid and liquid, particularly if chemicals are used on site
- The preservation and storage of surface soil for future rehabilitation uses

5.1 The Monitoring of Repositories

This is a sensitive but nevertheless important monitoring requirement.
Monitoring areas need to include the preparation, cataloguing, curation, storage, accessibility, loan policy, and display of heritage objects, and their availability to a broader public.

This responsibility would be SAHRA'S in the case of archaeological and palaeontological material.

5.2 Problems associated with monitoring

Heritage Monitors are needed, but:
- Who will train them?
- Who will employ and deploy them?
- Who will write a syllabus?
- What background information will they require?
- What credibility will they have with the researchers/ (researchers actively engaged in research will not be eligible to serve as a monitor for that particular site)
- How will anonymity be achieved?

If the Heritage Monitoring is a SAHRA function, there is a major shortage of suitably qualified human resources. There is no extant monitor training programme.
If the monitoring function is a DSSACS function, there is a major problem. There are likely to be shortages of suitably qualified human resources, capacity and funding problems, as well as the lack of a structured training programme.

SAHRA may well be capable of monitoring some aspects of heritage site research, but what about all the other disciplines where the need for additional research has been identified?
Furthermore, the North West Province has only just established a Provincial Heritage Office. This office is unlikely to be able to perform the specialist monitoring outlined above for some time.

5.3 A note on preparators and preparation techniques

From the moment of recovery, there are a number of processes which can impact on fossils/artefacts as heritage objects, such as fracturing during the sieving process, lack of cataloguing and proper curation and the process of "preparation'. The latter process entails the removal of the fossil from its enclosing matrix of surrounding rock. The matrix may be entirely decalcified and soft, and the fossil separable by sieving or simple washing under a jet of water, but in other cases the breccia is cement-hard, requiring removal by either mechanical or acid means.

- Mechanical means entail removing the fossil by means of chipping away at the enclosing matrix with a hammer and punch, or by using vibrotools, dental drills and other micro-percussion drills to drill away sediment, or by means of an air-scribe. For fine work, a binocular microscope is required.
- The disadvantage with mechanical techniques is that preparators frequently damage the bones with the mechanical aid, leaving scratch marks, punctate holes or even breaking them.
- Chemical extraction entails the slow dissolution of the calcium carbonate cement which locks individual grains of residual sediment together, creating a formidably hard matrix. This is done in acid baths, where different strengths of acd are required for different types of matrix.
- This method is not without dangers. The calcium carbonate cement often stabilises fragile specimens, particularly those that were sun-cracked prior to fossilisation. By dissolving the cementing agent, the fossils are rendered fragile to the point of ultra-delicacy of even causing them the fall apart into numerous loose pieces.
- The acids can also easily etch the delicate surface of fossil bone. Intact bone surfaces are of particular importance to taphonomic studies, where the types of pre-fossilization damage on the surface of bones is of crucial importance. Adding new damage does not help.
- The importance of adequate training of all preparators before latting them loose on fossils cannot be sufficiently stressed. It is not simply a matter of chipping fossils out. Preparators need to be trained what to do should they damage or break fossil bones, or flake or chip them. They need to know what method to use for different types of specimen, and the quality of preservation of the fossil. Each specimen requires a decision of this sort.
- There is a problem if insufficiently trained persons are left to prepare unsupervised for too long, and in any case, all preparators should be required to undergo training courses. This should entail informing the trainees of the importance to science of the meticulous work that is expected of them.

6 THE STRUCTURE AND FUNCTIONS OF THE RESEARCH MANAGEMENT COMMITTEE

Below follows the recommended composition of the proposed Research Management Committee. The Chairman of this committee should report to the Overall Management Authority (O.M.A.) of the Taung Skull Fossil Site. The secretariat should be provided by SAHRA. This would provide the essential link with the central Management of Cultural heritage resources.. The founding Document or Constitution should ensure that the management of research remains firmly in the scientific rather than in the government domain. Ideally, the Research Management Committee should be de-personalised and de-institutionalised but there are problems connected with this, because human resources with the necessary background and qualifications are very thin on the ground. Ideally too, this committee should be positioned as a sub-committee of the O.M.A., to avoid being

perceived as favouring one institution over another. An alternative institutional positioning, given the realities of the skills situation, is outlined, with a rationale, in section 7.

6.1 Structure of the Proposed Management Committee

The Research Management Committee should include at least one member from each of the relevant disciplines: Depending on the nature of the research proposal, not all of these need be present at every meeting. Ultra-specialist expertise could be co-opted or invited as required: For the consideration of key fossil site research, the committee could be weighted in this expertise area, and decisions made by a smaller committee of relevant experts

- Botanist
- Zoologist
- Microbiologist
- Geologist
- Cave sedimentologist
- Palynologist
- Archaeologist
- Palaeontologist
- Historian
- Living culture specialist
- Ethnobotanist
- geochronologist

- At least one member each from SAHRA and DSSACS. The SAHRA representative needs to be competent in both archaeological and palaeontological fields. These might have to be "watchdog" apointments, with no voting rights.
- Representatives of key repository institutions
- Council for Geosciences
- A member of the local landowners' committee
- Business representative
- Community
- Researcher(s) - by special invitation, if the need arises

6.2 Functions of the Proposed Management Committee

- Consideration of research proposals, according to the criteria outlined in section above
- The definition of monitoring criteria for the different areas of research. Those for heritage-related research outlined above in section 4.
- Arranging for the training of suitably qualified Heritage Inspectors. Who can train the Heritage Inspectors in all these things?
- Together with the OMA, DSSACS and SAHRA, providing for the monitoring of palaeontological and archaeological research being conducted within the TS NHS. This would have to be on an annual basis at least, as well as before and after completion of the study.
- The monitoring of repositories: this could be on a bi-annual basis. The preparation techniques available and the preparators and their skills should be open to monitoring.
- Performing the initial screening of research proposals
- Giving advice on the appropriate disbursement of funding allocated to research
- Reporting back to SAHRA and to the OMA on the results of monitoring exercises.

- Creating a Central Research Registry. This would have the purpose to ensure that:
- No clashes in research topics occur
- To ensure that research is fully completed
- To ensure the best chances for publication of scientific results
- To ensure compliance with "International Best Practice"
- To regulate overseas scientists
- To ensure local capacity building. At the moment, field schools of predominantly foreign students are building capacity, but there is no concomitant corpus of local skills being built up.
- To settle disputes
- Publicity. The organisation of Public Awareness campaigns, workshops and report backs. This will help to keep the Taung Skull Fossil Site in the public psyche and should go hand in hand with fund-raising initiatives.
- To organize an annual "Taung Child's' Birthday Party, the purpose of which would be to involve researchers, landowners and supervisors in an informal basis to assist communication.

7 RECOMMENDATIONS REGARDING THE INSTITUTIONAL POSITIONING OF THE RESEARCH MANAGEMENT COMMITTEE

The management plan for the Taung Skull Fossil Site provides a long-term strategy for the management and monitoring of research in the heritage site.

However, practical limitations on the ground may make a complete implementation of the plan problematic. The following points must be considered:

1. The ministry of higher education recently published the “Ministry of Education Approved Academic Programs for University and Technicons:2003-2006 (Pretoria, July 2002)”. In this document the field of geological sciences is singled out as over-resourced when considering the number of students trained, and program collaboration in geosciences is recommended for, amongst others, the Gauteng region. This means that in the field of paleontology and paleoanthropology we have to concentrate on those institutions that have established programs, rather than inviting or allowing new institution to develop their own. The latter would defeat the ministry’s objectives, and would weaken the overall position of geosciences in SA only further.
2. There are very few experts in the country that can truly assist in the development of the Taung Skull Fossil Site. They are thin on the ground, and this situation is not likely to improve considering salary levels in SA.
3. There is a lack of training facilities and trainers within any of the government structures. The only facility currently in a position of setting up accredited training programs is the Bernard Price Institute (BPI) at Wits.
4. The long-term sustainability of the BPI institute, the only training institute in paleontology in the country, and home of one of the most important fossil collections in the world (including large collections from the COH and Makapansgat), is under threat. The successful and speedy development of the World Heritage Site Cluster is closely linked to the survival of the BPI institute and vice versa. The importance of this link must not be underestimated.
5. SA simply does not have the resource base to be entirely inclusive across all institutions with a possible interest in developing the World Heritage Site Cluster. The resources are simply not there. It is important to recognize this fact before we spread ourselves too thinly and risk to lose more than we bargained for. The BPI institute exists and is functional and must be made use of to the fullest extent.

To develop the World Heritage Site Cluster in an expedient fashion, without unnecessary bureaucratic delays, and at the same time safeguard the science of paleontology in SA from a possible disastrous decline due to under-funding, will require a careful plan that takes cognizance of the practical limitations that exist on the ground.

We suggest that the best practical solution of obtaining short-term results whilst at the same time working towards a long-term 'steady state' situation, would be to devolve the training, monitoring and many of the research and research management functions required by the World Heritage Site Cluster directly to the School of Geosciences at the University of the Witwatersrand, which includes the BPI Paleontology as well as PURE. In the long term, these functions could be repositioned as a subcommittee of the Overall Management Authority, as outlined above, when the necessary skills have been developed. Initially the training and monitoring would be in Earth Science disciplines, but would ultimately be extended to include biological science and archaeology.

The cost implications of such a course of action would need to be discussed. Any training, research, monitoring and management responsibility taken by the School of Geosciences would be performed under the auspices of the memorandum of understanding which has been negotiated between the School of Earth Sciences at Wits and DACEL.

The School of Geosciences is currently very active in multidisciplinary earth science related research in the COH, and has the necessary skills and management structures to undertake such tasks.

8 ALTERNATIVES: THE MANAGEMENT OF RESEARCH AT THE OLDUVAI GORGE WORLD HERITAGE SITE

- A rigorous permitting system is in place.
- All Heritage is under the control and management of the Tanzanian Government's Heritage arm: COSTEC. This is the equivalent of the TS NHS Overall Management Authority combined with SAHRA.
- Permits have to be obtained by each and every individual engaged on whatever aspect of site research. These cost a standard U.S. $350 per person. These have to be renewed, and paid for, with each successive season. In this way, Heritage pays, in part, for its administration
- A full C.V. is expected from every applicant, with three full referees reports.
- The terms of permit issuing include the obligation to train local people as experts, to use local communities as labourers (and pay for their services), and to include local students on the dig. For example, the cook was a salaried local resident of the Ngorongoro Reserve, as were drivers and camp staff.
- There is an obligatory mix of foreigners and local people, so that there is a balance.
- Only one Research Team is allowed at the site at any one time, (for climatic reasons, and American university teaching commitments, this is usually July to August) although different programmes may run at different times. There is a maximum of 20 researchers on any one team.
- The full credentials of the Principal Investigators and Senior Researchers must be submitted. Those who apply for NSF (National Science Foundation) financial support are adjudicated on the basis of 10 reviewer's reports. This allows for a totally anonymous and impartial assessment of competence.
- Only Team Projects in which all aspects of the study are covered by expert inputs are considered. There are no "one-man shows". An average Research Team comprises a landscape archaeologist, an archaeologist, a palaeobotanist, a tephrostratigrapher, a

sedimentologist, a geochemist, a palaeomagnetic expert, a geologist, a hominid palaeontologist, a micromammalogist, a mammalian palaeontologist and someone who studies phytoliths. GIS specialists and map-makers are usually included.

- Report back is on an annual basis, as well as after each field season..
- Team projects are reviewed on an annual basis, and the Project Proposal must be renewed each year for each site.
- Payment must also be made for each successive year.
- The Research Team also has to pay and provide for the services of the Site Monitor, who is a Government Appointee, and who is present all the time whilst excavation is in progress. This person has a degree in Archaeology and writes regular reports on excavation progress, and on the recovery of fossil material.
- The site monitor has superiors, who may also pay visits to the excavation at any time.
- All tourism is by arrangement. General Tourists may view the excavations from a distance only, and visit the site museum and interpretation centre. Tourism is not allowed to interfere with or disrupt the scientific work. Even so, some 30 4x4's visit the Gorge every second day
- The Government pays for Tour Guides, site museum personnel, road maintainence,the site monitor (partially, researchers have to supplement his income).
- The researchers have to pay for the site inspection, the labourers, Tanzanian students (transport plus food), the security guard, the cooks and field assistents, water, drivers (there is no self-drive in the heritage area).

Such research is usually well managed and responsibly carried out, but it becomes prohibitively expensive to keep such comprehensive teams in the field.

ADVANTAGES

- all research stops are covered - no 'one-man shows' and 'plum picking'
- multi disciplinary interactions between team can take place whilst excavation is in process
- bona fides of P.I's and senior researchers well established
- referees reports highlight shortcomings in proposals and skills areas deficiencies
- funding is available
- permitting system is rigorous and anonymous there is an obligation to transfer skills to local people there is on-site training for Heritage monitors

DISADVANTAGES

- Teams are extremely expensive to field
- A very high proportion of the funding is deployed in non-productive non-scientific elements of the field work
- Comprehensive set of skills not locally available
- High proportion of foreign expertise, rather than local experts

APPENDIX 5

TOURISM REPORT

TAUNG SKULL FOSSIL SITE
TOURISM REPORT

Vincent Carruthers
14 November 2003

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OBJECTIVES OF THIS REPORT

To assess the current state of tourism at the Taung Skull Fossil Site (TSFS).

To present a preliminary tourism development and marketing strategy for the TSFS as a national and/or serial world heritage site.

Separate sections of the report deal with each objective.

METHODOLOGY

The Site was visited on 12 July 2003 to gain a preliminary overview of the tourism potential.

A variety of literature sources were consulted and reviewed (see Bibliography below). These included a number of planning documents that had been compiled over the past decade.

A preliminary Tourism Development and Marketing Strategy was compiled based on sound marketing practice and experience in other similar situations.

SECTION 1 – CURRENT STATE OF TOURISM AT THE TSFS

PREVIOUS DEVELOPMENT PLANNING INITIATIVES

Two major development plans have been compiled for the site, one in 1991 and the other in 2001. Only the first phase of the 1991 plan has been implemented. Taung and its environs have also been mentioned in several other provincial and regional planning documents. Development budgets have been proposed but no action appears to have been taken.

Marketing, management and development of the TSFS is currently the responsibility of the North West Parks and Tourism Board and the Product Development Subcommittee of that Board has recently indicated that it will be initiating work in the area.

The following is a review of the planning documents and initiatives referred to:

1991 EDP Project

The Bophuthatswana Parks Board commissioned consultants EDP to plan and develop the site as a tourism destination. The first part of the plan was executed and saw the development of:

- Picnic and camping sites at Blue Pool.
- An ablution block.

- Landscaping.
- Nature trails.
- Infrastructure – roads, water and electricity.

Subsequent phases of the EDP plan were never implemented. They included:

- Conducting market research into demand requirements.
- Completing essential management infrastructure.
- Building palaeontology / archaeology / geology education and interpretation facilities.
- Building upmarket camping sites with power and water points.
- Building overnight accommodation.
- Developing local support industries.

1998 North West Tourism Master Plan and
2000 Tourism Implementation Programme

The Tourism Master Plan for the North West Province was developed by the Development Banl of South Africa and is a principal guiding document for the Department of Economic Development and Tourism and the Parks and Tourism. It establishes a framework for tourism growth and development and sets out a management system for tourism in the province. The 2000 Implementation Programme identifies the following six key elements for tourism development and sets detailed strategies, objectives, timelines and budgets for each:

- Research and information
- Integrated tourism nodes and corridors.
- Investment in tourism
- Infrastructure
- Marketing
- Small business and employment

The Vryburg/Taung corridor is identified in the Implementation Programme as a development project. Modest budgets were nominated to incorporate this corridor into local and provincial plans and IDPs. No progress appears to have been made.

2000 Taung Local Tourism Development Zone

The Baphudehucwana Tribal Authority (Kgosi S.M. Mankuroane) commissioned Bigen Africa Project Management to develop plans for tourism development around the following features:

- Taung Dam.
- Pendomer Farm.
- Taung Skull Site and Buxton.
- Taung Tusk Hotel.
- Harts River and diamond diggings.
- Agri-tourism.

