


**MDALA MKHOMBO DEVELOPMENT AND UPGRADING OF INFRASTRUCTURE
HERITAGE IMPACT ASSESSMENT REQUESTED IN TERMS OF SECTION 38 OF
THE NATIONAL HERITAGE RESOURCES ACT (NO 25/1999)**

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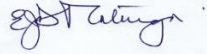

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ABBREVIATIONS

DEA	Department of Environmental Affairs
DWA	Department of Water Affairs
EIA	Environmental Impact Assessment
EIA	Early Iron Age
ESA	Early Stone Age
EMP	Environmental Management Plan
HIA	Heritage Impact Assessment
LIA	Later Iron Age
LSA	Late Stone Age
MTPA	Mpumalanga Tourism and Parks Agency
MSA	Middle Stone Age
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
SAHRA	South African Heritage Resources Agency

EXECUTIVE SUMMARY

The Mpumalanga Tourism and Parks Agency (MTPA) intends to upgrade and construct the following tourism and recreational facilities within the Mkhombo and Mdala Nature Reserve near Siyabuswa, in the Nkangala District Municipality, Mpumalanga Province. A Heritage Impact Assessment (HIA) has been requested as part of an Environmental Impact Assessment (Basic Assessment) and Environmental Management Programme for the proposed development. The following is a summary of the findings of the heritage assessment:

Mdala Nature Reserve:

There are several project sites located apart and spread out in the nature reserve. Various interventions and schedule of works have been planned. A distinction is made between upgrades / renovations / reconstructions of buildings and new developments. A number of buildings were destroyed by natural fires believed to be caused by lightning. Yet it is also evident from the decayed thatch of those that survived the fire that they had seen maintenance for a long time. The nature and extent of the proposed redevelopment trigger Sections 34 and 38 of the National Heritage Resources Act (No 25/1999) which require a Heritage Impact Assessment.



Sites of the proposed upgrades and new projects.

Assessment of buildings and structures to be affected by the development

To a very large extent the proposed works are repairs, reconstructions and renovations of buildings and structures. It has been confirmed that the oldest of these structures date to 1991 when the nature reserve was commissioned as one of the flagship projects of the homeland of KwaNdebele. In terms of the law such buildings below the age of 60 are not automatically protected to ensure that assessment for impact on heritage value before they have been altered or demolished. This notwithstanding, a heritage assessment has been carried which confirms lack of elements that define heritage value in terms of the act.

Assessment of sites of proposed new developments

Sites of proposed new developments, i.e. installation of new pipelines, construction picket, staff houses and pump-house at Zwalebo were examined and no heritage resources were found.

Conclusions

- (i) The buildings / structures which will be affected by the planned interventions are less than 60 years old and not protected in terms of Section 34 of the National Heritage Resources Act.
- (ii) No archaeologically or historically significant sites that are protected in terms of the National Heritage Resources Act 25 of 1999 will be affected by the proposed development.
- (iii) The project may go ahead. If heritage resources were to be found construction at the new sites, the process is to inform the relevant heritage authorities (SAHRA and/or the Provincial Heritage Resources Authority must be notified immediately and a heritage expert called to attend.

Mkhombo Nature Reserve:

The footprint of the proposed development will affect an area approximately 600m x 300m along the northern shore of the dam and close to the dam wall. There are two optional locations described as Alternative Site A (eastern area) and Alternative Site B (western area).

It is noted that the dam, then a major Public Works project for the benefit of the homeland of Kwa-Ndebele, was constructed over a period of three years and completed in 1987. Most of the structures we noticed and recorded are associated with the dam, and therefore less than 60 years old. Without any significant events connected with them, they are not of cultural value as provided under Section 34 of the National Heritage Resource Act. Furthermore from an archaeological perspective our observation was that Area A is disturbed as result of the construction activities.

Alternative Site A (Eastern Area)

- (i) In 1990 there were attempts to set up kitchen facilities for campers and day holiday makers. A rectangular structure of tiled hipped roof standing on steel columns (#S1) and several barbeque fire places stand as evidence of this project. The structures are less than 60 years old.
- (ii) A concrete manufacturing plant was located east of the stream. Evidence of that is an earth ramp with a concrete revetment wall (#S2) from which raw quarry was offloaded into the crushing plant and mixers. The structure is less than 60 years old.
- (iii) Two heaps of fine and medium grade gravel, leftovers of the construction project can be seen to the north of the ramp. A small building without a roof was a pit latrine. All structures and deposits date to the construction period 1984-1987 (#S3, #S4, #S5); they are not of heritage value.
- (iv) There is raised gravity water tank currently in use made of concrete, located 180m distance east of the ramp. Nearby there is another circular concrete reservoir, now derelict. These installations were made after the construction of the dam, i.e. post-1987, and hence are younger than 60 years and not culturally significant.
- (v) A stream inlet divides Areas A and B. The stream was excavated to get material for the construction of the dam wall thereby widening the valley

and creating a steep-sided bay inundated at full capacity (#S8). This feature is not culturally significant.

Alternative Site B (Western Area)

Site B is a low rocky spur overlooking the dam, the site of the proposed lodges.

- (vi) There is a scatter of aloes (stem-less and identified as the species *Aloe striata*). Aloes have proven herbal properties and they are applied for a wide range of human ailments. They are as such culturally important and must be protected. It is impossible to preserve all the aloes *in situ* as clearance is necessary for building foundations and access roads. Since aloes are tolerant to transplantation, it is recommended that those affected be incorporated into the green areas of the proposed new landscape design (#S9).

- (vii) There is small square concrete plate planted in the ground dated 31/10/78. An inundation peg 120cm high stand a short distance to the east. Both structures have been recorded although they are less than 60 years old and not considered significant from heritage standpoint (#S10, #S11).



Map of the area shows options in the location of the proposed development and structures / features assessed for heritage significance.

Conclusions

No heritage finds or sites that are protected in terms of the National Heritage Resources Act 25 of 1999 will be affected by the proposed development.

On Site B, aloes which will be affected by the inevitable clearance of some of the vegetation must be replanted in the green areas of the proposed development.

In light of this we recommend that Site A (eastern area) be the preferred site.

We further recommend that if unmarked graves are discovered during the construction phase, they should be relocated to a formal graveyard. The removal must be conducted with due respect for the customs and beliefs of the affected community/ relatives.

As a standard requirement if heritage resources were to be found during the construction phase, the relevant heritage authorities i.e. SAHRA and/or PHRA, will be notified immediately and a heritage expert called to attend.

