

# Phase 1 Heritage Impact Assessment Report

HERITAGE IMPACT ASSESSMENT FOR THE  
PROPOSED YORK TIMBERS VALUE ADDING PROJECT



PREPARED BY:  
G&A HERITAGE

PREPARED FOR:



# CREDIT SHEET

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***Disclaimer;** Although all possible care is taken to identify all sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the study. G&A Heritage and its personnel will not be held liable for such oversights or for costs incurred as a result of such oversights.*

SIGNED OFF BY: STEPHAN GAIGHER



# MANAGEMENT SUMMARY

**Site name and location:** York Timbers Value Adding Project, Sabie Mpumalanga.

**Municipal Area:** Thaba Chweu Local Municipality

**Developer:** York Timbers (Pty) Ltd.

**Consultant:** G&A Heritage, PO Box 522, Louis Trichardt, 0920, South Africa. 38A Voster Str. Louis Trichardt, 0920

**Date of Report:** 12 Augustus 2011

The purpose of the management summary is to distil the information contained in the report into a format that can be used to give specific results quickly and facilitate management decisions. It is not the purpose of the management summary to repeat in shortened format all the information contained in the report, but rather to give a statement of results for decision making purposes.

This study focuses on the proposed re-zoning of a plot of land adjacent to the existing York Timbers and ACME Village from agricultural to industrial and residential respectively. The purpose of this re-zoning application is to enable York Timbers to enter into a Value-Adding Program for their existing industry. Currently raw timber is being processed and some of this product is being turned into ply-wood at their existing plant. The project proposes to add several further value adding processes to the existing factory. For this reason and area of approximately 1.72 km<sup>2</sup> is being proposed to be rezoned to *industrial*.

A preliminary layout has been drawn to lead the study; however this could be altered to some extent to avoid any identified heritage sites.

A literature study did not indicate the existence of any paleontological deposits in the specific area however it is being proposed that, should bedrock be affected, a paleontological study should be initiated.

The purpose of this heritage impact assessment is to outline the cultural heritage sensitivity of the proposed development area and to advise on mitigation should any heritage sites or landscapes be affected.

## Findings

A small informal cemetery was identified to the southeast of the ACME labour village.

The labour village and saw mill contains several built structures; however none of these were of significant cultural value

No culturally sensitive landscape types could be identified within any of the study areas.

## Recommendations

It is recommended that the structural remains and the graveyard be avoided by the construction. A safety zone of 50m should be adhered to.

## Fatal Flaws

No fatal flaws were identified.

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# LIST OF ABBREVIATIONS

Bp.....	Before Present
EIA .....	Early Iron Age
ESA.....	Early Stone Age
Fm.....	Femtometre ( $10^{-15}$ m)
GPS .....	Geographic Positioning System
HIA .....	Heritage Impact Assessment
LIA.....	Late Iron Age
LSA .....	Late Stone Age
MYA .....	Million Years Ago
MSA .....	Middle Stone Age
NHRA .....	National Heritage Resources Act no 22 of 1999
SAHRA .....	South African Heritage Resource Agency
S&EIR.....	Scoping & Environmental Impact Reporting
Um .....	Micrometre ( $10^{-6}$ m)
WGS 84.....	World Geodetic System for 1984

## HERITAGE IMPACT REPORT

HERITAGE IMPACT ASSESSMENT REPORT FOR THE PROPOSED REZONING OF LAND FOR THE YORK TIMBERS VALUE-ADDING PROJECT.

### INTRODUCTION

#### Legislation and methodology

G&A Heritage was appointed by *Bokomosa Environmental Consultants and Landscape Architects cc*, to undertake a heritage impact assessment for the proposed re-zoning of 1.8 km<sup>2</sup> of land to industrial and residential use. Section 27(1) of the South African Heritage Resources Act (25 of 1999) requires that a heritage impact assessment is undertaken for:

- (a) construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;
- (b) construction of a bridge or similar structure exceeding 50 m in length; and
- (c) any development, or other activity which will change the character of an area of land, or water –
  - (1) exceeding 10 000 m<sup>2</sup> in extent;
  - (2) involving three or more existing erven or subdivisions thereof; or
  - (3) involving three or more erven, or subdivisions thereof, which have been consolidated within the past five years; or
- (d) the costs of which will exceed a sum set in terms of regulations; or
- (e) any other category of development provided for in regulations.