The project comprised five components:

- Broad area zoning, planning and consultation with communities.

- Specific plans for each of the sites listed above.
- Marketing, capacity building and training.
- Implementation.
- Maintenance.

The project anticipated funding requirements in excess of R4 m, which was to be obtained via the Department of Tourism and Economic Affairs and the Provincial Capital Development Fund. As far as can be ascertained, no aspects of the project have been implemented.

2001 Site Solutions Development Plan for Taung Heritage Site

The NW Province Department of Social Services, Arts, Culture and Sport commissioned Site Solutions to prepare a plan for the development of the site.

The Site Solution report is comprehensive and provides the first practical plan for the site in more than a decade. It presents the following:

- Emphasises the cultural and scientific significance of the site as a national and regional asset.

- Proposes a more popular perspective of the site as a heritage centre with more tourism resources than the "narrowly defined site with an identity forged only around a fossil which is unavailable for view on the historic terrain."

- Emphasises empowering local communities in the development and operation of the site. At the same time the plan warns against creating unrealistic expectations.

- Sets specific goals to:
  - raise the profile of Taung as a visitor centre
  - provide interpretative facilities
  - stimulate SMME development and revenue streams
  - provide controlled access points
  - broaden the historical narrative
  - create a platform for future development and investment opportunities.

- Incorporates Taung into broader heritage route options including:
  - Battlefields route
  - Kimberley Big Hole and Mine Museum
  - McGregor Museum
  - Platfontein San Community
  - Nooitgedacht Rock Art Site
  - Christiana / Vaal Resort
  - Hartswater Agricultural route
  - Mmbana Cultural Centre, Taung
  - Dryharts Black Concentration Camp
  - Vryburg Museum and Rock Art Site
  - Kuruman Eye
  - Wonderwerk Cave

- Kraaipan battlefield
- Dithakong

- Refers to market research that quantifies tourism demand for nature-based tourism, heritage tourism and historical sites.

- Develops the potential for community involvement and community-based tourism.

The Site Solution Plan itemised a hierarchy of detailed actions required to implement the plan. However, it does not present any cost estimation or budgets. The plan was never implemented and it could form a sound foundation for future planning for the area.

The Western Frontier SDI: Tourism Analysis (March 2002).

The analysis indicates the possible link between Taung as a serial site with the Cradle of Humankind World Heritage Site. Together with the Taung Dam, rock engravings and diamond diggings, Taung is cited as potentially "a major tourism attraction." It is one of eight such attractions that are analysed in the Bophirima Region.

Stakeholders are listed as:
- Taung municipality
- Bophirima Tourism Association
- Local community
- NW Parks and Tourism Board

A capital investment of US$ 3-4 million is recommended for the development. Employment opportunities for 50 people are anticipated. Proposals include a 30-bed lodge with conference and wedding facilities at the dam with guided tours to the skull site and Buxton. Emphasis is given to local and domestic markets with a small percentage of international tourists and palaeontologists.

Western Frontier SDI: Sustainable Integrated Irrigation Project in Greater Taung (not dated)

This document is published separately from the previous one and it is focussed on the agricultural and industrial development around Taung. The development of a large game conservancy north of Taung is considered to be necessary if the tourism potential of the region is to be realised

2002 North West Socio-Economic Tourism Audit

The audit is published by the Institute for Tourism and Leisure Studies, Potchefstroom University. It provides a certain amount of statistical data on tourism resources in the region. It also indicates shortcomings and makes recommendations on how these may be addressed. However, very little of the data is specifically

relevant to Taung. In addition, the audit is strictly confined to the North West Province, so the significant tourism resources located in Kimberley are omitted.

EXISTING TOURISM FACILITIES

The following tourism facilities and infrastructure were observed at and around the site:

- Signage to the Taung Skull Site is evident at some points along the approaching roads but is not consistently present at all intersections.

- The entrance to the site comprises a wire gate with adjoining buildings that have either been built or renovated since 1990. No signage exists at the entrance. The entrance is generally kept locked but at times it remains open and unattended. No fees seemed to be required for public entrance although a fee of R5.00 (R3.00 for juveniles and pensioners) is advertised on the website. There is uncontrolled pedestrian access at many points around the perimeter of the site and there appears to be a constant presence of people, goats and cattle. A warden or guard is employed by the North West Parks and Tourism Board, but was not present during our site visit.

- Roads and parking areas are suitable for conventional vehicles and give access to all areas of the site that might be of interest to visitors. The roads are dusty but in reasonably good condition.

- Equus Cave is an exposed fossil site that, *if adequately managed and protected*, allows excellent opportunities to see of fossils in natural surroundings (see photo).

- A pyramid monument commemorating the discovery of the Taung child skull was erected in 1985 on what was presumed to be the site from which the skull was removed. A brass plaque has been removed from the structure and there is no other interpretive information.

- Braai and picnic facilities were developed overlooking the Blue Pools area of the site in 1991 (see photo). The sites can accommodate about 200 picnickers and are made of natural stone. They are in good condition with ground surfaces swept and kept relatively clean.

- Level campsites and parking bays have been laid out in the Blue Pools area and in the shade of a number of trees near Equus Cave on the road approaching Blue Pools.

- An ablution block built in April 1992 adjoins the picnic and camping area (see photo). It has a water supply and sewage is probably processed in septic tanks in the dolomitic substrate (this was not confirmed). Eskom supplies electricity to the ablution block via overhead powerlines on standard 9m timber pylons. The ablution block and power supply have been insensitively positioned in a

scenically attractive area and they have a significantly negative visual impact. Vandals have destroyed all fittings and fixtures in the ablution block and the facility is currently completely beyond use (see photo). The electricity supply and water supply were not tested.

- A network of walking trails leads around the Blue Pools area and up onto the adjacent escarpment. Most of the paths are in reasonably good repair although crumbling of the softer material is evident on steeper slopes and maintenance is required. Bird life was noticeably good on these walks.

- A cave with reasonable examples of speleothems and the underground headwaters of the Blue Pools river has been sealed off from public access. The closure is incomplete, however, and presents a hazard to inquisitive children (see photo).

- A tunnel leading into the tufa and dating from the time of lime mining has been renovated and is evidently used for tourist interest. Steel gates are supposed to prevent unsupervised entry but these are broken and access is easy for any small person.

- The village of Buxton has an interesting industrial and missionary history. There has been no conscious attempt to conserve the old houses or mine workings, kilns etc (see photo) but the historic church and school are functioning (see photo).

CURRENT VISITORS

Local market

The principal use of the site at present is as a recreational resort for local people. This is particularly evident during festivities such as New Year and Easter when many hundreds of visitors are reputed to congregate. Visitor numbers are apparently not recorded on these occasions. It is not known whether an entrance fee is charged. However, free access to the site is possible from several unmanned entrance points.

Domestic (South African) market

Organised specialist tours (e.g. historical societies, bird clubs etc.) visit the site occasionally.

School tours have visited the site in the past.

Independent tourists, both domestic and foreign, also visit the site occasionally. Most are in transit from Kimberley to Vryburg.

Estimates of numbers and trends (increase or decline over time) have not been possible, but indications are that tours of this type have declined.

International market

Scientists and occasional foreign independent travellers (FIT) are the only international visitors to the site.

Current tourist numbers and site use

The authorities managing the site apparently do not maintain records of tourism and tourist numbers. Access is largely uncontrolled and past and current statistics are not available. The following table indicates the ***presumed volumes and growth/decline dynamics*** of various types of tourists who are, or have been visiting the site. The presumptions are based on informal discussions with parties who have been familiar with the site over past decades.

Tourism market segment	**Presumed current volume p.a.**	**Presumed dynamics**
Domestic (South African) market		
Day visitors especially at New Year and Easter.	3000 - 4000	Increasing
Specialist tours (history groups, bird clubs etc.)	100 - 200	Declining
School educational tours	500 - 1000	Declining
Independent tourists	100 – 150	Declining
International market		
Scientists and foreign independent travellers (FIT)	50 - 100	Static
Total	**3750 - 5450**	

SECTION 2 - PRELIMINARY TOURISM MARKETING AND DEVELOPMENT STRATEGY

INTRODUCTION

Local expectations of the tourism potential of a the site as a Serial World Heritage Site are unrealistically high. They fall into three categories:

- Revenue potential for local communities is expected to eliminate poverty, even in the short term.
- The site is expected to be developed as a local resort for mass entertainment.
- The Taung Skull is expected to be returned to the site.

In addition, there has been extensive planning for the area but a woeful lack of implementation. This has resulted a justifiable cynicism among local people towards “paper plans”.

These issues need to be sensitively handled if the commitment and confidence of the local community is to be regained.

Successful tourism is a function of four factors:

- **Markets** – size, origin (local, domestic, foreign), dynamics, sectors and niches, requirements and trends.

- **Products** – existing attractions, potential resources, suitability to market needs, packaging (e.g. seasonal events, integration with routes, nodes and hubs), compatibility with heritage site objectives.

- **Communications** – marketing processes that link tourism products to target market sectors and advertising and other strategies that provide information and stimulation to visitors, facilitate travel, access, accommodation and interpretation.

- **Responsibilities** – clear allocation of tourism roles and responsibilities to designated individuals and institutions; acceptance of, commitment to and capacity to exercise these roles.

INITIAL TOURISM OBJECTIVES

Tourism marketing for the site should only be developed if there is a realistic expectation that tourism will be sustainable and that it will generate benefits for stakeholders. The current absence of hard data prevents any finite determination of market feasibility, but a reasonable estimate based on sound marketing practice and experience can be given. ***The following provisional tourism targets are proposed as a point of departure with the clear understanding that they will need to be substantiated and revised after proper market research***. Their purpose is to re-establish realistic expectations and to allow market research surveys and business plans to be drawn up.

Provisional tourism targets:

- To improve tourist visitors to 25 000 tourists-days per annum.
- To increase average tourist expenditure in the Taung area to R150 per person per day. (i.e. gross local revenue = R3.75m p.a.)
- To change the tourist profile to a predominant interest in the heritage significance of the site.

Business planning and research requirements:

- Conduct market research to substantiate and/or amend the above targets. Recommended research surveys:

  Desk research to:
  - Identify relevant market segments
  - Establish market size and growth patterns.

  Delphi Technique interviews with tourism practitioners to:
  - Gain insights into demand trends
  - Establish price sensitivity ranges
  - Establish product development opportunities.

Field research among a stratifies sample of key market segments to:
  - Identify market needs and expectations

- Compile a detailed business development plan with funding proposals and time lines.

POTENTIAL MARKETS

Several world-wide trends in tourism have recently become evident. Subject to the outcome of the above research recommendations, the following potential niche markets are directly relevant to Taung and should be investigated:

Specialist tours

Supervised tours specialising in palaeontology, archaeology, birding, game-viewing and other appropriate subjects do already take place and the declining market could easily be revived once facilities and packages have been developed.

School tours

Educational tours were once a substantial feature of the site. This market could be revived by direct communication with schools. Camping ablution facilities would need to be improved.

Heritage tourism

This involves an element of learning, personal involvement and experience. The exposure of world heritage sites in the media and the work of ICOMOS have developed this domestic and international market niche significantly.

Events tourism

The market is attracted to annual or seasonal festivals, often linked to heritage and culture. Such events require efficient promotion and organisation to be successful. To enhance visitor numbers, a series of seasonal or one-off events needs to be arranged.

Cultural tourism

This market niche has been growing in South Africa. Tourists want to see and learn about the qualities and experiences that make a country or community distinct. A significant development in the 2000s has been a demand for authenticity and participative experiences.

Adventure tourism

This is reputed to be the fastest growing tourism market segment. Young, more intrepid tourists are demanding a degree of physical excitement in their tours.

POTENTIAL TOURISM PRODUCTS

The tourism market requires *experiences* rather than just products and facilities. In the Taung context, this means that interpretation will be more important than anything else.

A further requirement is that, wherever possible, tourism products should be suitable for the development of SMMEs and black empowerment enterprises.

Subject to the outcome of the research recommendations above, products that could be investigated are as follows. All of these should be income earning and sub-contracted to local entrepreneurs:

Proper gate facilities. These include controlled access, entrance fee handling, cash management and maintenance of visitor records. The entrance itself needs to be upgraded with good signage and information. Training and structural facilities are required.

Fencing. The site needs to be fenced and access should be limited to the entrance gate. Fencing contractors should be drawn from the local community.

Upgrading existing popular use. The most immediate use of the site is by the large number of local visitors on festive occasions. More appropriate use would be achieved by organising these occasions into semi-informative events with site-oriented competitions and entertainment. Portable toilets could be provided for the temporary large crowds.

Accommodation. A sensitively sited lodge with chalets for incidental visitors and specialist tours could be constructed. A suitable position would be the southern escarpment overlooking the quarry.

Camping and caravan sites should be upgraded. An urgent requirement would be to upgrade or demolish the ablution block.

Interpretation centre(s). Good quality interpretation of the palaeontology, archaeology and history is essential. One or more of the buildings in Buxton might be renovated for this purpose. Exhibits might include:

- Geology and geomorphology of the area
- The evolutionary history of hominins
- The story of the discovery of the Taung skull
- Early human settlement by Khoi and San people including rock engravings
- Pre-colonial Tswana history and archaeological sites
- Frontier and missionary history (including the history of Stellaland and the Warren expedition)
- The story of lime mining (possibly integrated with diamond discoveries)
- Apartheid and resistance history.

Reconstruction of the lime works. This could include a self-guided walk through the kilns and workings.

Interpretation material. This would include structural interpretation (information boards, signage, etc.) literature including self-guided trails, pamphlets and books, and audio-visual material for sale.

Development of competent guides and tours. This involves training and the structuring of guided tours. Special types of touring such as donkey carts with knowledgeable drivers could be developed. Specialist tours and guides in fields such as palaeontology, history, birds, botany, geology, mining, bats, caves should be encouraged and provided.

Supervised access to the quarrying tunnel. A well-managed and strictly supervised programme is required with no casual access at any time. If such a programme can be developed without mishap to the tunnel or the visitors, it may be possible to develop supervised tours into more sensitive environments such as the cave and subterranean stream and even to the Equus Cave fossil site.

Retail outlets. Opportunities exist for outlets for refreshments, crafts and souvenirs, information material (pamphlets, books, videos), booking and visitor information services etc.

Events tourism. An example of an appropriate event for Taung would be the ceremonial return of the Taung Child Skull. Expectations that the original skull should be returned to the site have been created. This would be impossible for scientific and security reasons, but a ceremonial return with dignitaries, media coverage etc. could be arranged to draw public attention to the site. The skull could then be returned to safekeeping at Wits and a cast exhibited permanently at the site.

Other possible events might include:

- Annual pageant depicting human evolution
- Annual donkey-cart races
- Mountain bike rallies through non-sensitive parts of the quarry
- Cultural exhibitions
- Music festival/choirs
- New Year festival with site-related entertainment (see above)
- School events.

Off site tourism

Nearby are further tourist attractions:

- Taung Dam
- Boipelo Game Reserve
- Dikwaneng San engravings.
- Mmabana Cultural Centre.
- Taung Marble.
- 4X4 trails.

- Game watching and hunting reserves.

Development of tourism routes

The Taung site on its own is unlikely to generate the tourism numbers that are be needed to make a significant impact on the local economy. In order to achieve this, Taung must be integrated into a regional tourist route that draws visitors from one attraction to the next offering a cumulative tourism experience that is greater than the sum of its parts.

Tourist routes need three components:

A tourism **hub,** which is the focal point from which tourism flows are generated, information is disseminated and central tourism infrastructure and facilities are provided. Kimberley and Vryburg are the logical hubs for this region.

Tourism **nodes,** which provides a cluster of tourism experiences. Taung itself can be developed into a tourism node with a range of tourism products such as those described above. Other nodes in the region may be Kimberley, Kuruman, Harts River Valley, Vaal River, etc.