Overall recommendations

The projects may go ahead subject to the precautions stated above. If heritage resources were to be found during the exploitation phase, it is standard procedure that the relevant heritage authorities (SAHRA and/or the Provincial Heritage Resources Authority) must be notified immediately and a heritage expert called to attend.

1. INTRODUCTION

A Heritage Impact Assessment (HIA) has been requested as part of an Environmental Impact Assessment (Basic Assessment) and Environmental Management Programme for the proposed upgrade and construction of recreational facilities at Mdala and Mkhombo Nature Reserves, Siyabuswa, in the Nkangala District Municipality, Mpumalanga Province. An HIA forms the basis of high level decisions on whether a development proposal meets sustainable development principles. Significantly an HIA is conducted in order to incorporate community and stakeholders views in assessment of impacts and decision making.

1.1. Location and Geographical Setting

1.1.1. Mdala Nature Reserve

Mdala Nature Reserve (Lat: 25°11'27.40"; Long: 28°53'14.20"E; taken at Ndlulamithi Gate) in Nkangala District is situated on the western boundary of Mpumalanga Province, an area where the boundaries of three provinces meet – namely Gauteng, Limpopo and Mpumalanga. Situated in a wedge between the Elands and the Kameel Rivers, a line of hills in the nature reserve trends NE-SW and forms a minor watershed between the two rivers. The most prominent feature in the topography are the Loskop Mountains which lie on the east side of the Kameel River a distance of only 3km from the east boundary of the nature reserve (Fig 2). The Elands and Kameel meet 13km to the northeast continuing as the Elands on a north-easterly course to the Olifants River (Fig 1). Mdala nestles a good lowveld woodland with a mixture of species including red bush willow - *Combretum apiculatum*, sickle bush and *Terminalia sericia*.

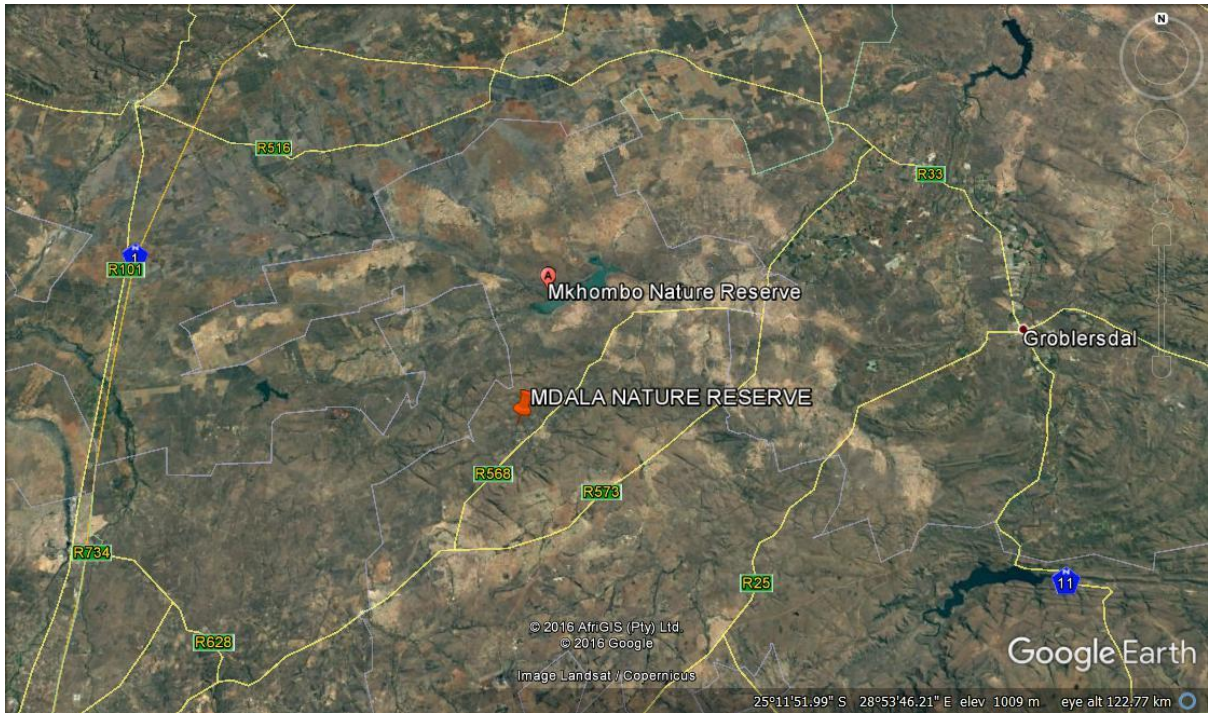


Fig 1. Google-Earth Map shows the location of Mdala and Mkhombo Nature Reserves.



Fig 2. Part of Mdala Nature Reserve with the Loskop Mountains in the background.

1.1.2. Mkhombo Nature Reserve

Mkhombo Dam Lat: 25° 5'56.33"S, 28°55'6.07"E (dam wall) is on the Elands River. The Elands River is one of the tributaries of the Olifants River. The Elands' sources is near Cullinan; it occupies the western margin of the Olifants basin. A narrow watershed between Hammanskraal and Cullinan divides the Olifants River system from the Crocodile River Basin to the west. The river is also dammed ca30km upstream to create another water reservoir, the Rust de Winter Dam. There are number of villages located along the southern bank of the Elands River. Vaalbank A, Allemansdrift and Makometsane are situated close to the shores of the dam. Further downstream Kameelrivier and Siyabuswa are much larger villages located along the southern bank of the Elands River. The R568 road links Siyabuswa with Kwa-Mhlanga passing near Mkhombo Nature Reserve (Fig 3).

Mkhombo Dam Nature Reserve is on the northern shores of the dam and extend distance further downstream of the dam on the northern bank of the River. On this side there is another village, Senotlelo, which defines the northern limits of the conservation area.

The Nature Reserve nestles good lowveld woodland dominated by red bush willow - *Combretum apiculatum*. There are game animals with a significant population of Kudu. At the present time the eastern portion is used for communal grazing.

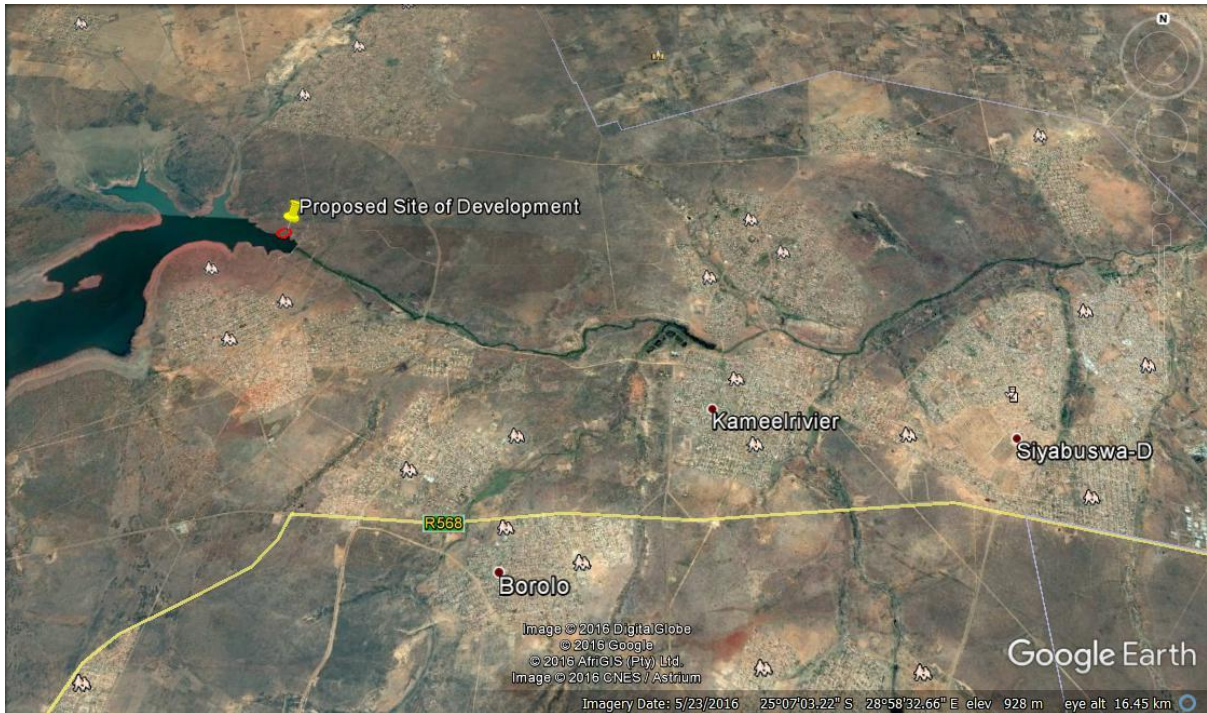


Fig 3. Google-Earth map of the area.

1.2. Nature of Development

Tourism is an important component of Integrated Development Plans (IDP), the development framework blueprint for district and local municipalities. It has been recognised that Nature Reserves have potential for development niche tourist destinations. This is expected to maximise on existing international visitor inflows and domestic volumes by redirecting them from the highly frequented National Parks to the smaller nature reserves some of which are tucked away in rural areas. The new thrust is likely to stimulate economic development in rural areas, which have been lagging behind. International visitors are likely to be persuaded to extend their stay in the country if the range and quality of leisure is broadened.

The Mpumalanga Tourism and Parks Agency (MTPA) is mandated to provide for the management and promotion of responsible tourism and nature conservation and to ensure sustainable utilisation of natural resources for the benefit of everyone in Mpumalanga Province.

1.2.1. Mdala Nature Reserve

The Mpumalanga Tourism and Parks Agency (MTPA) is mandated to provide for the management and promotion of responsible tourism and nature conservation and to ensure sustainable utilisation of natural resources for the benefit especially of rural communities. MTPA intends to rehabilitate and construct the following tourism and recreational facilities within Mdala Nature Reserve:

- (i) Renovation of Ndlulamithi Gate and Administration Offices
- (ii) Renovation of bulk services (water reticulation, sewer and electrical installations).
- (iii) Renovation of Mkholwane Lodge, entrance gate, swimming pool, Mkholwane Lodge, Zandspruit Guest House, Zandspruit staff accommodation, Ndlulamithi gate and administration block
- (iv) Construction of Zwelabo Pump house, 2 bedroom picket, Zandspruit picket and pump house
- (v) Renovation of Zandspruit Guesthouse and staff accommodation
- (vi) Upgrading of Zandspruit picket and pump-house
- (vii) Construction of 2-bedroom picket and pump-house at Zwelabo

These are several sites located apart and spread out in the nature reserve. Various interventions and schedule of works have been planned. A distinction is made between upgrades / renovations / reconstructions of buildings and new developments. A number of buildings were destroyed by natural fires believed to be caused by lightning. These structures with grass thatch are vulnerable to veld fires, yet it is also evident from the decayed thatch of those that survived the fire that they have not seen maintenance for a long time. The nature and extent of the proposed renovations and new development triggers Sections 34 and 38 of the National Heritage Resources Act (No 25/1999) which require a Heritage Impact Assessment.

1.2.2. Mkhombo Nature Reserve

MTPA intends to upgrade and construct the following tourism and recreational facilities within Mkhombo Nature Reserve

- (i) Ablution facilities.
- (ii) Nineteen (19) campsites of 95m² each; with the total camping area of 5000m² which include the lapa and the ablution facilities.
- (iii) Approximately 280m² adult swimming pool

(iv) Approximately 240m²boat ramp/ slipway of 40m in length into Mkhombo Dam

The footprint of the project is approximately 18ha. The nature and extent of physical works triggers Section 38 of the National Heritage Resources Act (No 25/1999) which requires a Heritage Impact Assessment to be carried out as part of an Environmental Impact Assessment.

2. LEGAL FRAMEWORK

2.1. Heritage Impact Assessments

Section 38 of the National Heritage Resources Act (No 25 1999), specifies circumstances which trigger a Heritage Impact Assessment as follows:

38. (1) *Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as—*

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

(b) the construction of a bridge or similar structure exceeding 50m in length;

(c) any development or other activity which will change the character of a site—

(i) exceeding 5 000m² in extent; or

(ii) involving three or more existing erven or subdivisions thereof; or

(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

(d) the re-zoning of a site exceeding 10 000 m² in extent; or

(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority.