The **route** itself could be a circular trip connecting Kimberley, Kuruman and Vryburg.embracing a great deal of historically interesting sites and tourism attractions:

- Kimberley: Big Hole diamond mine and museum village; SA War history and battlefields; McGregor Museum.
  70kms
- Warrenton: Vaal River
  25kms
- Jan Kempsdorp: Vaal-Harts Museum; WW II internees escape tunnel.
  15kms
- Hartswater; Centre of Vaal-Harts irrigation Scheme (largest in southern hemisphere.)
  24kms
- **Taung**
  68kms
- Vryburg: Boer-Tlaping-Korana history; original capital of Stellaland; hunting and game farming.
  88kms
- Dithakong: Pre-colonial history and archaeological site; Mfekane battlefield.
  92kms
- Kuruman: Robert Moffat Mission Station; pre-colonial and frontier history; Kuruman Eye.
  84kms
- Danielskuil: Great Pan; Wonder Cave
  118kms

- Barkley West: Diamond history; Griqua frontier history; Nooitgedacht glacial paving; rock engravings; Canteen Koppie.
  31kms
- Kimberley.

MARKETING COMMUNICATIONS

The Taung Skull Site and Blue Pools are promoted on the NW Parks and Tourism website. The illustrated web page gives sound information and directions to the site. An entrance fee is quoted. Web page marketing in South Africa is still fairly novel and a more basic communications strategy is required.

The most important means of marketing the site will be through the tourism trade - tour operators, travel agents, etc.

Communication of a tourist destination requires a series of four consecutive stages, each with its own target audience, its own desired outcome, its own message, its most appropriate communications media. For Taung these stages should be:

First stage: Create awareness

- Target audience: All prospective South African and foreign tourists.
- Desired outcome: Spontaneous recall of the name and/or general awareness of the site or tourist route.
- Message: Frequently repeated, short, arresting and tempting statement of the single most interesting aspect of the site or tourist route.
- Media: Widespread, highly visible in high traffic areas for the target audience (e.g. airports, tour guide books).

Second stage: Create comprehension

- Target audience: South African and foreign tourists with an interest in evolution, history or culture. Also travel agents and tour operators.
- Desired outcome: Interest in the significance of the TSFS.
- Message: Interesting and convincing information about the site - Press releases and advertorial material.
- Media: Targeted media such as travel magazines, websites, special interest groups and societies. Promotional trips to the site for travel agents and operators.

Third stage: Create commitment

- Target audience: South African and foreign tourists who are interested in including the site on their itinerary. Travel agents and tour operators.
- Desired outcome: Specific enquiries about reservations, access, travel information.
- Message: Directly relevant information to the prospective visitor – prices, facilities, available tours, maps, brochures etc.
- Media: Brochures, inter-active web sites, tourism information centres at hubs. Direct sales to operators.

Fourth stage: Stimulate action

- Target audience: Tourists and tour operators who are committed to visiting the site. Desired outcome: Reservations and visits.
- Desired outcome: Conclusive bookings, arrivals.
- Media: Good road signage. Maps and directions. Central reservation offices.

INSTITUTIONAL RESPONSIBILITY

In 1994 BOP Parks Board ceased to exist. All its responsibilities, including the development, management and marketing of Taung, passed to the North West Parks and Tourism Board. Further changes took place in 1999 with the greater devolution of responsibility to local government and again in 2002 with the appointment of a North West representative of SAHRA.

The precise tourism functions and responsibilities of SAHRA (Department of Social Services, Arts, Culture and Sports), the NW Parks and Tourism Board (Department of Economic Development and Tourism) and the Department of Agriculture, Conservation and Environment need to be clarified.

Currently the Site is administered by a warden employed by the NW Parks and Tourism Board. Marketing of the site, along with all tourism marketing also appears to be the responsibility of the Board.

In recent years, the following documents have been produced for the NW Province and are relevant to the Taung site and its tourism potential:

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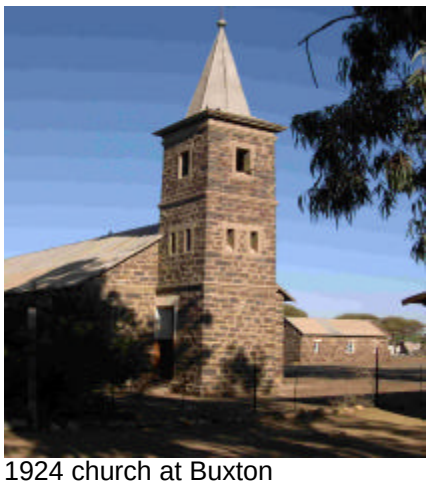
PHOTOGRAPHS

Picnic sites at Blue Pools


1924 church at Buxton

Insensitive siting of ablution block

Equus Cave – good for public education but will need protection and management

Vandalism in ablution block

Interior of underground cave (Photo: P Norton)

Typical house in Buxton with renovation potential

Original entrance to cave (Photo: P Norton)

APPENDIX 6

TOUR GUIDING AND TRAINING

TOUR GUIDING AND TRAINING

1 INTRODUCTION

The Hominid Fossil Sites in Southern Africa, including those of the Cradle of Humankind (W & NW of Johannesburg), Makapansgat (Limpopo Province), the Taung Skull National Heritage Site (NW Province) and the Border Cave (KwaZulu-Natal) are of paramount scientific importance both nationally and internationally. It is for this reason that World Heritage Status applications are in progress for various of the said sites including the TSNHS. Part of the requirements of such applications is the drafting of appropriate Management Plans for the sites.

In recent years the significance of these sites has received more coverage than in the medium to distant past when the tourism potential of these assets may well have not been fully realised. With the relatively recent increased interest in Heritage Tourism in addition to the World Heritage applications this scenario may well change. On the assumption that there could be an increased interest in these sites suitable mechanisms need to be in place to facilitate these as tourism destinations. Such mechanisms amongst others must include the necessary management actions to ensure the long term integrity of the sites by way of "environmentally sensitive" tourism activities. This can be facilitated in part by the training of suitably qualified guides.

Aspects pertaining to the training of guides are further discussed in this document which must only be regarded as a "Concept" document and a point of departure in respect of this matter. Issues such as legal requirements, selection of candidates, training manuals, syllabus content, possible funding sources etc are however briefly addressed.

As a result of the site visit on the 12th July 2002 by various Project Team members it was established that there would appear to be "unrealistic" expectations of the local community in respect of this project. It would be remiss at this stage not to point out that the tourism potential of this site may very well not meet the expectations of the said community and will not be the solution to the unemployment in the region. The Phase 1 Tourism Report has for instance highlighted the fact that no reliable statistics as to visitor numbers exist and all indications are that numbers are reducing. The future marketing of the site may well increase visitor numbers but a "phased in" approach to Tour Guides is indicated and proposed.

It should be noted that this document has been drafted with the knowledge of the THETA who were consulted in this respect and who may be able to assist in the funding of the training of guides and would also be involved in the accreditation process of such guides.

2 LEGAL REQUIREMENTS

In terms of the Tourism Second Amendment Act (No 70 of 2000) it is a requirement that guides must be registered. Registration as a guide is done through the Department of Environmental Affairs and Tourism (DEA&T) via the Provincial Tourism Authority. New guides wanting to register with the DEA&T have to produce proof of a National Qualification (NQ) from the THETA in order to register as legally qualified guides. It therefore becomes necessary to consider the NQF (National Qualifications Framework) and NQ's (National Qualifications) in more detail.

The NQF is a means of transforming education and training in South Africa. The NQF has been designed to:

- combine education and training into a single framework, and bring together separate education and training systems into a single, national system;

- make it easier for learners to enter the education and training system and to progress within it;

- improve the quality of education and training in South Africa ;

- open up learning and work opportunities for those who were treated unfairly in the past because of their race or gender; and

- enable learners to develop to their full potential and thereby support the social and economic development of the country as a whole.

National Qualifications (NQ's), which are available to everyone, are based on national standards which are recognised by industry throughout South Africa. NQ's are designed to provide: (1) individuals with a clear path in terms of career development, which is not tied to a specific route of learning, and (2) employers with a means of recruiting qualified and competent staff, as well as managing their performances.

Unit standards constitute the building blocks of NQ's and are registered statements of desired education and training outcomes together with their associated assessment criteria.

In 1995 the South African Qualifications Authority Act (1995) stipulated that NQ's would be developed for all components of the education and training system in South Africa. This effectively meant that tourist guiding would also need to develop a set of NQ's and tourist guides would be expected to achieve them. Following instructions from the Minister M Valli Moosa, THETA established a Guiding SGB in order to do this.

The Parliamentary Portfolio Committee insisted that a revision of the Tourism Act of 1993, stipulated that future registration of tourist guides be linked to the achievement of NQ's. This was borne out in the Second Tourism

Amendment Act of 2000 as mentioned above. This effectively means that national guiding qualifications be linked to the various categories of tourist guides and that the guide would have to obtain the NQ in order to guide legally in the future.

3 TOUR GUIDES AND THE TSNHS

3.1 Objectives and Benefits of a Local (Site) Guide Training Programme

Apart from the legal requirements pertaining to tourist guides as discussed above one must also consider the benefits derived from the utilization of suitably qualified guides at the TSNHS.

Firstly professionally trained guides have the potential to transform a mere visit into a memorable experience and to ensure that the visitor derives the maximum from their visit to the site. Some of the primary objectives of a Local (Site) Guide Training Programme would include the following:

- To enhance the Management Strategy/ Plan for the TSNHS and to ensure the long-term integrity of the site;

- To encourage a professional standard for guides operating on the site and to ensure the safety and enjoyment of visitors while on site while at the same time protecting the area and its biophysical and heritage components;

- To impart vital and useful information to visitors to the site.

Some of the benefits arising from a Local Guide Training Programme would include the following: those benefits pertaining to the guides them self, the landowners, visitors, local communities and the benefit to the environment. Considering these in more detail the following is applicable:

3.1.1 Benefits to Guides

Some of the benefits to guides resulting from a training programme would include the following:

- Guides would acquire vital and factual knowledge to the specific site and its environs. This has the potential of further peripheral benefits of enhancing a pride in local heritage and a “buy in” to the project as a whole;

- Guides through a process of training can acquire the necessary skills to interpret the biotic and abiotic aspects of the site and to communicate this knowledge in a meaningful way;

- Guides would be instructed in the skills necessary to guarantee the safety and enjoyment of visitors;

- Guides would also be instructed in the skills necessary to create an awareness of the importance of the site and to create an awareness of nature, environmental and conservation principles in general.

3.1.2 Benefits to Visitors

- The safety of visitors on site is promoted by appropriate training of guides;

- Training furthermore promotes a high standard of knowledge and skills to enhance the experience of visitors to the site.

3.1.3 Benefits to Communities

- Guides trained from local communities would have the potential ability to generate greater awareness about the importance of the site amongst other members of their communities. This also has the potential benefit of creating a sense of pride in the site and local heritage amongst community members;

- Trained guides would be able to dissipate their knowledge with other members in their community;

- A limited number of suitable persons within the local community through a selection process could be trained as Local (Site) Guides thus supply limited employment opportunities within the community.

3.1.4 Benefits to the Landowner

- Guides should be trained to respect the rules and property of both the landowner and other stakeholders;

- The marketing of the site can be enhanced by professional and well trained guides.

3.1.5 Benefits to the Site and the Environment

- Any training programme of substance would promote a specific “code of ethics” pertaining to the tourism activities and the management and integrity of the site;
- Much emphasis is placed on the sensitivity towards the environment and respect for all the components of the environment. The promotion of the principles of IEM (Integrated Environmental Management) would further ensure the integrity of the site.

4 RECOMMENDATIONS IN RESPECT OF TOUR GUIDES IN THE TSNHS

4.1 General

Prior to making recommendations in respect of Tour Guides pertaining to the TSNHS it is necessary to briefly consider the possible types of tourist activities envisage on site. Some of these have been referred to in the Phase 1 Report of this project as submitted by Mr V Carruthers to which reference is made.

It is the opinion of the author that the site as it stands would require a large degree of transformation and rehabilitation if the tourism potential of the site is to be realised. The site may not initially be suitable as a tourist destination (other than for specialist tours as discussed below) and some market research may be necessary in how best to maximise the sites potential. This may for instance include investigation into a variety of tourism products ie "specialist" and "non specialist" with over night facilities possibly including a camping ground and limited number of chalets to also cater for the "en route tourist". Of note however is the critical aspect of "Tourist Carrying Capacity" which must be addressed in the Management Plan. Consideration should be given to the establishment of a small nature reserve possibly within the "Buffer Zone" of the site.

The most important assets of the site however pertain to the Geological Palaeontological and Archaeological history and artefacts of the TSNHS. These components would lend towards both "specialist" and "non specialist" tours. In addition to these are the issues of mining and other local historical interest as well as certain biophysical aspects of the site which may also be promoted as "specialist" and "non specialist" tourism products. The limited site visit on the 12th July for instance revealed a potential for possible specialist birding tours. The existence of nesting Black Eagle may endorse this aspect.

It is indicated that possibly both "Self Guided " and "Guided" products may be applicable to the site. The highly scientific and technical nature of certain aspects of the elements on site (palaeontology, geology and palaeo-anthropology / archaeology) would necessitate to cater for both "Specialist" and "Non Specialist" products. This would necessitate the supply of product information at both levels. The option of portable audio material applicable to various appropriate and documented sites of interest within the TSNHS could possibly be initially investigated as an option.

4.2 Selection and Training of Guides

After various discussions with role players in the sector (see acknowledgements) and following the site visit on the 12th July it is envisaged that it may be appropriate to consider as a point of departure at least two levels of guides applicable to the TSNHS which would accommodate both "Specialist" and "Non Specialist" tours.

The first category should be trained to the status of a **Site Guide**. All site guides are required to obtain a minimum of two unit standards at NQF level 2 to be able to register with a provincial registrar and guide legally at a site. Two categories of Site Guides exist namely- Cultural and Nature Site Guides. The author is of the belief that there exists an overlap of elements in the biophysical / heritage environment which the classification of guides according to the THETA does not cater for (this also applies to "Specialist Guide" categories and is a matter to be shortly taken up with the THETA). This is particularly evident in this case where the assets of the site would encompass elements applicable to both Cultural and Nature Guides.

The Unit Standards required for Cultural Site Guides include the following:

Code	Unit Standard	Level	Credits
TGO1	Create a Guided Experience for Customers	2	20
TGO9	Conduct a Guided Cultural Experience in a Limited Geographical Area	2	20

The Unit Standards required for Nature Site Guides are similar and include the following:

Code	Unit Standard	Level	Credits
TGO1	Create a Guided Experience for Customers	2	20
TGO8	Conduct a Guided Nature Experience in a Limited Geographical Area	2	20

Note : 1 credit = 10hrs

It is envisaged that members of the local community could potentially be trained initially to the level of Site Guides and this is recommended. The training of members of the local community will require a process of selection of guides for training, the raising of funds for training and the compilation of an appropriate syllabus and generation of training material. The Selection Process is not considered in detail here as it may require further interaction with the community leaders. This process must however be open and transparent and some of the issues to be considered in this process are presented in Appendix 1. A Training Manual specific to the site is recommended and this should include the Modules and Subjects as documented in Appendix 2. Those attaining the appropriate qualifications should be encouraged to attain higher qualifications (Site Guide – Full Qualification and to the level of NQF 4 - details pertaining to the NQF Level 2 and NQF Level 4 are presented in Appendix 3 and Appendix 4) and to broaden their knowledge base. This could be enhanced by assistance from Professional and Specialist Guides visiting the site as well as from researchers. Visits to appropriate institutions during the Training Programme of such guides will be encouraged (ie Bernard Price Institute and the McGregor Museum in Kimberley). Site Guides should also be trained to perform the function of a "Heritage Protector" to ensure that no artefacts are

damaged or removed from the site (both in the absence of tourists and during tourist visits).