Section 34 provides provisional protection for buildings and structures more than 60 years old:

(1) No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

2.2. Protection of Buildings and Structures Older than 60 years

Section 34 provides provisional protection of buildings and structures more than 60 years old:

- (1) No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.*

2.3. Protection of Archaeological Sites

Section 35 (4) of the NHRA prohibits the destruction of archaeological, palaeontological and meteorite sites:

No person may, without a permit issued by the responsible heritage resources authority—

- (a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;*
- (b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;*
- (c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or*
- (d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.*

2.4. Graves and Burial Grounds

Section 36 of the NHRA gives priority for the protection of Graves and Burial Grounds of victims of conflict and graves and burial grounds more than 60 years old. Within this frame cautious approaches are considered including managed exhumations and re-interment to pave way for development:

3. METHODOLOGY

3.1. Literature Survey

A literature survey is the starting point of an HIA study. We searched books and the internet to understand broadly the archaeology and ethno-history of the area. A review of all available relevant literature included reports of previous HIAs conducted in the in broader area, historical books, and project planning documents. A lot of material was researched on internet portals, in particular most of the HIA reports that are referred to in this report have been obtained from the internet.

3.2. Site visit and ground survey

A ground survey was carried out on 9 October 2016 and 8 May 2017. At Mkhombo Nature Reserve random walking surveys were conducted for possible occurrence of archaeological material at the project site. A condition survey was undertaken of all the buildings on the schedule for renovations at Mdala Nature Reserve. Ground survey for the location of heritage resources were conducted at the site of the proposed new buildings and pipelines.

3.3. Significance ranking of findings

The significance ranking (with a colour scheme) refers to perceived impacts and risk of the proposed development. Appropriate interventions and mitigation strategies are also proposed.

	RANKING	SIGNIFICANCE
1	High	National and Provincial heritage sites (Section 7 of NHRA). All burials including those protected under Section 36 of NHRA. They must be protected.
2	Medium A	Substantial archaeological deposits, buildings protected under Section 34 of NHRA. Footprint of early modern mining. These may be protected at the recommendations of a heritage expert.
3	Medium B	Sites exhibiting archaeological characteristics of the area, but do not warrant further action after they have been documented.
4	Low	Heritage sites which have been recorded, but considered of minor importance relative to the proposed development.

4. THE CULTURAL SEQUENCE IN SOUTH AFRICA

The purpose of giving an outline of the Cultural Sequence is to provide a framework for the identification of heritage resources.

4.1. The Early Stone Age (2 million – 250 000 years BP)

The story of mankind begins about 4 million years ago with the appearance of proto-humans called hominids for which a source closest to the development area is the Makapansgat Valley ca50km south of Polokwane.¹ The Stone Age which dates back more than 2 million years marks a more diagnostic appearance of the cultural sequence divided into three epochs, the Early, Middle and Late Stone Ages. Stone and bone implements manifest the technology of the period and fall into distinct typologies indicating chronological development. Material evidence of human activities has been found in caves, rock-shelters and riverside sites, and very rarely seen in open country.² Early Stone Age technology was based on core tools which resulted in shapes such as the pear-shaped hand axe, and cleavers (Deacon & Deacon, 1999).

¹ Deacon, J. and N. Lancaster. 1986. *Later Quaternary Palaeo-environments of Southern Africa*. Oxford: Oxford University Press.

These tools, which have been called Acheulian after a site in France, were probably used to butcher large animals such as elephants, rhinoceros and hippopotamus. Acheulian artefacts are usually found near sites where they were manufactured and thus in close proximity to the raw material or at butchering sites.

Tools dating to the Early Stone Age period are mostly found in the vicinity of larger watercourses, e.g. the Vaal River, or in sheltered areas. The absence of habitation sites may suggest mobile communities using temporary camps.

4.2. Middle Stone Age (MSA) [250 000 yrs – 30 000 yrs BP]

The Middle Stone Age (MSA), which appeared 250 000 years ago, is marked by the introduction of a new tool kit which included prepared cores, parallel-sided blades and triangular points hafted to make spears. Flakes and flake-blades with faceted platforms were produced from prepared cores. Open sites were still preferred near watercourses. By then humans had become skillful hunters, especially of large grazers such as wildebeest, hartebeest and eland. It is also believed that by then, humans had evolved significantly to become anatomically modern. Caves were used for shelter suggesting permanent or semi-permanent settlement. Furthermore there is archaeological evidence from some of the caves indicating the making of fire (e.g. at Blombos Cave, Wonderwerk, Makapansgat, Cave of Hearths). These were two remarkable steps in human cultural progress.³

4.3. Late Stone Age (LSA)[30 000 yrs to ca2000 yrs BP]

Late Stone Age (LSA) people had even more advanced technology than the MSA people and were able to exploit more diverse habitats. By the time humans were classified as *Homo sapiens*, which refer to the modern physical form and thinking capabilities. Several behavioural traits are exhibited, such as rock art and purposeful burials with ornaments, became a regular practice. The practitioners of the Rock Art are definitely the ancestors of the San and Khoikhoi, and sites abound in the whole of Southern Africa. LSA technology is characterized by microlithic scrapers and segments made from very fine-grained rock. Spear hunting continued, but LSA people also hunted small game with bows and poisoned arrows. Because of poor

³ Deacon, J & H. Deacon. 1999. *Human Beginnings in South Africa*. Cape Town: David Philip.

preservation, open sites are less visible compared to rock shelters. Cultural materials other than stone tools begin to make an appearance. Ostrich eggshell beads, ground bone arrowheads, small bored stones and wood fragments with incised markings are traditionally linked with the LSA.

4.4. Early Iron Age / Early Farming Communities

About 2500 years ago, the introduction of farming brought about fundamentally new technologies and lifestyles replacing the stone tool cultures which had existed for thousands of years. A synchronised appearance of crops such as sorghum / millet and cow peas, domestic animals such as cattle, sheep/goats, metals – iron and copper - and pottery has been postulated and linked with migration of Bantu speakers from a source in the north of the subcontinent. However the notion of migration as general theory breaks down recognising that these people were in any case indigenous to the continent. Indeed there were population shifts, expansion and spread of settlement and assimilation with between the Bantu and the Khoisan.

4.5. The Later Iron Age

The transition from the Early Iron Age to the Later Iron Age is much clearer in the Limpopo-Shashi Basin where archaeological research has been concentrated and pottery classifications refined. The EIA Zhizo Tradition gives way to Leopard's Kopje Tradition around 900AD.

The area around Siyabuswa has been occupied by the Southern Ndebele in historical times. In areas occupied by the Northern Nguni, EIA pottery was replaced by Blackburn pottery marking the transition to the Later Iron Age, although the relationship between the two pottery traditions is yet uncertain (Huffman 2007: 443).

4.6. Historical context of the area

The Ndebele of Ndzunza are a major population group of the area. Historically, the Ndzunza were an amalgamation of various groups of people of Nguni stock who arrived on the Highveld in the 18th-19th century. They established a fortified capital at **Erholweni**. At the time of the arrival of the Afrikaners, some of the Ndebele had rallied under Chief Mabhogo. The Afrikaners often became embroiled in feuds between African chiefdoms. In 1864 they instigated the Swazi to attack the Ndebele. In the

1880s **Mampuru**, an exile in a succession struggle among Sekhukhune's Pedi sought refuge among the Ndzundza Ndebele. Both British and Boers sought to take advantage of the situation to depose the incumbent Ndzundza chief, **Nyabele Mahlangu** (Fig 4). In 1882 when Afrikaner demands that Nyabele hands over Mampuru were spurned, they declared war on the Ndzundza storming their strongholds with dynamite. Nyabele and Mampuru were captured and taken to Pretoria where the latter was hanged. The brutal assault by the Boers has been remembered in Ndebele legends. Ndebele cultures has earned world acclaim for the ornate painting schema on houses, yard walls and attire (Delius 2007).

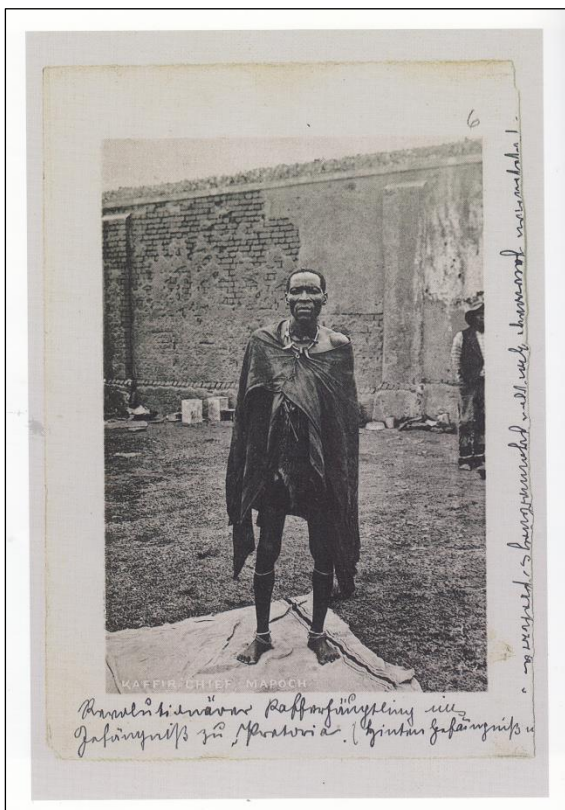


Fig. 4. Nyabele Mahlangu Chief of the Ndzundza

5. FINDINGS

5.1. Mdala Nature Reserve

5.1.1. Buildings and structures

To a very large extent the proposed works are repairs, reconstructions and renovations of buildings and structures. It has been confirmed that the oldest of these structures date to 1991 when the nature reserve was commissioned as one of

the flagship projects of the homeland of KwaNdebele. In terms of the law such buildings below the age of 60 are not automatically protected to ensure assessment for impacts on heritage value before they have been altered or demolished. This notwithstanding, a heritage assessment has been carried out which confirms lack of elements that define heritage value in terms of the NHRA.

5.1.2. Sites of proposed new developments

Sites of proposed new developments, i.e. installation of new pipelines, construction picket, staff houses and pump-house at Zwalebo were examined and no heritage resources were found.



Fig 5. Google-map of the area shows sites of proposed renovations and development.

SITE NO	SITE NAME	LATITUDE	LONGITUDE	PERIOD	DESCRIPTION	RANKING
#S1-2	Ndlulamithi Gate & Admin Office	25°11'27.40"S	28°53'14.20"E	1990s	Thatched structure / complex which comprise the entrance and administration office. Surrounded by natural Savana woodland. Broken thatch and general disrepair of structure.	Low
#S3-4	Mkholwane Lodge	25°14'28.00"S	28°49'16.60"E	1990s	Lodge which comprise a number of thatched buildings and walls made of reeds. State of general disrepair and decay of thatch and reeds.	Low
#S3-4b	Mkholwane Swimming Pool	25°13'16.70"S	28°50'58.20"E	1990s	Swimming pool located in a square between buildings. In a state of disrepair.	Low
#S3-4c	Mkholwane lakeside deck	25°13'16.70"S	28°50'58.20"E	1990s	Lakeside deck of timber flooring and standing on wooden poles. Timber generally decayed and there is risk that the deck may collapse.	Low
#S3-4d	Proposed Boardroom / Conference Centre	25°13'16.70"S	28°50'58.20"E	1990s	Flat area and good woodland to the west of the lodge. Ground visibility good on pathways, poor elsewhere due to grass. Site of the proposed construction of a boardroom / conference facility.	Low
#S5	Zandspruit Staff Accommodation	25°13'16.70"S	28°50'58.20"E	1990s	Old staff house, back rooms and a garage. Broken grass thatch and state of general disrepair.	Low
#S6	Zandspruit Guesthouse	25°13'16.70"S	28°50'58.20"E	1990s	Old abandoned lodges consisting of three thatched rondavel	Low
#S6b	Garages	25°13'16.70"S	28°50'58.20"E	1990s	Derelict garages, outbuildings of the lodge.	Low
#S6c	Zandspruit Lapa	25°13'16.70"S	28°50'58.20"E	1990s	An old circular lapa which carried a conical thatched roof. It was destroyed by a fire.	Low
#S6d	Zandspruit Swimming Pool	25°13'16.70"S	28°50'58.20"E	1990s	A derelict concrete swimming pool.	Low
#S8	Zandspruit Picket & Pump house	25°12'28.50"S	28°51'51.10"E	1990s	Gabled building, front with stone with cement cladding. Decayed grass thatch.	Low
#S9	Education centre	25°11'24.15"S	28°52'49.88"E	1990s	Building complex dating back to the 1990s which was destroyed by a fire.	Low
#S7 & 10	Zwalebo Development	25°11'55.30"S	28°49'44.20"E	1990s	Flat area, Savana woodland and grass. Ground visibility poor. No heritage resources.	Low

The significance ranking (with a colour scheme) refers to perceived impacts and risk of the proposed development. Appropriate interventions and mitigation strategies are also proposed.