Training will have to be undertaken by a Service Provider in conjunction with specialist inputs where and when required. It has been indicated by the THETA (pers comms with Mr Thabo Matjabe) that an application for the funding of a Training Programme for Site Guides from the local community would be considered. A proposal to this end would be required for submission to the THETA. However the criteria for such funding is that such Trainee Guides would need to be employed and appropriate measures in this connection will require consideration.

The selection criteria for guides would need to be compiled taking into account local conditions and would hence require further investigation. The author has however requested that in the Public Participation Process (PPP) of the project that a “Preliminary” scan of skills and qualifications be undertaken which may assist in this process. Due to the lack of current visitor data as highlighted in the Phase 1 Tourism Report it is currently impossible to assess Tourist Guide demand in respect of the site and which makes the numbers of Site Guides required somewhat speculative. Initially it is envisaged that possibly 3 persons should be trained to the level of Site Guide.

The second category of guides would be Provincial/National Guides of higher levels of NQ’s and Specialist Guides ie those qualified by way of tertiary education in any of the relevant sciences applicable to the site. The relevance of these would be in Regional “en route” tours as well as in Specialist Tours. When on site such guides should be accompanied by Site Guides so as to assist and enhance the knowledge base of the said Site Guides.

5 ACKNOWLEDGEMENTS

The author acknowledges discussions with and inputs from the following persons : THETA (Mr C Poultney, Mr D Goliath & Mr T Matjabe), Drumbeat (Mr C Olivier) and Bush Education & Training (Mrs R Milburn).

GUIDE SELECTION PROCESS AND CRITERIA

As indicated in the text of this report the selection of Guides is not discussed in detail in this report as further inputs from the community are indicated. The following however briefly considers some of the issues which should be considered in this process.

Background

A major contributor to the success of skills development /training is the quality of the learner selection process. Learner selection should be a comprehensive and transparent process and should select candidates for training based on criteria such as learning potential, job profile requirements, aptitude and attitude. The correct selection of candidates will prevent learner expectations being frustrated and employers being disappointed at the quality of the potential employee.

Selection Criteria

Consideration should be given to the following criteria in selection of guides for training:

The point of departure in this process should be the establishment of an independent Learner Selection Committee (LSC) whose first priority should be to finalise the criteria for selection. The potential employer and the Training Service Provider (TSP) should be represented on this committee and the TSP should possibly chair the said committee. The LSC committee and the employer must also draft a contract document which would be signed by candidates selected. An information session should be held with the community explaining the criteria to be used for selection of learners and the positions should be advertised through the community structures in an open and transparent manner. The LSC must carry out a pre-selection of applicants based on the defined selection criteria and a short list of candidates compiled. A final selection process would then be conducted following which the selected candidates should sign an appropriate contract agreeing and committing to the terms and conditions therein. Following this the Training Programme (TP) can then be scheduled.

Should funding be obtained for the Training Programme through the THETA for instance such funding would be directed to the employer. A contract between the employer and the Training Service Provider is therefore also indicated.

Consideration may be given as recommended by the THETA to involve the assistance of the Department of Labour with the selection of learners using the SPEEX system.

Some of the criteria for the selection of candidates apart from those mentioned above ie learning potential, job profile requirements, aptitude and attitude should include the following:

- current educational status (minimum requirement is that they must be able to read and write), personal attributes (appearance, ethical behaviour, sociability, humour, general code of conduct, assertiveness, enthusiasm, tolerance), organisational ability (general organisational abilities, punctuality etc), guiding ability (explanation of rules, emergency procedures, control of group, respect of the environment, respect for rules and regulations, client empathy, first aid kit etc), communication skills (vocabulary, voice tone and clarity, bi / multilingualism, eye contact, audience captivation, client participation, sensitivity to audience, ability to listen etc) and interpretive skills (interpretive ability, observations etc).

In addition to the above the prospective guides must be of sober habits and life style, be physical fit and be able to pass a preliminary evaluation. Although practical knowledge will be part of the Training Programme it is also an important aspect in selection and should be assessed in general.

An Application Form for prospective guides would need to be drafted and should include the following for instance:

Personal Details (Name, Address, Tel No, Date of Birth, ID Number, Citizenship, Marital Status, Children, Ownership – ie fixed property, and vehicle), Language (Home language and other languages), Qualifications (Schools attended and highest grade attained / tertiary qualifications if applicable), Occupation (Current occupation, Title, Employer, Details of previous employers, Approximate monthly salary), Field Guide Qualifications (Field Guide Qualifications, Courses attended, Details of Practical Experience) and Other (to be identified).

In terms of the Preliminary Evaluation consideration should be given to the following as an example:

* Why do you want to become a guide? * What are your hobbies? * What are your main interests? * What books do you read and how many do you read a month? * What contribution do you intend to make to the project? * What is the importance of the TSNHS? * Why is it important to conserve this site? * What wild animals and birds occur in the area? * Are you prepared to work on weekends? * Is the leader of South Africa called a President a King or a Prime Minister and who is the leader of South Africa? * In what Province is the TSNHS and who is the Premier of the Province? * Which is the nearest big town / city and how far away is it? * Where is the nearest hospital and what is its name? * Do you think people should be able to live in Protected Areas? * When you walk with people in the field would you do as they say or would you consider yourself in charge? * Your clients have brought beers along and offer you some – would you or would you not accept the beers and drink with your clients? – explain your answer. * If a client

becomes rude, uses bad language and starts spoiling the tour for others what would you do? * One of your clients has fallen and broken his / her leg – what would you do? * What is the climate in the area and how hot and cold does it get? * Does the area get rain mainly in summer or winter? * What clothes would you advise your clients to wear on a days walk in the area? * What items would you advise your clients to bring with on a days walk in summer? * How did the fossils come to be in the area? * What are the main rock types in the area? * What are the main trees in the area? * Do snakes and scorpions occur in the area? – if yes what snakes have you seen? * Other (to be identified and included – ie historical and cultural questions for instance.

DRAFT GUIDE SYLLABUS – TSNHS

Note: The following proposed syllabus includes both site specific and general guiding aspects but does not include the requirements of the NQF Level 2 and / or 4 which are presented in Appendix 3 & 4

Module 1 – Guiding Principles & Code of Ethics

Subjects

- Guiding principles & code of ethics pertaining to the guide, visitors, landowners and the environment
- Aspects pertaining to the enjoyment & safety of visitors

Module 2 – Conservation Principles

Subjects

- The objectives, principles and ethics of conservation

Module 3 – Guiding Skills

Subjects

- Client handling
- Personal attributes
- Communicational and Organizational skills
- Interpretative skills
- Regulations and briefings pertaining to interpretative trails and routes
- Orientation skills and map reading
- Driving skills (if appropriate)

Module 4 – Geology, Geomorphology & Climate

Subjects

- General Geology – principles, major rock types, geological time scale etc.
- Local Geology - Precambrian and more recent : cavernous developments in the dolomites / tufa development and deposits associated with the fossil assemblages
- Geomorphology of the area
- Climatic conditions of the area

Module 5 - Flora

Subjects

- Common tress, shrubs and grasses in the area

- Edible, medicinal and poisonous plants (where appropriate) in the area
- Any interesting facts about common plants in the area

Module 6 - Fauna

Subjects

- Basic knowledge of invertebrates, reptiles, amphibians birds and mammals in the area
- Interesting facts pertaining to the fauna of the area

Module 7 – Palaeontology & Palaeoanthropology

Subjects

- Precambrian Palaeontology and its significance in the Earths evolution (stromatolites / microfossils and sedimentary structures)
- Palaeontology (other than Precambrian) – a sound knowledge of the general palaeontology of the cave and tufa deposits
- Palaeoanthropology – a sound knowledge of the palaeoanthropology of the site and the relevance of this site in the broader Southern African and global context

Module 8 – Archaeology

Subjects

- A general knowledge of the Late, Middle, Early Stone Ages and other aspects of archaeological significance and interest.

Module 9 – Historical and Cultural Aspects

Subjects

- Basic knowledge of the Sub-regional history
- Basic knowledge of the site specific history including the mining operations and other aspects of interest
- Regional and local cultural aspects of significance

Module 10 - Other Site Specific Aspects

- To be identified

NATIONAL CERTIFICATE IN TOURISM: GUIDING
NQF LEVEL 2 – 134 CREDITS

FUNDAMENTAL			CORE			ELECTIVE		
Unit Standard Titles	L	C	Unit Standard Titles	L	C	Unit Standard Titles	L	C
Operate a Personal Computer	2	6	Introduce South Africa to Tourists	4	7	**Choose one from a specialised area:**		
Do basic research	2	4	Understand and interpret our natural and cultural heritage	2	5	Conduct a guided nature experience in a limited geographical area	2	20
Understand social issues	2	4	Participate in Sustainable Tourism in South Africa	2	5	or		
Operate in a team	2	4	Operate in a Business	4	4	Conduct a guided cultural experience in a limited geographical area	2	20
Apply basic written and oral communication skills	2	10	Oversee Arrival & Departure of Customers	4	3	or		
Use numeracy for self-organisation	2	2	Care for Customers	4	3	Track animals and identify spoor using easily recognisable spoor	2	40
Understand and apply personal values and ethics	2	4	Maintain Occupational Health & Safety	2	2			
Organise oneself in the workplace	2	3	Demonstrate an understanding of HIV/AIDS and its implications	2	4			
Work with people who have special needs	2	4	Create a guided experience for customers	2	20			
Any other communication & language standard at NQF2 or above		2	Operate within the national and international legal framework	4	4			
Any other mathematical standards at NQF2 or above		14						
TOTAL CREDITS		**57**			**57**			**20**

Appendix 3 – Details of the NQF Level 2 (National Certificate in Tourism)

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25-AUG-2003 20:30 FROM: +27 011 475 8252 TO:0123620394 P:1

NATIONAL CERTIFICATE IN TOURISM: GUIDING
NQF LEVEL 4 – 144 CREDITS

FUNDAMENTAL			CORE			ELECTIVE		
Unit Standard Titles	**L**	**C**	**Unit Standard Titles**	**L**	**C**	**Unit Standard Titles**	**L**	**C**
Operate a personal computer	2	6	Acquire an overview of South Africa	4	9	**Accumulate a minimum of 20 credits**		
Plan & conduct research	4	6	Weave South African heritage into tourism	4	9	Conduct a limited guided experience	3	20
Analyse & understand social issues	4	4	Contribute to sustainable tourism in SA	4	4	Conduct a guided nature experience	4	20
Function in a team	4	4	Operate in a business	4	4	View potentially dangerous animals	6	30
Interact orally & in writing in the workplace	4	10	Oversee arrival & departure of customers	4	3	Conduct an advanced guided nature experience	6	20
Collate, understand & communicate workplace data	4	5	Care for customers	4	3	Conduct a guided cultural experience	4	20
Demonstrate an understanding of societal values & ethics	4	4	Maintain occupational health & safety	2	2	Track animals and identify spoor using moderately difficult spoor	4	50
Organise oneself in the workplace	2	3	Contribute to information distribution regarding HIV/AIDS in the workplace	4	4	Track animals and identify spoor using difficult spoor	6	60
Demonstrate an understanding of issues effecting people with special needs	4	4	Conduct a guided experience with customers	4	10			
Any other communication & language standard at NQF4 or above		2	Design a guided experience for customers	4	5			
Any other mathematical standards at NQF4 or above		11	Interpret guiding for tourists	4	5			
			Operate within the National & International legal framework	4	4			
TOTAL CREDITS		**59**			**65**			**20**

Appendix 4 - Details of the NQF Level 4 (National Certificate in Tourism)

Makapan and Taung (South Africa)

No 915 bis

1. BASIC DATA

State Party: South Africa

Name of property: Makapan Valley and Taung Skull Fossil Site

Location: Makapan Valley:
Limpopo Province
Taung Skull Fossil Site:
North-west Province.

Date: 2 February 2004

Category of property:

In terms of the categories of cultural property set out in Article 1 of the 1972 World Heritage Convention, this is a *site*.

The property nominated is a serial extension of the 'Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai and Environs', inscribed on the World Heritage list in 1999 on the basis of criteria iii and vi.

Brief description:

The Taung Skull Fossil Site is the place where in 1924 the celebrated Taung Skull - a specimen of the species *Australopithecus africanus* - was found.

Makapan Valley houses in its many archaeological caves – in the form of sediments/fossils and archaeological vestiges – traces of human occupation and evolution dating back some 3.3 million years.

2. THE PROPERTY

Description

The Taung Skull Fossil Site covers an area of 158.7429 hectares (ha), with a buffer zone of 3.387 ha. It consists of archaeological, paleontological, historic and mining sites which are important in heritage terms.

Makapan Valley covers an area of 2,220.0495 ha, with a buffer zone of around 55 ha. It consists of paleontological, archaeological and historic sites.

a/ Components of the Taung Skull Fossil Site:

This ensemble includes archaeological sites whose importance is widely recognised. They consist of the following 4 caves:

- Wittrans Cave,
- Black Earth Cave,
- Equus Cave,
- Power House Cave.

It also includes a rich series of paleontological sites, some of which are well known to the most eminent specialists in prehistory and paleontology. They consist of the following 19 sites:

- Dart Pinnacle,
- Hirdlicka's Pinnacle,
- Hirdlicka's Deposits,
- Dart Deposits,
- Tobias Pinnacle Deposits,
- Berger Cave Complex,
- Lucky Moon Cave,
- LSN Cave,
- Innominate Cave,
- Quinney Cave,
- Cut-through Alley,
- Black Earth Cave
- Peabody's Equus Site,
- Equus Cave,
- Blom Cave,
- Satan Cave,
- Alcove Cave,
- Oaxland Large Mammal Site,
- Acacia Cave.

Lastly, it includes historic sites and mining sites (vast disused limestone quarries) which are important from a heritage viewpoint: in particular Norline Quarry at Buxton.

In this long series, it is primarily the paleontological and paleo-anthropological component which has made the Taung Skull Fossil Site so celebrated. This applies not only to the scientific world but also to the cultural world which is fascinated by the origin and history of humankind, in view of the fact, which is now indisputable, that Africa is the cradle of humankind (as had been predicted by Charles Darwin writing as early as 1871, in *The Descent of Man*). It will be noted that a large proportion of the caves where significant finds were made bear the names of the researchers who explored them (Professors Dart, Hirdlicka, Quinney, Tobias, etc.).

In this respect, the most famous name remains that of Professor Raymond DART, who proposed the term *Australopithecus africanus*, given in 1924 to a hominid specimen revealed by the Taung Skull Fossil, whose species is of great importance in the evolution of the hominisation process. The place in which the Taung Skull Fossil was found is known as *Dart Pinnacle*.

b/ Components of Makapan Valley:

This ensemble, of acknowledged richness, consists of:

Paleontological sites:
- Makapensgat Limeworks
- Buffalo Cave
- Peppercorn's Cave and Katzenjammer Cave

Archaeological sites:
- Cave of Earths and Hyaena Cave
- Ficus Cave and the Ficus Iron Age Site

- Many open-air sites

Historic sites:
- Historic Cave
- Makapansgat

History

This inscription application is an extension of the property inscribed on the World Heritage List in 1999 (on the basis of criteria iii and vi) under the name: "Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai and Environs".

The whole of this zone contains essential elements which define the origin and evolution of humankind. Thus, as a result of exploration and scientific analysis:

- geological strata have revealed the first traces of hominids in southern Africa, dating back around 3.5 million years;

- stone and bone tools, dating back from 2 to 1.5 million years, have been uncovered, particularly at the time of the discovery in 1936 by Professor Robert Broom of the first adult *Australopithecus*;

- fossil elements have enabled the identification of several specimens of early hominids, linked to the *Homo* genus, a collateral ancestor of modern man (*Homo sapiens sapiens*), more particularly specimens of *Paranthropus* dating back between 4.5 million and 2.5 million years: *Australopithecus africanus* and *Australopithecus robustus*.

- lastly, evidence of the domestication of fire, another specific characteristic of human behaviour, has been detected, for the period extending from 1.8m to 1m years ago.