	RANKING	SIGNIFICANCE	NO OF SITES
1	High	National and Provincial heritage sites (Section 7 of NHRA). All burials including those protected under Section 36 of NHRA. They must be protected.	0
2	Medium A	Substantial archaeological deposits, buildings protected under Section 34 of NHRA. Footprint of early modern mining. These may be protected at the recommendations of a heritage expert.	0
3	Medium B	Sites exhibiting archaeological characteristics of the area, but do not warrant further action after they have been documented.	0
4	Low	Heritage sites which have been recorded, but considered of minor importance relative to the proposed development.	13
		TOTAL	13

5.2. Mkhombo Nature Reserve

The footprint of the proposed development will affect an area approximately 600m x 300m along the northern shore of the dam and close to the dam wall. The area has been divided into an Eastern Area (A) and Western Area (B).

It is noted that the dam, then a major Public Works project for the benefit the homeland of Kwa-Ndebele, was constructed over a period of three years and completed in 1987. Most of the structures we noticed and recorded are associated with the dam, and therefore less than 60 years old. Without any significant events connected with them, they are not of heritage value as provided in terms of Section 34 of NHRA. Furthermore from an archaeological perspective our observation was that Area A is disturbed as result of the construction activities.

5.2.1. Alternative Site A (Eastern Area)

- (i) In 1990 a businessman from Johannesburg attempted to set up kitchen facilities for campers and day holiday makers. He erected a rectangular structure of tiled hipped roof standing on steel columns (S1). The project apparently failed to take off the ground and was abandoned. Several barbeque fire places were erected, some now partially broken. The structures are less than 60 years old.
- (ii) A concrete manufacturing plant was located east of the stream. Evidence of that is an earth ramp with a concrete revetment wall from which raw quarry was offloaded into the crushing plant and mixers (S2). The structure are less than 60 years old.
- (iii) Two heaps of fine and medium grade concrete stone / gravel, leftovers from the construction project, can be seen to the north of the ramp. A small building with roof was a pit latrine (S3, S4 and S5). All structures and deposits date to the construction period 1984-1987. Furthermore, from an archaeological perspective, our conclusion was that the ground was disturbed as a result of the construction activities.
- (iv) There is raised gravity water tank currently in use made of concrete and located 180m distance east of the ramp. Nearby there is another circular concrete reservoir now derelict. These installations were made after the construction of the dam, i.e. post-1987, and hence younger than 60 years.
- (v) A stream inlet divides the Areas A and B. The stream was excavated for material for the construction of the dam thereby widening the valley and creating a steep-sided bay inundated at full capacity (S8). This feature is not of heritage value.

5.2.2. Alternative Site B (Western Area)

Turning to the western side of the stream, there is a low rocky spur overlooking the dam, the site for the proposed lodges. The hills nestles a good woodland of *Combretum apiculatum* (red bush willow).

- (vi) There is a scatter of aloes (stem-less species identified as *Aloe striata*). Aloes have proven herbal properties and they are applied for a wide range of human ailments. They are also used for treating sick chickens. They are as such culturally important and must be protected. It is impossible to preserve all the aloes *in situ* as clearance is necessary for building foundations and access roads. Since aloes are tolerant to transplantation, it is recommended that those affected be incorporated into the green areas of the proposed new landscape design (S9).
- (vii) There is small square concrete plate planted dated 31/10/78. An inundation peg 120cm high stand a short distance to the east. Both structures have been recorded although they are less than 60 years old and not considered from heritage standpoint (S10, S11).



Fig 6. Map of the area shows the options in the location of the proposed development and structures / features which were assessed for heritage significance.

No	LATITUDE	LONGITUDE	PERIOD	DESCRIPTION	RANKING
S1	25° 5'45.54"S	28°55'3.63"E	1990s	A shed, tiled hipped roof standing on heavy steel columns. It was built in 1990. It was to be custom-designed into a camping kitchen. The project was not completed.	Low
S2	25° 5'43.50"S	28°55'6.04"E	1990s	An earth ramp with a concrete revetment on the north-eastern side served trucks offloading quarry into the plant for crushing.	Low
S3	25° 5'40.07"S	28°55'7.32"E	1990s	Fine grade concrete stone discard, leftovers from the dam building in the mid-1980s.	Low
S4	25° 5'40.28"S	28°55'11.70"E	1990s	Concrete stone discard, leftovers from the dam building in the mid-1980s.	Low
S5	25° 5'45.94"S	28°55'7.21"E	1990s	Disused lavatory located near the stone crushing plant. It therefore dates to the dam construction period 1984-1986.	Low
S6	25° 5'47.45"S	28°55'10.95"E	1990s	Gravity reservoir of concrete standing on a concrete column. In current use. Water supply installation after the commissioning of the dam in 1987.	Low
S7	25° 5'46.42"S	28°55'11.54"E	1990s	Derelict concrete water reservoir.	Low
S8	25° 5'38.74"S	28°55'1.22"E	1990s	A stream inlet where a large quarry was operated for concrete raw material. Part of the quarry is flooded and creates a bay at full capacity.	Low
S9	25° 5'44.45"S	28°54'54.78"E		Rocky spur facing the northern shore of the dame. Good <i>Combretum</i> woodland. Aloes identified as the stem-less species – <i>Aloe striata</i> grow are spread out in the woodland.	Medium B
S10	25° 5'45.00"S	28°54'55.80"E	1970s	Survey point dated 31/10/78 (31 Oct 1978)	Low
S11	25° 5'45.58"S	28°54'56.75"E	1980s	Inundation peg, 1980s	Low

The significance ranking (with a colour scheme) refers to perceived impacts and risk of the proposed development. Appropriate interventions and mitigation strategies are also proposed.

	RANKING	SIGNIFICANCE	NO OF SITES
1	High	National and Provincial heritage sites (Section 7 of NHRA). All burials including those protected under Section 36 of NHRA. They must be protected.	0
2	Medium A	Substantial archaeological deposits, buildings protected under Section 34 of NHRA. Footprint of early modern mining. These may be protected at the recommendations of a heritage expert.	0
3	Medium B	Sites exhibiting archaeological characteristics of the area, but do not warrant further action after they have been documented.	1
4	Low	Heritage sites which have been recorded, but considered of minor importance relative to the proposed development.	10
		TOTAL	11

5.3. Summary assessment of potential impacts of the proposed development

Our assessment is guided by Section 38 of the National Heritage Resources Act (No 25 of 1999) subsection 3 which provides a checklist of things that must be done in an HIA process:

Section 38(3) The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): Provided that the following must be included:

(a) The identification and mapping of all heritage resources in the area affected:

In both areas, no archaeological or other heritage sites were found. All buildings are less than 60 years and are not protected in terms of Section 34 of NHRA.

b) An assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7:

A ranking system uses a four-colour code to highlight sites that need attention before or during the construction phase of the project. No sites of heritage value were found.