Management regime

Legal provision:

Taung Skull Fossil Site:

In May 2004, i.e. three months after submission of the nomination dossier, the status of "National Heritage Site" was conferred on this ensemble. This means that it is now protected by the provisions of the *National Heritage Resources Act* (NHRA), and benefits from the constant attention of the *South Africa Heritage Resource Agency* (SAHRA).

As a result, the buffer zone can immediately be declared as a "protected space" and retain this status for a period of 2 years, leaving time to find sustainable solutions for the preservation of the zone.

Makapan Valley:

This ensemble was proclaimed a *National Heritage Site* in 2002, and thus benefits from the protections mentioned above for the Taung Skull site.

Important note:

In addition to the protection conferred by the National Heritage Resources Act, there are other legal safeguards relating to land use, development and environmental impact in the zone:

- mining exploitation is governed by the Quarries and Mining Act (no. 50, of 1991);

- the provisions of the Environmental Conservation Act (no. 73, of 1989) stipulate that impact studies are compulsory prior to all construction work;

- the provisions of the National Environment Management Act (no. 107, of 1999) state that management plans must be drawn up and approved by the governmental committee for environmental coordination;

- lastly, the Development Encouragement Act (no. 67, of 1995) provides for the devising, by the provincial and local authorities, of land development objectives (agriculture, tourism, leisure). This enables the local control and protection of sites against all damaging land use and risks relating to urban sprawl.

Management structure:

Taung Skull Fossil Site:

Five agencies have management authority:

- the *South African Heritage Resources Agency* (SAHRA), a national agency established in accordance with the provisions of the NHRA;
- the *North West Department of Agriculture, Conversation and Environment*, to which authority is devolved particularly relating to the control of animal and plant material;
- the *Department of Water Affairs and Forestry* (DWAF) exercises control over all matters pertaining to forestry protection, and to surface and ground water;
- the *Greater Taung Municipality*, a local government structure in charge of the Integrated Development Plan and the Spatial Planning Framework, and whose administrative territory is adjacent to the Skull Fossil Site.
- the *North West Parks and Tourism Board* (NWPTB) an organisation established in 1997 to manage tourist activities on the site.

It should be noted that because of its use of the resources of the site, the *Batlapeng Tribal Authority* may be involved in the process of managing this site, which is immediately surrounded by their living area.

Makapan Valley:

Five agencies are involved in the management of this site:

- the national agency (SAHRA), naturally;
- the *Limpopo Tourism and Parks Board* (LTPB), which - in addition to its responsibilities in tourism - owns part of the land to be protected;
- the University of the Witwatersrand (WITS), which not only regulates scientific research activity, but also owns some 77 hectares of the zone;

- An integrated provincial and local structure - the *Makapan Valley Project Management Committee* (MVPMC) - brings together the representatives of:

- *the Tribal Authority*
- *the Mogalakwena municipality*

and the provincial and local delegates and authorities.

- The *Mogalakwena municipality*, which is the structure that deals with residents, and which is responsible for the control of the water system.

Note that the Municipality is the main owner of the land in the management zone of this site, which is adjacent to the residents' living zone.

Resources:

Taung Skull Fossil Site:

After years of disinterest or abandonment, the site is now being given attention. This nomination dossier shows that substantial financial resources are being devoted to the implementation of the conservation policy. In accordance with the provisions of the 5-year development plan (*The Integrated Spatial Development Framework*), the funds come from the following programmes or organisations:

- Site Conservation Budget (*Buxton Heritage Site*)
- Tourism Programme (*Tourism Sign Boards for Taung Skull Site*)
- Museum (*Taung Skull Interpretative Museum*)
- Management Plan (*Conservation Management Plan*)

The total forecast amount is approximately 16 million rands, or some USD 2,700,000.

Makapan Valley:

An overall plan setting out the conservation and infrastructure development projects for the development of the zone (*Comprehensive Business Plan*) has been drawn up. It is monitored on an annual basis.

The following are involved in its financing:

- Limpopo Tourism and Parks Board,
- Limpopo Economic Development Enterprise,
- SAHRA
- University of the Witwatersrand
- The provincial and local authorities.

To this are added private donations and contributions from the National Lottery (e.g. the State National Lottery / Lotto very recently granted 16,600,000 rands for the conservation of the sites, equivalent to approximately USD2,800,000).

Justification by the State Party (summary)

The nomination for inscription on the World Heritage List is presented as a serial extension of the "Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai and Environs" inscribed on the World Heritage List in 1999. For this reason the State Party justifies its nomination by referring to criteria iii and vi on which basis the inscription was granted in 1999.

For the Taung Skull Fossil Site, it is pointed out that:

Criterion iii: The site bears exceptional testimony to some of the most important Australopithecine specimens dating back more than 3.5 million years; this throws unique light on to the origins and then the evolution of humankind, through the hominisation process.

Criterion vi: This site constitutes a vast reserve of scientific data of universal scope and considerable potential, linked to the history of the most ancient periods of humankind.

The State Party proposes the adding to these two criteria of criterion iv:

Criterion iv: The site bears exceptional testimony to a significant period in the evolutionary process of humankind.

For the Makapan Valley, the State Party bases its nomination on criteria iii and vi only.

3. EVALUATION BY ICOMOS

Actions by ICOMOS

An ICOMOS expert mission visited the sites in August 2004.

Note:

The evaluator for this mission is the same person who carried out the ICOMOS mission in January 1999 for the "Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai and Environs".

This greatly facilitated the analysis and enabled a study of the extension conditions proposed, based on a good knowledge of the practical realities of the site and the problems.

ICOMOS also contacted the State Party to obtain additional information about the location of the sites, the boundaries of the Taung Skull Fossil Site, and the joint management of the sites and archaeological data. The State Party has provided supplementary information and agreed to extend the nominated site to include part of the Buffer Zone known as the Liquor store.

Conservation

Conservation history:

Generally speaking, the importance of fossil hominid sites is revealed by excavations, and on occasion by chance discoveries. This means that material is removed from the sites as discoveries take place, and that, in this specific field, one must make judgments based on conventional conservation terms.

a/ It should be recalled that the place in which the Taung Skull Fossil site was discovered is an open limestone quarry, and that industrial and commercial considerations at first prevented this site from being declared a paleo-anthropological site.

It should not be forgotten either that the Taung Skull Fossil Sites ensemble (nominated for inclusion on the World Heritage List) represents one of the last vestiges of the racist ideology of Apartheid and the exploitation of the work of Black people. Many of the buildings in which the black workers lived in poor conditions are still intact, and the memory of this past period still remains vivid.

Another remark should also be made: many questions concerning the long-term conservation of the sites are clearly raised in the inscription nomination dossier. These questions must now be seen as less acute, and be reconsidered, as the sites have now been proclaimed national heritage properties (May 2004), which gives them a high level of conservation protection.

b/ The essential remark concerning Makapan Valley is the fragile nature of the structures uncovered by quarry exploitation or archaeological excavations.

The monitoring carried out up to now, whose results have been mixed, will be stepped up under the provisions of the National Heritage Resources Act.

State of conservation:

It is important not to lose sight of two key facts:

- The sites which contain fossil hominids are generally fragile;
- The importance of the paleontological and archaeological sites is only revealed by excavations, i.e. by the material that is removed as discoveries are made. This means that the most significant finds, which enable advances in knowledge and make the site valuable, as the site of the find, cannot be conserved in their context.

To these facts, which are in no way specific to the sites in South Africa, may be added - as far as conservation is concerned - something which is specific to the country: the legacy of the ideology of Apartheid, which even influenced the fields of research and anthropology.

However, it should be pointed out that the relevant South African authorities - as revealed in the nomination dossier - are fully aware of the problems raised by the conservation of the sites, and that they carry out effective monitoring.

Lastly, the status of "National Heritage Site" conferred in 2002 on the Makapan Valley and in 2004 on the Taung Skull Fossil Site means that the conservation conditions should be gradually improved.

Management:

As indicated above (in the section on Management Structure), the diversity and the specialisation of the agencies involved in the management of the sites ensure that the questions, activities and aspects covered by this management are taken into account. Accordingly, with regard to the Taung Skull Fossil Site, convinced of the necessity of setting up an integrated management agency bringing together all the organisations, administrative departments, local authorities and legal entities involved and interested, the South African authorities have committed themselves - during the field mission undertaken by ICOMOS (and particularly after the working session of 17 August 2004) - to ensuring the participation, in the management process, of all those interested at the national, regional and local levels.

The regulatory provisions for the setting up of this new management authority, and its operation, will be effective at the end of March 2005, and at all events before the 29th session of the World Heritage Committee in July 2005.

Risk analysis:

The inscription nomination dossier unhesitatingly highlights the risks facing the nominated site, and the threats faced by its components in general:

- Development pressures,
- Pressures on the integrity of the environment, because of the presence of the villagers, scattered over the protected area, and their use of wood and water, which are necessary for their everyday life but are often prejudicial to the environmental balance.
- The damage caused by insufficiently controlled or anarchical visits (particularly by tourists).

All these risks and threats are taken seriously by the authorities concerned. Their impact is currently being analysed, and corrective measures or long-term protection measures are being prepared at all levels of responsibility, with the participation of the population.

Authenticity and integrity

From the viewpoint of integrity (in this case the criteria are those which apply to natural properties), the caves, breccia and strata from which quantities of fossils or tools have been extracted are generally intact. They are no longer exploited as quarries.

Similarly - despite the presence of the scattered population and domestic animals - the landscape, taken as a whole, has a high level of integrity.

As for the fossil sites, it is hard to apply the concept of authenticity in the classical sense.

Comparative evaluation

In 1997, ICOMOS had a comparative study carried out by two eminent paleontologists of potential fossil hominid sites for inscription on the World Heritage List. The study set out six criteria for evaluating such sites:

- a good chronology,
- number of fossils,
- dating of discoveries,
- discovery potential,
- closely linked groups of sites,
- discovery and evidence of human evolution.

Like Sterkfontein Valley, inscribed on the World Heritage List in 1999, the Taung Skull Fossil Site and Makapan Valley meet all the above criteria.

Outstanding universal value

General statement:

Just as much as the fossil hominid sites of Sterkfontein, Swartkrans, Kromdraai and Environs, inscribed on the World Heritage List in 1999, Taung Skull Fossil Site and Makapan Valley contain exceptional traces, which are both physical and cultural, of the first stages of the evolution of *Hominidae*.

These deposits are of universal value from the viewpoint of science, archaeology and anthropology. In fact, they bear a testimony of the first importance covering several significant periods of human prehistory. The discovery in 1925 by Professor Dart of the fossil skull of the Taung child - a discovery confirmed by others (particularly from 1936 onwards, in 1938, and from 1948 onwards), led to the conclusion that the species represented had a definite link with the origin and evolution of humankind.

Furthermore, it is these South African fossils that in fact enabled the designation of Africa as the cradle of humankind.

Evaluation of criteria:

With regard to the Taung Skull Fossil Site, the nomination dossier refers to criteria iii, iv and vi.

It justifies the application of these criteria as follows:

- for criteria iii and vi: by pointing out that this is a proposal to extend the fossil hominid sites of Sterkfontein, Swartkrans, Kromdraai and Environs, and that the said sites have been inscribed on the basis of criteria iii and iv, and concluding that the applicability of the same criteria was a logical consequence.

- for criteria iv: by arguing that the site bears an exceptional testimony to an important stage of the evolutionary process of humankind.

As for the Makapan Valley ensemble, the nomination is however limited to criteria iii and vi.

Important note:

It seems that criteria iv should not apply because of homogeneity in the reference to criteria. If the extension is to be approved, it would be approved on the basis of the existing criteria iii and vi. How could the addition of a criterion be accepted for a mere extension, and above all for only one part of the extension (i.e. Taung Skull Fossil Site)?

It would be more logical to propose that criterion iv should be accepted for the basic sites already inscribed in 1999 and for the two extensions (not just Taung Skull Fossil Site but also Makapan Valley.

Conclusion:

As ICOMOS is suggesting that the extension should be approved, it is strongly recommended that the appropriate order is not disturbed and that homogeneity is observed: the same criteria should apply for the sites already inscribed and for the extensions.

4. ICOMOS RECOMMENDATION

Recommendations with respect to inscription

ICOMOS recommends that the World Heritage Committee adopt the following draft decision:

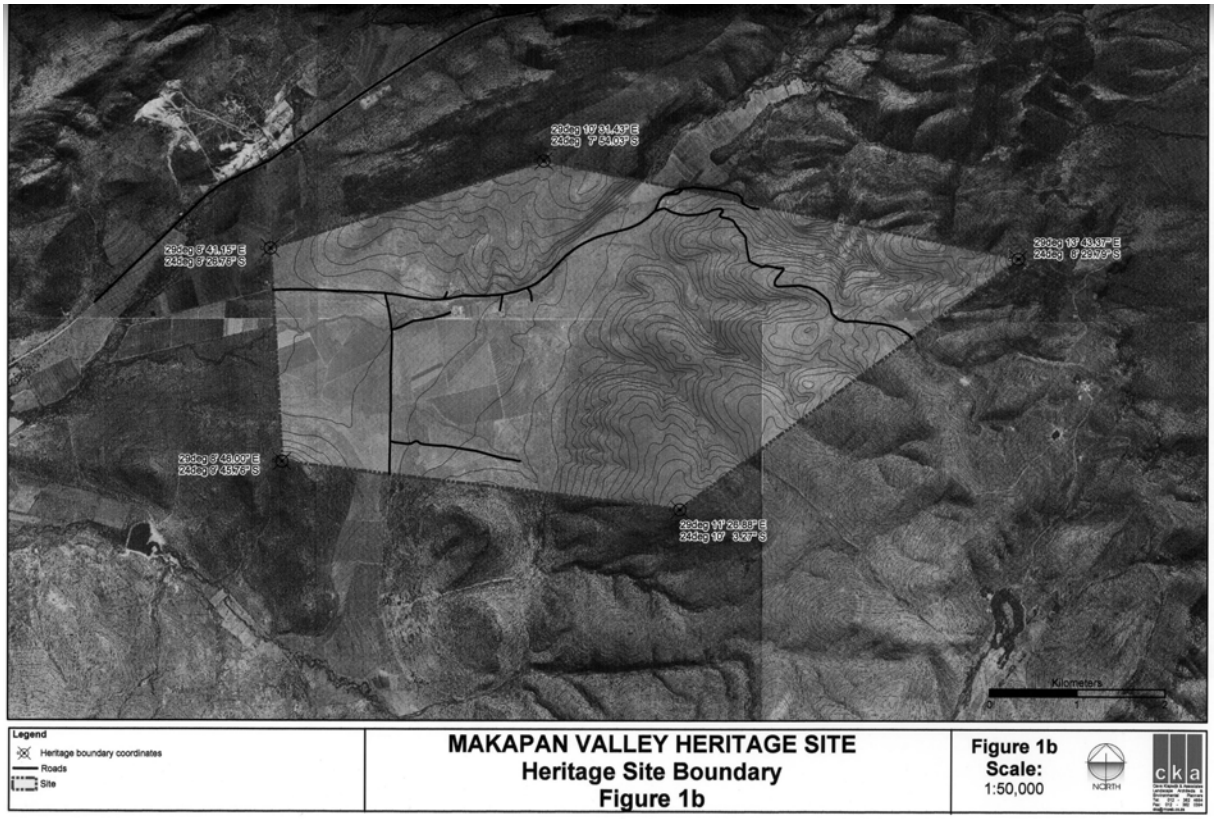
The World Heritage Committee,

1. Having examined Document WHC-05/29.COM/8B,

2. Approves the extension on the basis of the ***existing criteria iii and vi***.

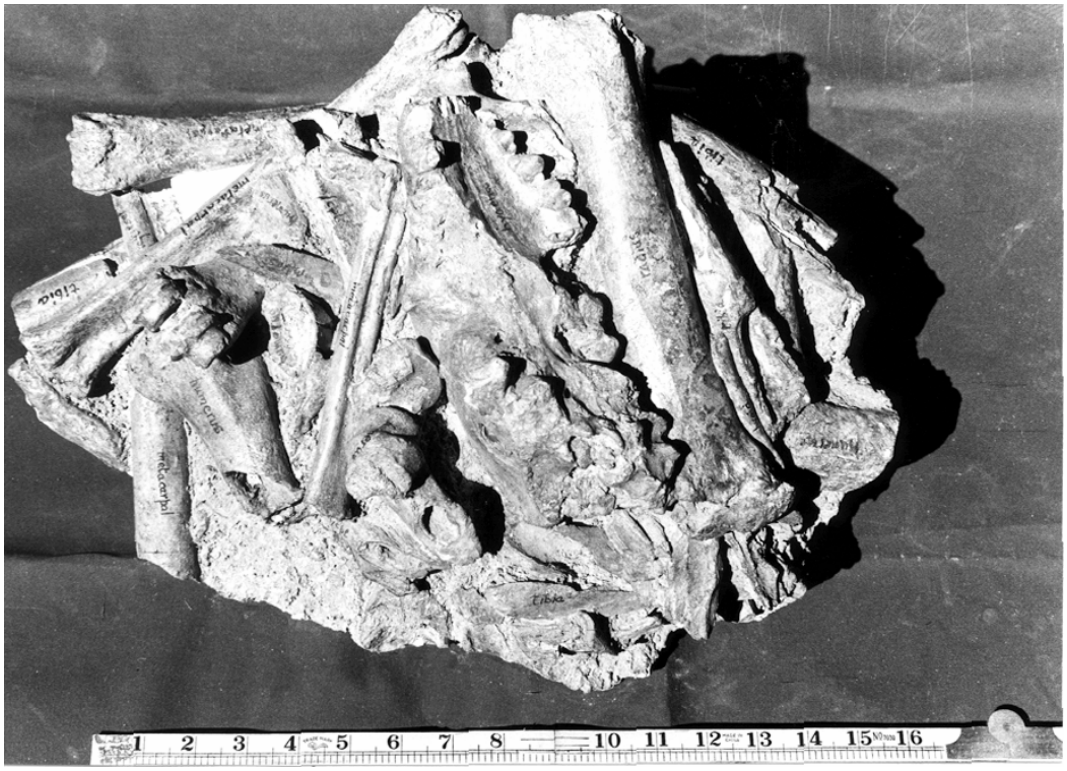
3. Notes the proposal made by the State Party for the changing of the name of the property, which as extended becomes: “The Fossil Hominid-bearing Sites of South Africa”.

ICOMOS, April 2005

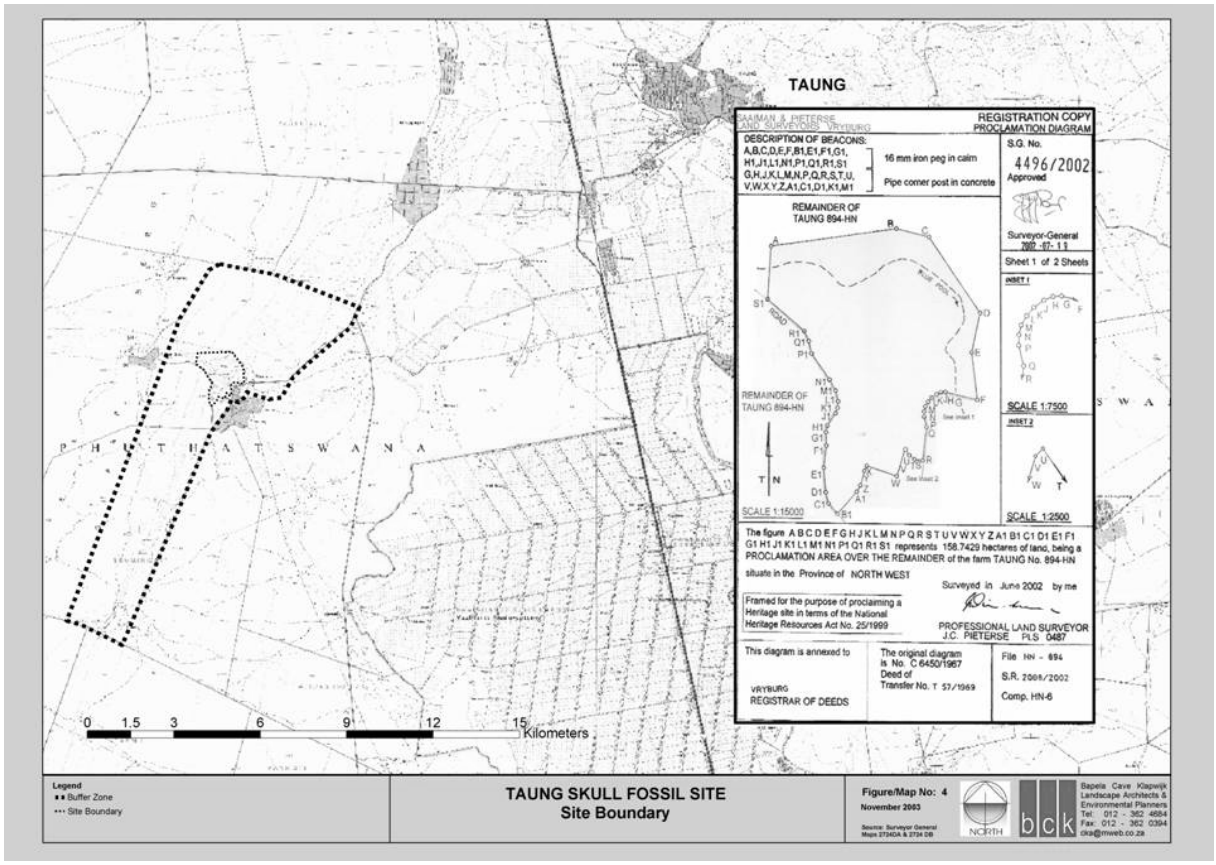


Map showing the boundaries of the Makapan Valley

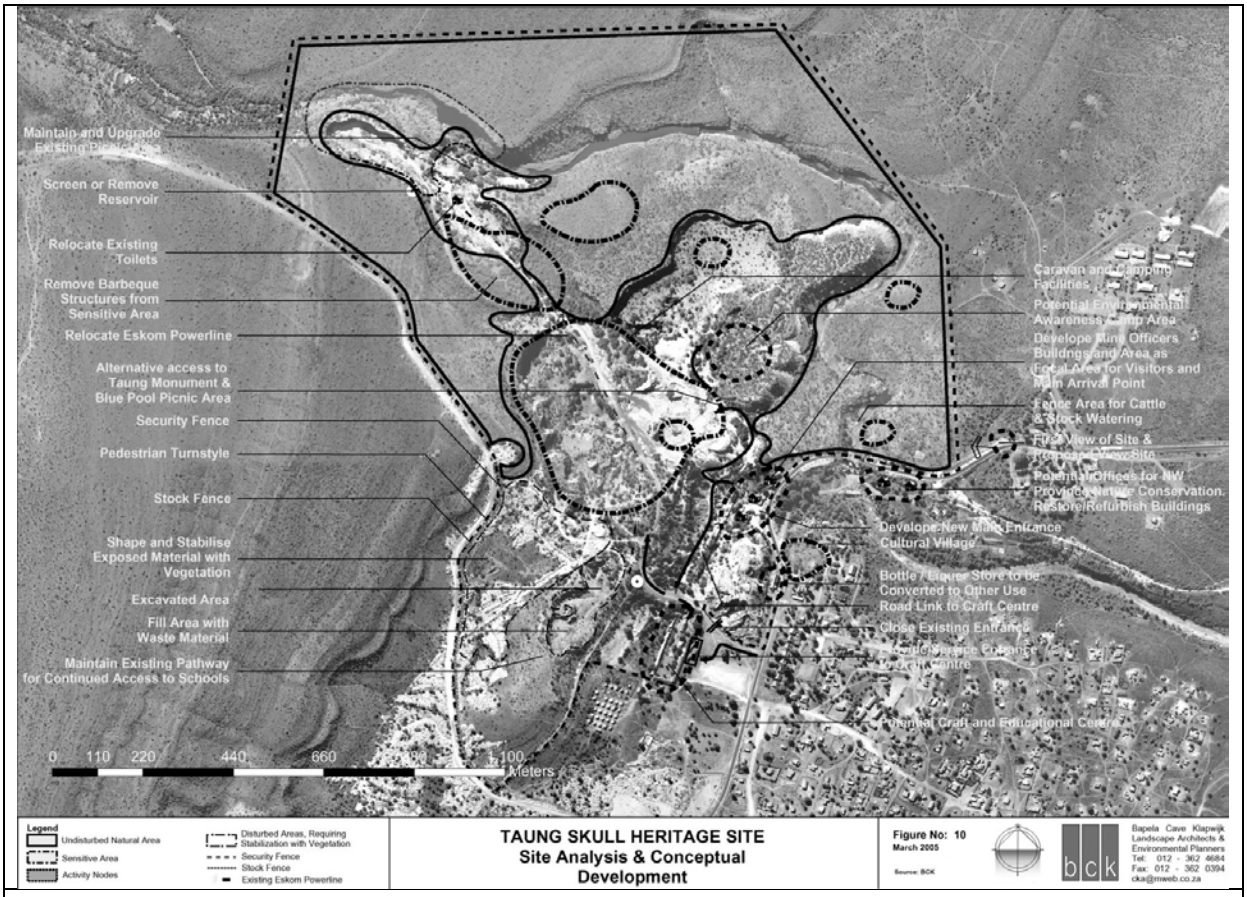
Makapansgat Limeworks interior



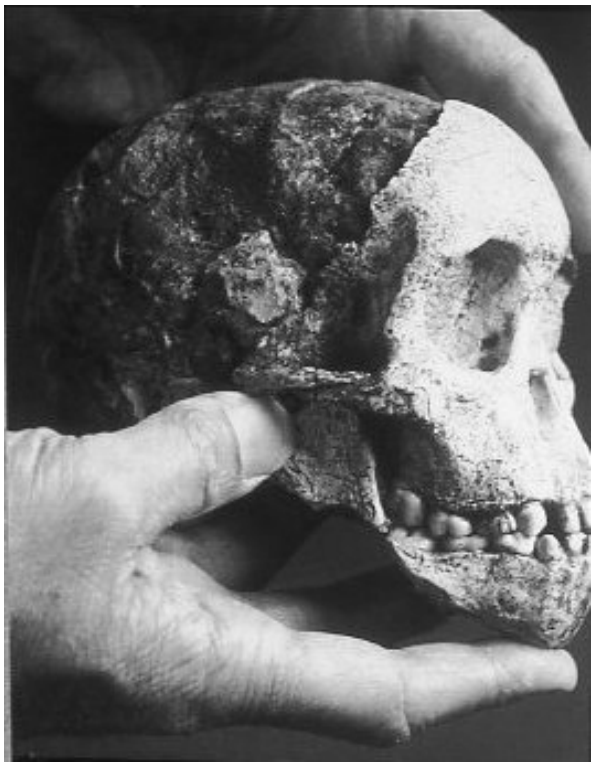
Block of richly fossiliferous breccia



Map showing the boundaries of the Taung Skull Fossil Site



Revised Map showing the nominated area of the Taung Skull Fossil Site



Taung Fossil Skull

Abandoned Norlim Limestone Quarry at Buxton

Makapan et Taung (Afrique du Sud)

No 915 bis

1. IDENTIFICATION

État partie : Afrique du Sud

Bien proposé : Vallée de Makapan et site du crâne fossile de Taung

Lieu : Vallée de Makapan :
Province du Limpopo
Site du crâne fossile de Taung :
Province du Nord-Ouest.

Date de réception : 2 février 2004

Catégorie de bien :

En termes de catégories de biens culturels, telles qu'elles sont définies à l'article premier de la Convention du Patrimoine mondial de 1972, il s'agit d'un *site*.

Le bien proposé est une extension en série des « Sites des hominidés fossiles de Sterkfontein, Swartkrans, Kromdraai et les environs », inscrits sur la liste du Patrimoine mondial en 1999 sur la base des critères iii et vi.

Brève description :

Le site du crâne fossile de Taung est le lieu de découverte, en 1924, du célèbre crâne de Taung, spécimen de l'espèce Australopithecus africanus.

La vallée de Makapan abrite dans ses nombreuses grottes archéologiques – sous forme de sédiments/fossiles et vestiges archéologiques – des traces de l'occupation et de l'évolution humaines, depuis 3,3 millions d'années environ.

2. LE BIEN

Description

Le site du crâne fossile de Taung couvre une zone de 158,7429 ha, avec une zone tampon de 3,387 ha. Il se compose de sites archéologiques, paléontologiques, historiques et sites miniers d'importance patrimoniale.

La vallée de Makapan couvre 2 220,0495 ha, avec une zone tampon de 55 ha environ. Elle est constituée de sites paléontologiques, archéologiques, et historiques.

a/ Composantes du site du crâne fossile de Taung :

Cet ensemble comprend des sites archéologiques dont l'importance est généralement reconnue. Ce sont les 4 grottes suivantes :

- Wittrans Cave,
- Black Earth Cave,
- Equus Cave,
- Power House Cave.

Il comprend de même une riche série de sites paléontologiques, dont certains sont très connus des plus grands préhistoriens et paléontologues. Il s'agit des 19 sites ci-après :

- Dart Pinnacle,
- Hirdlicka's Pinnacle,
- Hirdlicka's Deposits,
- Dart Deposits,
- Tobias Pinnacle Deposits,
- Berger Cave Complex,
- Lucky Moon Cave,
- LSN Cave,
- Innominate Cave,
- Quinney Cave,
- Cut-through Alley,
- Black Earth Cave
- Peabody's Equus Site,
- Equus Cave,
- Blom Cave,
- Alcove Cave,
- Oaxland Large Mammal Site,
- Acacia Cave.

Il comprend enfin des sites historiques et des sites miniers (vastes carrières de calcaire, aujourd'hui désaffectées) d'importance patrimoniale : il s'agit de Norline Quarry, à Buxton.

Dans cette longue série, c'est avant tout la composante paléontologique et paléoanthropologique qui a fait la célébrité du site du crâne fossile de Taung dans le monde scientifique et parmi les milieux culturels passionnés par l'origine et l'histoire de l'humanité, compte tenu du fait, aujourd'hui indiscutable, que l'Afrique est le berceau de l'humanité (NB : comme l'avait prédit Charles Darwin, dès 1871, dans son livre : *De la descendance de l'homme*). On aura remarqué qu'une grande part des grottes où ont été faites les découvertes significatives portent le nom des chercheurs qui les ont explorées : ainsi les professeurs Dart, Hirdlicka, Quinney, Tobias, etc.

À cet égard, le nom le plus fameux demeure celui du professeur Raymond DART, à l'origine de la dénomination Australopithecus africanus, donnée en 1924 au spécimen d'hominidé révélé par le crâne fossile de Taung et dont l'espèce est d'une importance considérable dans l'évolution du processus d'hominisation. Or, justement, le lieu de découverte de ce crâne fossile de Taung s'appelle *Dart Pinnacle*.

b/ Composantes de la vallée de Makapan :

Cet ensemble, d'une richesse reconnue, est constitué de :

Sites paléontologiques :
- Makapensgat Limeworks
- Buffalo Cave
- Peppercorn's Cave et Katzenjammer Cave

Sites archéologiques :
- Cave of Earths et Hyaena Cave

- Ficus Cave et le site Ficus de l'âge du fer
- Nombreux sites en plein air

Sites historiques :
- Historic Cave
- Makapansgat

Histoire

Cette proposition d'inscription se présente comme une extension du bien inscrit sur la liste du Patrimoine mondial en 1999 (sur la base des critères iii et vi) sous le nom de « Sites des hominidés fossiles de Sterkfontein, Swartkrans, Kromdraai et les environs ».