(c) An assessment of the impact of the development on such heritage resources:

N/A.

(d) An evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development:

N/A.

(f) If heritage resources will be adversely affected by the proposed development, the consideration of alternatives:

N/A.

(g) Plans for mitigation of any adverse effects during and after the completion of the proposed development:

A heritage expert may periodically inspect the sites of proposed new developments during site preparation.

5.4. Risk Assessment of the Findings

EVALUATION CRITERIA	RISK ASSESSMENT
Description of potential impact	Negative impacts range from partial to total destruction of surface and under-surface movable/immovable relics.
Nature of Impact	Negative impacts can both be direct or indirect.
Legal Requirements	Sections 34, 35, 36, 38 of National Heritage Resources Act No. 25 (1999)
Stage/Phase	Construction phase at the new sites
Nature of Impact	Negative, both direct & indirect impacts.
Extent of Impact	Clearance and excavation can cause damage to archaeological resources above and below the surface not seen during the survey.
Duration of Impact	Any accidental destruction of surface or subsurface relics is not reversible, but can be mitigated.
Intensity	Uncertain.
Probability of occurrence	Low.

Confidence of assessment	High
Level of significance of impacts before mitigation	High
Mitigation measures	If heritage resources are found during site preparation at the new sites, the provincial heritage authority must be informed and a heritage expert called to attend.
Level of significance of impacts after mitigation	Low.
Cumulative Impacts	None.
Comments or Discussion	None.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1. Mdala Nature Reserve

- (iv) The buildings / structures which will be affected by the planned interventions are less than 60 years old and not protected in terms of Section 34 of the National Heritage Resources Act.
- (v) No archaeologically or historically significant sites that are protected in terms of the National Heritage Resources Act 25 of 1999 will be affected by the proposed development.

6.2. Mkhombo Nature Reserve


- (vi) No archaeologically or historically significant sites that are protected in terms of the National Heritage Resources Act 25 of 1999 will be affected by the proposed development.
- (vii) On Site B, aloes which will be affected by the inevitable clearance of some of the vegetation must be replanted in the green areas of the proposed development.
- (viii) In light of this we recommend that Site A (eastern area) be the preferred site.
- (ix) We further recommend that if unmarked graves are discovered during the construction phase, they should be relocated to a formal graveyard. The removal must be conducted with due respect for the customs and beliefs of the affected community/ relatives.

6.3. Recommendations

The projects may go ahead subject to the precautions stated above. If heritage resources were to be found during the exploitation phase, it is standard procedure that the relevant heritage authorities (SAHRA and/or the Provincial Heritage Resources Authority) must be notified immediately and a heritage expert called to attend.

7. CATALOGUE OF SITES

7.1. MDALA NATURE RESERVE CATALOGUE OF SITES

S1-2 Ndlulamithi Gate & Admin Office	COORDINATES	25°11'27.40"S	28°53'14.20"E
			



OBSERVATIONS: Thatched structure / complex which comprise the entrance and administration office. Surrounded by natural Savana woodland. Broken thatch and general disrepair of structure.

HERITAGE STATUS	Built in 1991 and less than 60 years old
POTENTIAL IMPACTS & PROPOSED MITIGATION	No heritage value, renovations can go ahead.

S3-4 Mkhohlwane Lodge	COORDINATES	25°14'28.00"S	28°49'16.60"E
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OBSERVATIONS: Lodge which comprise a number of thatched buildings and walls made of reeds. State of general disrepair and decay of thatch and reeds.

HERITAGE STATUS	Built in 1994 and less than 60 years old.
POTENTIAL IMPACTS & PROPOSED MITIGATION	No heritage value, renovations can go ahead.

S3-4b Mkhholwane Swimming Pool	COORDINATES	25°13'16.70"S	28°50'58.20"E
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OBSERVATIONS: Swimming pool located in a square between buildings. In a state of disrepair.


HERITAGE STATUS	Built in 1994 and less than 60 years old.
POTENTIAL IMPACTS & PROPOSED MITIGATION	No heritage value, renovations can go ahead.

S3-4c Mkhholwane lakeside deck	COORDINATES	25°13'16.70"S	28°50'58.20"E
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OBSERVATIONS: Lakeside deck of timber flooring and standing on wooden poles. Timber generally decayed and there is risk that the deck may collapse.

HERITAGE STATUS	Structure less than 60 years old.
POTENTIAL IMPACTS & PROPOSED MITIGATION	No heritage value. Replacement of wood/ reconstruction may go ahead.

S3-4d Proposed Boardroom / Conference Centre	COORDINATES	25°13'16.70"S	28°50'58.20"E
			
<p>OBSERVATIONS: Flat area and good woodland to the west of the lodge. Ground visibility good on pathways, poor elsewhere due to grass. Site of the proposed construction of a boardroom / conference facility.</p>			
HERITAGE STATUS	No heritage resources found.		
POTENTIAL IMPACTS & PROPOSED MITIGATION	The proposed development may go ahead.		

S5 Zandspruit Staff Accommodation	COORDINATES	25°13'16.70"S	28°50'58.20"E
<div data-bbox="204 349 839 819" data-label="Image"> </div> <p data-bbox="204 837 1350 925"> OBSERVATIONS: Old staff house, back rooms and a garage. Broken grass thatch and state of general disrepair. </p>			
HERITAGE STATUS	Building constructed in the 1990s, thus less than 60 years old.		
POTENTIAL IMPACTS & PROPOSED MITIGATION	No heritage significance; the proposed renovations may go ahead.		


S6 Zandspruit Guesthouse	COORDINATES	25°13'16.70"S	28°50'58.20"E
			
<p>OBSERVATIONS: Old abandoned lodges consisting of three thatched rondavel</p>			
<p>HERITAGE STATUS</p>	<p>Structures dating back to the 1990s and less than 60 years old</p>		
<p>POTENTIAL IMPACTS & PROPOSED MITIGATION</p>	<p>No heritage significance. The proposed renovations may go ahead.</p>		

S6b Zandspruit Garages	COORDINATES	25°13'16.70"S	28°50'58.20"E
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OBSERVATIONS: Derelict garages, outbuildings of the lodge.