Or, toute cette zone contient des éléments essentiels définissant l'origine et l'évolution de l'humanité. Ainsi, grâce à l'exploration et à l'analyse scientifique :

- des couches géologiques ont révélé les premières traces d'hominidés dans le sud de l'Afrique : 3,5 millions d'années environ ;

- des outils en pierre et en os, datant de 2 à 1,5 millions d'années, ont été mis au jour, en particulier à l'occasion de la découverte, en 1936, par le professeur Robert Broom, du premier australopithèque adulte ;

- des éléments fossiles ont permis de reconnaître plusieurs spécimens de la lignée des hominidés, apparentés au genre *Homo*, ancêtre collatéral de l'homme moderne (*Homo sapiens sapiens*), plus particulièrement des « paranthropes » datant entre 4,5 et 2,5 millions d'années : Australopithecus africanus et Australopithecus robustus.

- Enfin, des preuves de domestication du feu, autre trait spécifique du comportement humain, ont été mises en évidence, pour une période s'étendant de 1,8 à 1 million d'années.

Politique de gestion

Dispositions légales :

Site du crâne fossile de Taung :

En mai 2004, c'est-à-dire trois mois après la soumission du dossier de proposition d'inscription, le statut « site du Patrimoine national » a été conféré à cet ensemble. Il est protégé, désormais, par les dispositions de la loi nationale, *The National Heritage Resources Act* (NHRA), et bénéficie de l'attention constante de l'Agence nationale du Patrimoine, *The South Africa Heritage Resource Agency* (SAHRA).

À ce titre, la zone tampon peut être immédiatement déclarée « espace protégé » et garder ce statut pendant une durée de 2 années, le temps que des solutions durables, pour la préservation de la zone, puissent être trouvées.

Vallée de Makapan :

Cet ensemble a été proclamé, en 2002, *site du Patrimoine national* et, à ce titre, bénéficie des protections mentionnées ci-dessus pour le site du crâne fossile de Taung.

Remarque importante :

Outre la protection conférée par la loi sur le Patrimoine national, il existe d'autres mécanismes juridiques permettant l'utilisation des sols, le développement et l'impact environnemental dans la zone :

- l'exploitation minière est soumise à la loi sur les carrières et mines (n°50, de 1991) ;

- les dispositions de la loi sur la conservation de l'environnement (n°73, de 1989) stipulent que des études d'impact préalables à tous travaux de construction sont indispensables ;

- les dispositions de la loi sur la gestion de l'environnement national (n°107, de 1999) requièrent la formulation de plans de gestion ainsi que leur approbation par le Comité gouvernemental de coordination environnementale ;

- enfin, la loi sur l'encouragement du Développement (n°67, de 1995) prévoit l'élaboration, par les autorités provinciales et locales, d'Objectifs de développement des terres (agriculture, tourisme, loisirs). Cela permet le contrôle local et la prévention des sites contre toute utilisation dommageable des sols et les risques liés à l'extension urbaine.

Structure de la gestion :

Site du crâne fossile de Taung :

Cinq opérateurs composent l'Autorité de gestion :

- SAHRA, Agence nationale établie conformément aux dispositions de la Loi sur le Patrimoine national (NHRA) ;
- *North West Department of Agriculture, Conversation and Environment*, Autorité de décentralisation contrôlant en particulier la faune et la flore ;
- *Department of Water Affairs and Forestry* (DWAF) exerçant le contrôle pour la protection de la forêt et pour les eaux tant en surface que dans la nappe phréatique ;
- *Greater Taung Municipality*, Autorité Communale en charge des Plans d'Aménagement et de Développement et dont le territoire administratif jouxte le site du crâne fossile.
- *North West Parks and Tourism Board* (NWTPB) organisme établi en 1997 pour gérer les activités touristiques dans le site.

Il est à signaler qu'en raison de l'utilisation des ressources du site la communauté tribale *The Batlapeng Tribal Authority* peut-être impliquée dans le processus de gestion de ce site, limitrophe de leur zone d'habitat.

Vallée de Makapan :

Les intervenants, en matière de gestion de ce site, sont au nombre de cinq :

- l'Agence nationale SAHRA, évidemment ;
- *Limpopo Tourism and Panks Board* (LTPB), qui intervient, outre ses compétences touristiques, en tant que propriétaire d'une part du terrain à protéger ;

- L'Université de Witwatersrand (WITS), qui non seulement assume une mission de régulation de la recherche scientifique, mais intervient également en tant que propriétaire de 77 ha de la zone ;
- Une structure provinciale et locale intégrée, *Makapan Valley Project Management Committee* (MVPMC), réunit les représentants de :

- *the Tribal Authority*
- *the Mogalakwena municipality*

ainsi que les délégués et les autorités provinciales et locales.

- La municipalité en tant que telle, *Mogalakwena municipality*, qui est l'interlocuteur des résidents et à qui incombe la responsabilité du contrôle du régime des eaux.

Il est à noter que la Municipalité est le propriétaire principal des terrains dans la zone de gestion de ce site, limitrophe de leur zone d'habitation.

Ressources :

Site du crâne fossile de Taung :

Après des décennies de désintérêt ou d'abandon, le site est désormais pris en charge. Ce dossier de proposition d'inscription montre que des moyens financiers substantiels sont consacrés à la mise en œuvre de la politique de conservation. Selon les dispositions du plan quinquennal de développement (*The Integrated Spatial Development Framework*), les fonds proviennent des programmes ou organismes suivants :

- Budget pour la Conservation du Site (*Buxton Heritage Site*)
- Programme pour le tourisme (*Tourism Sign Boards for Taung Skull Site*)
- Musée (*Taung Skull Interpretative Museum*)
- Plan de gestion (*Conservation Management Plan*)

Le montant total des prévisions est de 16 millions de rands environ soit à peu près 2 700 000 US dollars.

Vallée de Makapan :

Un plan global programmant les projets de conservation et d'aménagement des infrastructures pour le développement de la zone (*Comprehensive Business Plan*) a été élaboré. Il est l'objet d'un suivi annuel.

Pour son financement interviennent :

- Limpopo Tourism and Parks Board,
- Limpopo Economic Development Enterprise,
- SAHRA
- University of the Witwatersrand
- Les Autorités provincials et locales.

À cela s'ajoute des dons privés et des contributions de la Loterie nationale (par exemple : cette Loterie – State National Lottery / Lotto – a accordé, tout récemment, 16 600 000 rands, pour la conservation des sites soit 2 800 000 dollars environs).

Justification émanant de l'État partie (résumé)

La proposition d'inscription sur la liste du Patrimoine mondial se présente comme une extension en série des « Sites des hominidés fossiles de Sterkfontein, Swartkrans, Kromdraai et les environs » inscrits sur la Liste du Patrimoine mondial en 1999. C'est pourquoi l'État partie justifie cette proposition en se référant aux critères iii et vi qui ont également justifié l'inscription obtenue en 1999.

Pour le site du crâne fossile de Taung, il est rappelé que :

Critère iii : Ce site recèle des témoignages exceptionnels de quelques uns des plus importants spécimens d'australopithécidés remontant à plus de 3,5 millions d'années ; c'est-à-dire un éclairage unique sur les origines puis l'évolution de l'espèce humaine, à travers le processus d'hominisation.

Critère vi : Ce site constitue une vaste réserve de données scientifiques, de portée universelle et au potentiel considérable, liées à l'histoire des temps les plus anciens de l'humanité.

L'État partie propose de rajouter à ces deux critères le critère iv :

Critère iv : Le site représente, en effet, un témoignage exceptionnel sur une période significative de processus d'évolution de l'espèce humaine.

Pour le site de la vallée de Makapan, l'État Partie s'en tient aux critères iii et vi.

3. ÉVALUATION DE L'ICOMOS

Actions de l'ICOMOS

Une mission d'expertise de l'ICOMOS a visité les sites en août 2004.

Remarque :

L'évaluateur, au cours de cette mission, est le même évaluateur qui a accompli la mission de l'ICOMOS, en janvier 1999, pour les « Sites des hominidés fossiles de Sterkfontein, Swartkrans, Kromdraai et les environs ».

Cela a grandement facilité l'analyse et a permis d'étudier les conditions de l'extension proposée, sur la base d'une bonne connaissance du terrain et des problèmes.

L'ICOMOS a également contacté l'État partie afin d'obtenir des informations supplémentaires sur la localisation des sites, la délimitation du site du crâne fossile de Taung, la gestion conjointe des sites et les données archéologiques. L'État partie a fourni les informations demandées et a accepté d'étendre le bien proposé pour inscription afin d'inclure une partie de la zone tampon appelée *Liquor Store*.

Conservation

Historique de la conservation :

En général, l'importance des sites d'hominidés fossiles est révélée par les fouilles et, quelquefois, à l'occasion de découvertes fortuites. Cela signifie que l'on retire le matériel des sites au fur et à mesure des découvertes et qu'il ne faut pas, dans ce domaine précis, juger en termes classiques de conservation.

a/ Il convient de rappeler que le lieu de découverte du crâne fossile de Taung est une carrière, à ciel ouvert, de calcaire et que des raisons industrielles et commerciales ont d'abord empêché que ce lieu soit déclaré site paléoanthropologique.

Il ne faut pas oublier, non plus, que l'ensemble des sites du crâne fossile de Taung (ensemble proposé à l'inscription sur la Liste du Patrimoine mondial) représente l'un des derniers vestiges de l'idéologie raciste de l'Apartheid et de l'exploitation du travail des Noirs. Ainsi de nombreux bâtiments, où étaient parqués les ouvriers noirs, sont encore intacts et la mémoire de ces temps révolus reste encore vivace.

Enfin une remarque s'impose : de nombreuses questions relatives à la conservation durable des sites sont clairement posées dans le dossier de proposition d'inscription. Il faut, désormais, en relativiser l'acuité et même les réviser, à la lumière de la proclamation de ces sites comme Patrimoine national, en mai 2004, ce qui leur confère un haut niveau de conservation.

b/ La remarque essentielle concernant la vallée de Makapan est la nature fragile des structures mises en évidence par l'exploitation de la carrière ou par les fouilles archéologiques.

Le suivi assuré jusqu'ici, avec plus ou moins de résultats, est appelé à se renforcer dans le cadre des dispositions de la loi sur le Patrimoine national.

État de conservation :

Il y a lieu de ne pas perdre de vue deux données de base :

- Les sites qui renferment des fossiles d'hominidés sont généralement fragiles ;
- L'importance des sites paléontologiques et archéologiques n'est révélée que par les fouilles, c'est-à-dire par le matériel que l'on retire au fur et à mesure des découvertes. Autant dire que les pièces les plus significatives qui font avancer la connaissance et donnent de la valeur au site, leur lieu de trouvaille, ne peuvent être conservés dans leur contexte.

À cet état de fait, nullement spécifique des sites d'Afrique du Sud, s'ajoute, pour la conservation, une caractéristique propre à ce pays ; l'héritage de l'idéologie de l'Apartheid qui a influencé même les domaines de la recherche et de l'anthropologie.

Cependant, il est remarquable que les Autorités concernées de l'Afrique du Sud – comme le révèle le dossier de proposition d'inscription, soient pleinement conscientes des problèmes que pose la conservation des sites et qu'elles assurent un suivi efficace.

Enfin le statut du « site du Patrimoine national » conféré, en 2002, à l'ensemble de la vallée du Makapan et, en 2004, au site du crâne fossile de Taung permet d'améliorer progressivement les conditions de conservation.

Gestion :

Comme indiqué ci-dessus (voir « Structure de la gestion »), la diversité et la spécialisation des intervenants impliqués dans le processus de gestion des sites garantissent une prise en compte des questions, des activités et des différents aspects que couvre cette gestion. C'est pourquoi, en ce qui concerne le site du crâne fossile de Taung, convaincus de la nécessité de mettre en place un organe intégré de gestion réunissant l'ensemble des organismes, services administratifs, collectivités locales et personnes morales impliqués ou intéressés, les Autorités sud-africaines se sont engagées, lors de la mission entreprise sur le terrain par l'ICOMOS (en particulier, après la séance de travail du 17 août 2004), à assurer la participation, dans le processus de gestion, de tous les intéressés aux plans national, régional et local.

Les dispositions réglementaires pour la mise en place de cette nouvelle Autorité de gestion et de son fonctionnement seront effectives fin mars 2005 et, en tout état de cause, avant la 29e session du Comité du Patrimoine mondial, en juillet 2005.

Analyse des risques :

Le dossier de proposition d'inscription met en lumière, sans hésitation, les risques qu'encourt le site proposé et les menaces qui pèsent sur ses composantes, en général :

- Les pressions consécutives au développement,
- Les pressions sur l'intégrité de l'environnement, en raison de la présence de villageois, dispersés à travers l'espace protégé, et de leur usage du bois et de l'eau, nécessaire à leur vie quotidienne mais souvent préjudiciable à l'équilibre environnemental.
- Les dégâts causés par les visites (en particulier touristiques) incontrôlées ou anarchiques.

Tous ces risques et menaces sont pris au sérieux par les Autorités concernées. Leur impact est en cours d'analyse et, à tous les niveaux de responsabilité, des mesures correctives ou de protection durable, avec la participation de la population, sont en cours de préparation.

Authenticité et intégrité

En termes d'intégrité (comme c'est le cas des biens relevant des critères pour les biens naturels) les grottes, les brèches ou les strates d'où ont été extraites des quantités de fossiles ou d'outils sont, généralement, intactes. Elles ne sont plus exploitées comme carrières.

De même, malgré la présence de la population dispersée et des animaux domestiques, le paysage, dans sa globalité, possède un haut degré d'intégrité.

Pour les sites de fossiles, il est difficile d'appliquer dans son acception classique, le concept d'authenticité.

Évaluation comparative

L'ICOMOS a fait préparer, en 1997, par deux éminents paléontologues une étude comparative des sites potentiels d'hominidés fossiles pour inscription sur la Liste du Patrimoine mondial. Elle a établi six critères d'évaluation de ces sites :

- bonne chronologie,
- nombre de fossiles,
- datation des découvertes,
- potentiel de découvertes,
- groupes de sites étroitement liés,
- découverte et preuves de l'évolution humaine.

Comme la vallée de Sterkfontein, inscrite sur la Liste du Patrimoine mondial en 1999, le site du crâne fossile de Taung et la vallée de Makapan remplissent tous les critères précités.

Valeur Universelle Exceptionnelle

Déclaration générale :

Tout autant que les sites des hominidés fossiles de Sterkfontein, Swartkrans, Kromdraai et les environs, inscrits en 1999 sur la liste du Patrimoine mondial, le site du crâne fossile de Taung et l'ensemble de la vallée de Makapan renferment des traces exceptionnelles, tant physiques que culturelles, des premiers stades de l'évolution des Hominidés.

Ces gisements ont une valeur universelle du point de la science, de l'archéologie et de l'anthropologie. De fait, ils portent un témoignage de premier ordre sur plusieurs périodes significatives de la préhistoire de l'humanité. La découverte, dès 1925 par le professeur Dart, du crâne fossile de l'enfant Taung, découverte confirmée par d'autres (notamment à partir de 1936 puis en 1938 et après 1948), avait permis de conclure que les espèces représentatives avaient un lien assuré avec l'origine et l'évolution de l'humanité.

De plus, ce sont ces fossiles d'Afrique du Sud qui ont justement permis de désigner l'Afrique comme le berceau de l'humanité.

Évaluation des critères :

En ce qui concerne le site du crâne fossile de Taung, le dossier de proposition d'inscription fait référence aux critères iii, iv et vi.

Il justifie cette référence :

- pour les critères iii et vi : en rappelant qu'il s'agit d'une proposition d'extension des sites des hominidés fossiles de Sterkfontein, Swartkrans, Kromdraai et les environs, en faisant remarquer que ces derniers sites ont été inscrits sur la base des critères iii et iv, en concluant que le recours aux mêmes critères s'impose par voie de conséquence.

- pour le critère iv : en arguant que le site présente un témoignage exceptionnel sur une importante étape dans le processus d'évolution de l'espèce humaine.

En ce qui concerne l'ensemble de la vallée de Makapan, le dossier de proposition d'inscription s'en tient, en revanche, aux critères iii et vi.

Remarque importante :

C'est d'abord l'homogénéité dans la référence aux critères qui semble imposer de renoncer au critère iv. Si l'extension devait être approuvée, elle le serait sur la base des critères existants iii et vi. De fait, comment admettre l'adjonction d'un critère pour une simple extension, et surtout seulement pour une partie de cette extension (à savoir le site du crâne fossile de Taung) ?

Il serait plus logique de proposer la référence au critère iv tant pour les sites de base déjà inscrits en 1999 que pour les 2 extensions, non seulement le site du crâne fossile de Taung mais aussi la vallée de Makapan.

Conclusion :

Comme l'ICOMOS suggère que l'extension soit approuvée, il est vivement conseillé de ne pas bouleverser l'ordre des choses et de s'en tenir à l'homogénéité : mêmes critères et pour les sites déjà inscrits et pour les extensions.

4. RECOMMANDATION DE L'ICOMOS

Recommandation concernant l'inscription

L'ICOMOS recommande que le Comité du patrimoine mondial adopte le projet de décision suivant :

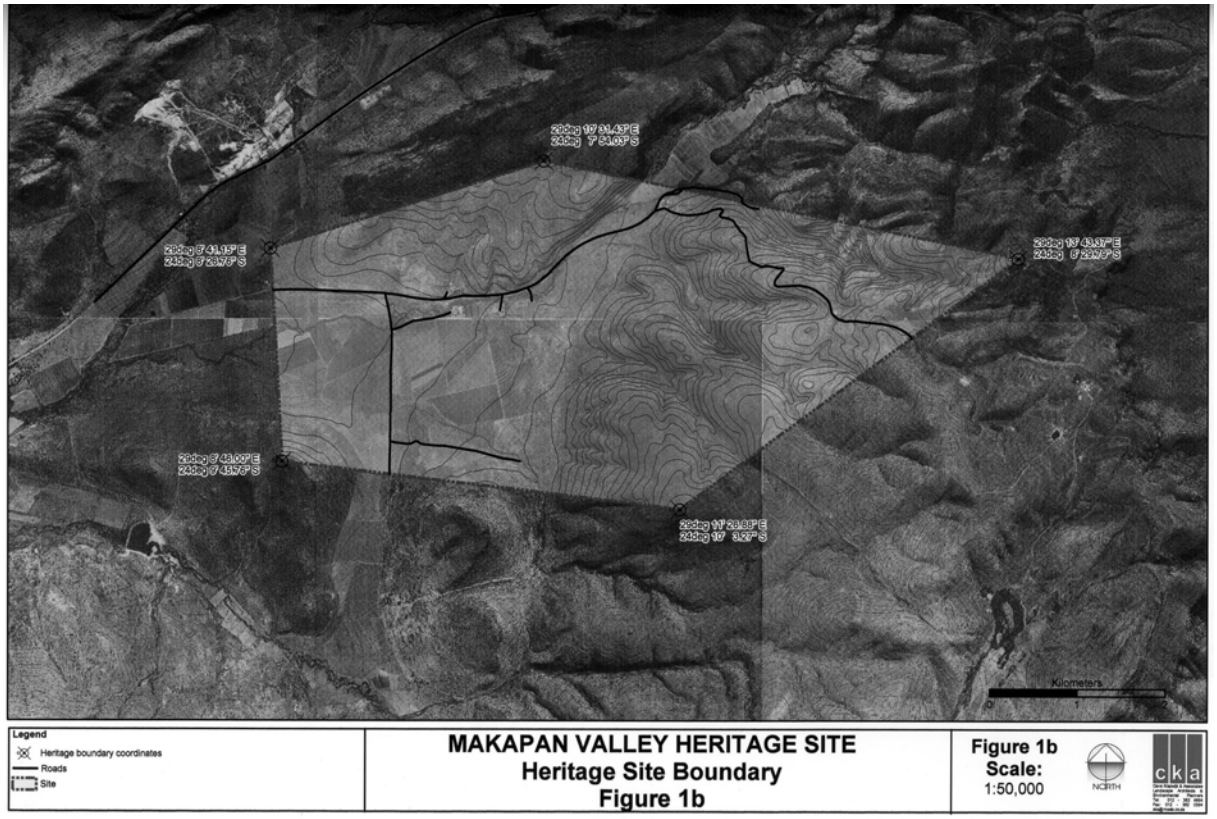
Le Comité du patrimoine mondial,

1. Ayant examiné le document WHC-05/29.COM/8B,

2. Approuve l'extension sur la base des ***critères existants iii et vi***.

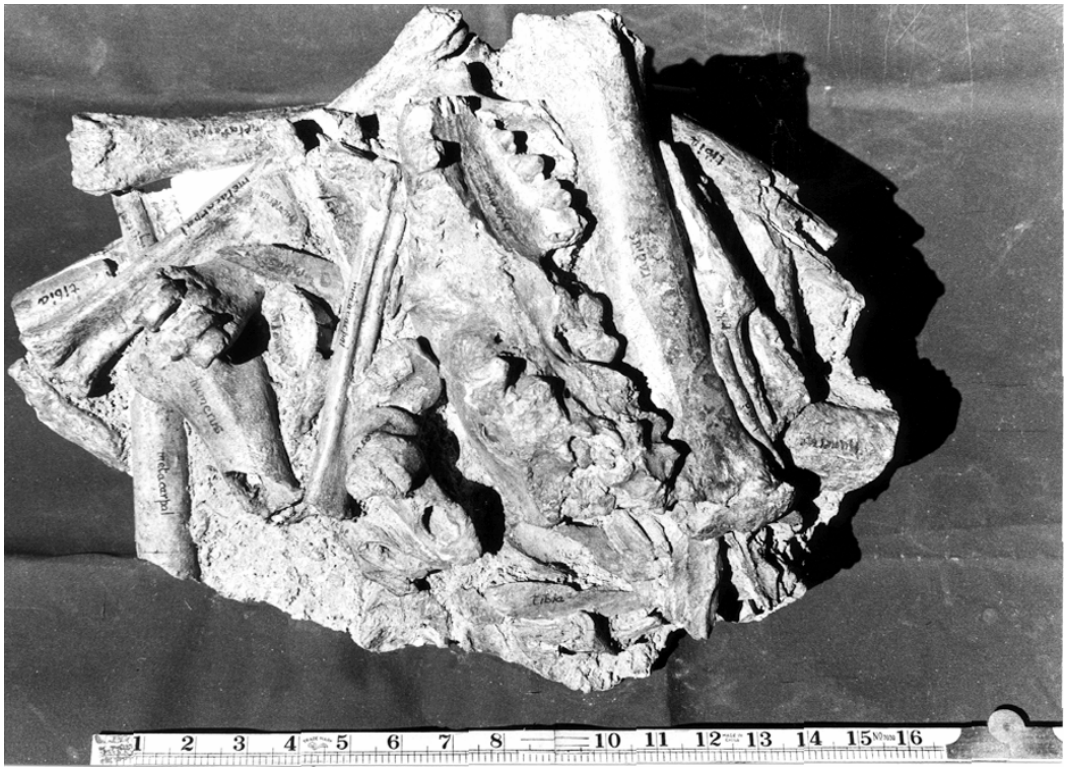
3. Note la proposition de l'État partie sur le changement du nom du bien qui, ainsi étendu, devient : « Les sites des hominidés fossiles d'Afrique du Sud ».

ICOMOS, avril 2005

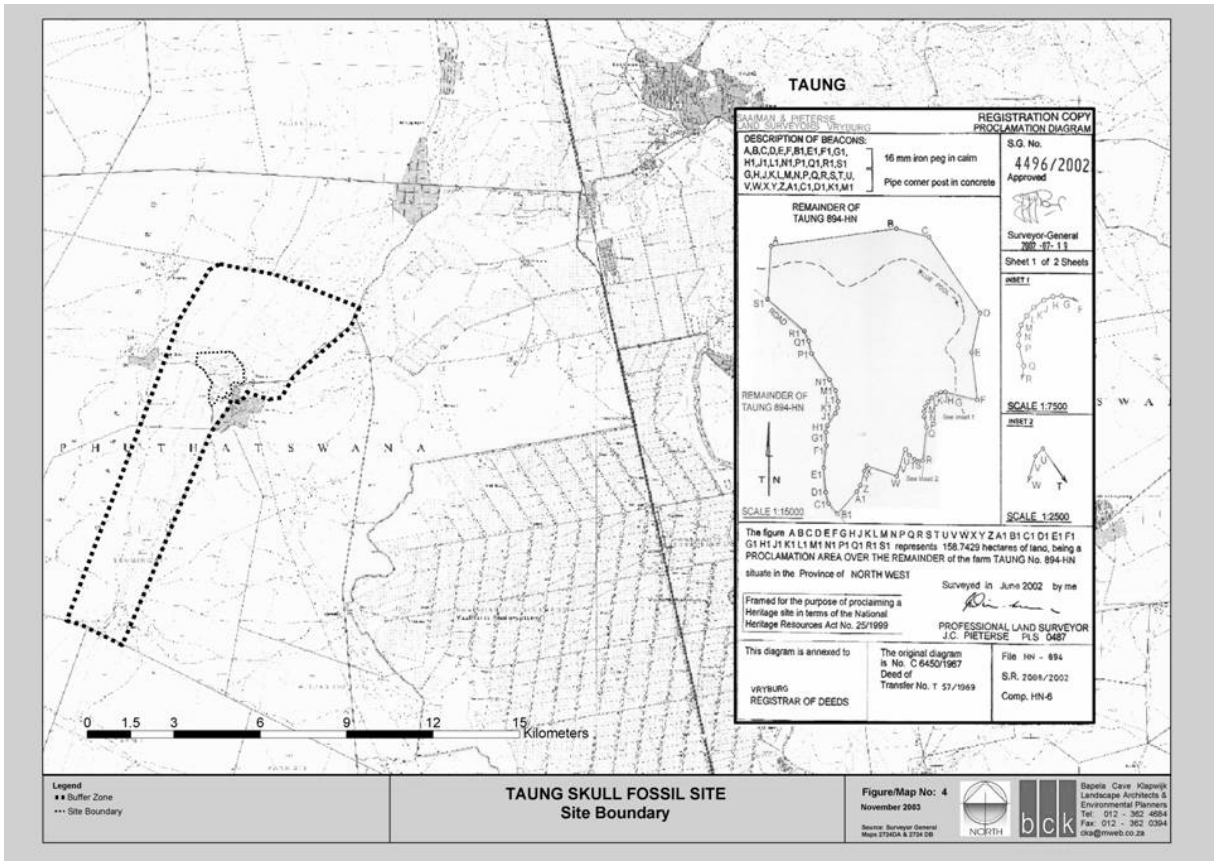


Plan indiquant la délimitation de la Vallée de Makapan

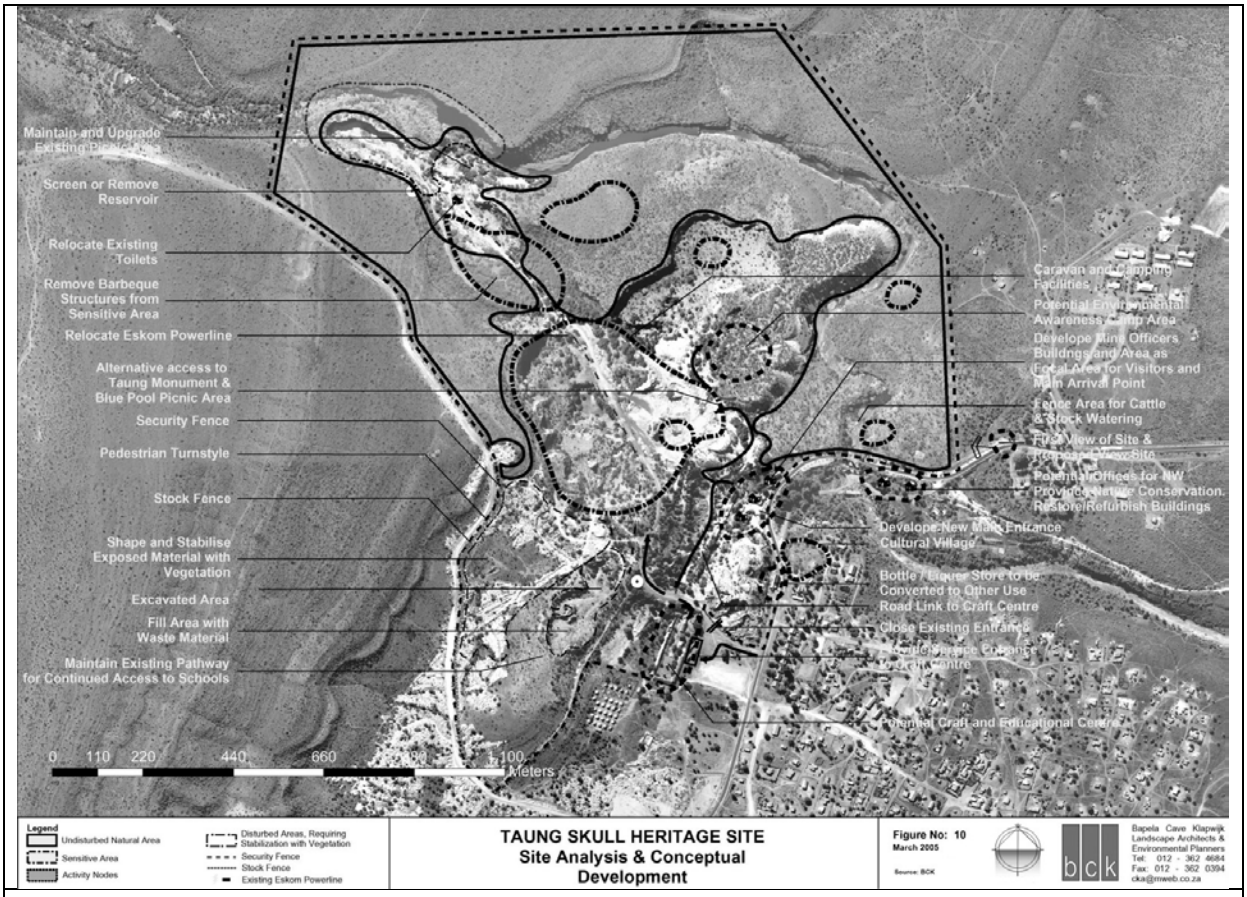
Intérieur de Makapansgat Limeworks



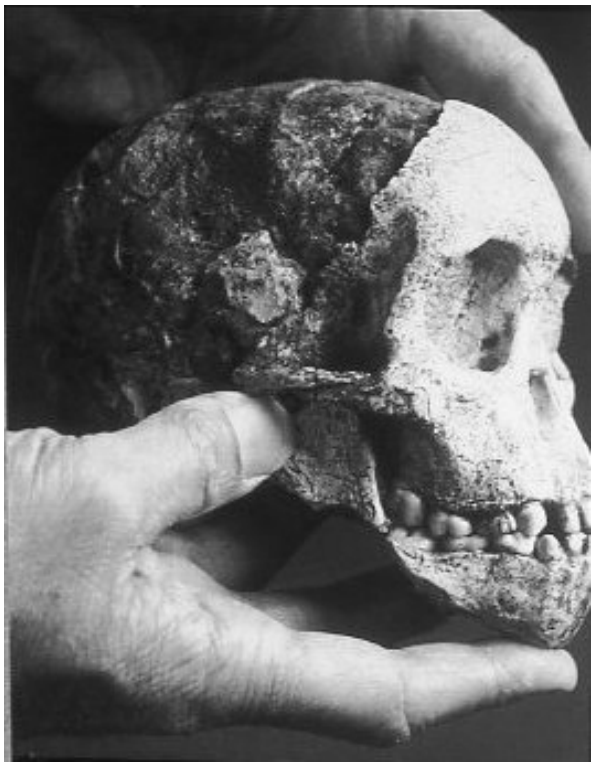
Bloc de fossiles



Plan indiquant les délimitations du site du crâne fossile de Taung



Plan révisé indiquant la zone proposée pour inscription du site du crâne fossile de Taung



Crâne fossile de Taung

Carrière de calcaire abandonnée de Norlim à Buxton