HERITAGE STATUS	Structures date back to the 1990s, thus less than 60 years old.
POTENTIAL IMPACTS & PROPOSED MITIGATION	No heritage significance. The structures may be renovated or demolished.

S6c Zandspruit Lapa	COORDINATES	25°13'16.70"S	28°50'58.20"E
			
<p>OBSERVATIONS: An old circular lapa which carried a conical thatched roof. It was destroyed by a fire.</p>			
HERITAGE STATUS	Structure built in the 1990s, thus less than 60 years old.		
POTENTIAL IMPACTS & PROPOSED MITIGATION	No heritage significance. The structure may be demolished or repaired.		

S6d Zandspruit Swimming Pool	COORDINATES	25°13'16.70"S	28°50'58.20"E
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OBSERVATIONS: A derelict concrete swimming pool.

HERITAGE STATUS	Structure built in the 1990s, thus less than 60 years old.
POTENTIAL IMPACTS & PROPOSED MITIGATION	No heritage significance, structure may be destroyed or repaired.

S8 Zandspruit Picket & Pump house	COORDINATES	25°12'28.50"S	28°51'51.10"E
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OBSERVATIONS

Gabled building, front with stone with cement cladding. Decayed grass thatch.


HERITAGE STATUS	Structure built in the 1990s, thus less than 60 years old.
POTENTIAL IMPACTS & PROPOSED MITIGATION	No heritage significance, structure may be repaired.

S9 Education centre	COORDINATES	25°11'24.15"S	28°52'49.88"E
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OBSERVATIONS: Building complex dating back to the 1990s which was destroyed by a fire.


HERITAGE STATUS	Structures built in the 1990s, thus less than 60 years old.
POTENTIAL IMPACTS & PROPOSED MITIGATION	No heritage significance, structures may be reconstructed.


S7&10 Zwalebo Development	COORDINATES	25°11'55.30"S	28°49'44.20"E
			
OBSERVATIONS: Flat area, Savana woodland and grass. Ground visibility poor. No heritage resources.			
HERITAGE STATUS	No heritage resources found.		
POTENTIAL IMPACTS & PROPOSED MITIGATION	The proposed development may go ahead.		


7.2. MKHOMBO NATURE RESERVE CATALOGUE OF SITES


S1 - Kitchen	COORDINATES	25° 5'45.54"S	28°55'3.63"E
			
<p>OBSERVATIONS</p> <p>A shed, tiled hipped roof standing on heavy steel columns. It was built in 1990. It was to be custom-designed into a camping kitchen. The project was not completed.</p>			
HERITAGE STATUS	Building less than 60 years old		
POTENTIAL IMPACTS & PROPOSED MITIGATION	N/A		


S2 - Offloading Ramp	COORDINATES	25° 5'43.50"S	28°55'6.04"E
			
OBSERVATIONS			
An earth ramp with a concrete revetment on the north-eastern side served trucks offloading quarry into the plant for crushing.			
HERITAGE STATUS	Structure less than 60 years		
POTENTIAL IMPACTS & PROPOSED MITIGATION	N/A		


S3 – Gravel discard	COORDINATES	25° 5'40.07"S	28°55'7.32"E
			
OBSERVATIONS			
Fine grade concrete stone discard, leftovers from the dam building in the mid-1980s.			
HERITAGE STATUS	Less than 60 years		
POTENTIAL IMPACTS & PROPOSED MITIGATION	N/A		

S4 - Gravel discard	COORDINATES	25° 5'40.28"S	28°55'11.70"E
			
<p>OBSERVATIONS</p> <p>Concrete stone discard, leftovers from the dam building in the mid-1980s.</p>			
HERITAGE STATUS	Less than 60 years		
POTENTIAL IMPACTS & PROPOSED MITIGATION	N/A		

S5 - Lavatory disused	COORDINATES	25° 5'45.94"S	28°55'7.21"E
			
OBSERVATIONS			
Disused lavatory located near the stone crushing plant. It therefore dates to the dam construction period 1984-1986.			
HERITAGE STATUS	Structure less than 60 years old.		
POTENTIAL IMPACTS & PROPOSED MITIGATION	N/A		

S6 – Concrete Reservoir	COORDINATES	25° 5'47.45"S	28°55'10.95"E
			
OBSERVATIONS			
Gravity reservoir of concrete standing on a concrete column. In current use. Water supply installation after the commissioning of the dam in 1987.			
HERITAGE STATUS	Structure less than 60 years old.		
POTENTIAL IMPACTS & PROPOSED MITIGATION	N/A		

S7- Derelict Concrete reservoir	COORDINATES	25° 5'46.42"S	28°55'11.54"E
			
<p>OBSERVATIONS Derelict concrete water reservoir.</p>			
HERITAGE STATUS	Structure less than 60 years old.		
POTENTIAL IMPACTS & PROPOSED MITIGATION	N/A		

S8- Quarry	COORDINATES	25° 5'38.74"S	28°55'1.22"E
			
<p>OBSERVATIONS</p> <p>A stream inlet where a large quarry was operated for concrete raw material. Part of the quarry is flooded and creates a bay at full capacity.</p>			
HERITAGE STATUS	Structure less than 60 years old.		
POTENTIAL IMPACTS & PROPOSED MITIGATION	N/A		

ALTERNATIVE B

S9- Aloes	COORDINATES	25° 5'44.45"S	28°54'54.78"E
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OBSERVATIONS

Rocky spur facing the northern shore of the dam. Good Combretum woodland. Aloes identified as the stem-less species – *Aloe striata* grow are spread out in the woodland.

HERITAGE STATUS	Cultural value of aloes - medical application for human and animal sicknesses.
POTENTIAL IMPACTS & PROPOSED MITIGATION	Some of the aloes may be saved where they will be directly affected by the development. They can be replanted and integrated into the new landscape.


S10 – Survey Point	COORDINATES	25° 5'45.00"S	28°54'55.80"E
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OBSERVATIONS

This appears to be a survey point dated 31/10/78 (31 Oct 1978). It is pointer to the preconstruction planning phase of the dam project in the late 1970s.

HERITAGE STATUS	Structure less than 60 years old.
POTENTIAL IMPACTS & PROPOSED MITIGATION	N/A

S11– Inundation Peg	COORDINATES	25° 5'45.58"S	28°54'56.75"E
			
OBSERVATIONS			
This inundation peg seems to lie outside the area where the buildings will be located.			
HERITAGE STATUS	Structure less than 60 years old.		
POTENTIAL IMPACTS & PROPOSED MITIGATION	It will not be affected by the proposed development.		

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