A heritage impact assessment is not limited to archaeological artefacts, historical buildings and graves. It is far more encompassing and includes intangible and invisible resources such as places, oral traditions and rituals. A heritage resource is defined as any place or object of cultural significance i.e. of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. This includes the following:

- (a) places, buildings, structures and equipment;
- (b) places to which oral traditions are attached or which are associated with living heritage;
- (c) historical settlements and townscapes;
- (d) landscapes and natural features;
- (e) geological sites of scientific or cultural importance;
- (f) archaeological and paleontological sites;
- (g) graves and burial grounds, including –
  - (1) ancestral graves,
  - (2) royal graves and graves of traditional leaders,
  - (3) graves of victims of conflict (iv) graves of important individuals,
  - (4) historical graves and cemeteries older than 60 years, and
  - (5) other human remains which are not covered under the Human Tissues Act, 1983 (Act No.65 of 1983 as amended);
- (h) movable objects, including ;
  - (1) objects recovered from the soil or waters of South Africa including archaeological and paleontological objects and material, meteorites and rare geological specimens;
  - (2) ethnographic art and objects;
  - (3) military objects;
  - (4) objects of decorative art;
  - (5) objects of fine art;
  - (6) objects of scientific or technological interest;



- (7) books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings; and
- (8) any other prescribed categories, but excluding any object made by a living person;
- (i) battlefields;
- (j) traditional building techniques.

A **'place'** is defined as:

- (a) A site, area or region;
- (b) A building or other structure (which may include equipment, furniture, fittings and articles associated with or connected with such building or other structure);
- (c) a group of buildings or other structures (which may include equipment, furniture, fittings and articles associated with or connected with such group of buildings or other structures); and (d) an open space, including a public square, street or park; and in relation to the management of a place, includes the immediate surroundings of a place.

**'Structures'** means any building, works, device, or other facility made by people and which is fixed to land and any fixtures, fittings and equipment associated therewith older than 60 years.

**'Archaeological'** means:

- (a) material remains resulting from human activity which are in a state of disuse and are in or on land and are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;
- (b) rock art, being a form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and is older than 100 years including any area within 10 m of such representation; and
- (c) wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land or in the maritime cultural zone referred to in section 5 of the Maritime Zones Act 1994 (Act 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which are older than 60 years or which in terms of national legislation are considered to be worthy of conservation;
- (d) features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found.

**'Paleontological'** means 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 or trace.

**'Grave'** means a place of interment and includes the contents, headstone or other marker of and any other structures on or associated with such place. The South African Heritage Resources Agency (SAHRA) will only issue a permit for the alteration of a grave if it is satisfied that every reasonable effort has been made to contact and obtain permission from the families concerned.

The removal of graves is subject to the following procedures as outlined by the SAHRA:

- Notification of the impending removals (using English, Afrikaans and local language media and notices at the grave site);
- Consultation with individuals or communities related or known to the deceased;
- Satisfactory arrangements for the curation of human remains and / or headstones in a museum, where applicable;
- Procurement of a permit from the SAHRA;
- Appropriate arrangements for the exhumation (preferably by a suitably trained archaeologist) and re-interment (sometimes by a registered undertaker, in a formally proclaimed cemetery);
- Observation of rituals or ceremonies required by the families.

The limitations and assumptions associated with this heritage impact assessment are as follows;

- Limited field investigations were performed on foot and by vehicle where access was readily available.
- Sites were evaluated by means of description of the cultural landscape, direct observations and analysis of written sources and available databases.
- It was assumed that the site layout as provided by York Timbers Pty (Ltd) is accurate.
- We assumed that the public participation process performed as part of the Scoping and Environmental Impact Reporting (S&EIR)

process was sufficiently encompassing not to be repeated in the Heritage Assessment Phase.

Table 1. Impacts on the NHRA Sections

Act	Section	Description	Possible Impact	Action
National Heritage Resources Act (NHRA)	34	Preservation of buildings older than 60 years	None	None
	35	Archaeological, paleontological and meteor sites	No impact	None
	36	Graves and burial sites	Informal graveyard at Site 1	Demarcate area
	37	Protection of public monuments	None	None
	38	Does activity trigger a HIA?	Yes	HIA

Table 2. NHRA Triggers

Action Trigger	Yes/No	Description
Construction of a road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length.	Yes	Access roads to new area as well as upgrading of existing roads
Construction of a bridge or similar structure exceeding 50m in length.	No	N/A
Development exceeding 5000 m <sup>2</sup>	No	N/A
Development involving more than 3 erven or sub divisions	No	N/A
Development involving more than 3 erven or sub divisions that have been consolidated in the past 5 years	No	N/A
Re-zoning of site exceeding 10 000 m <sup>2</sup>	Yes	Rezoning of 1.8 km <sup>2</sup>
Any other development category, public open space, squares, parks or recreational grounds	No	N/A

## BACKGROUND INFORMATION

### PROPOSED YORK TIMBERS REZONING PROJECT

#### PROJECT DESCRIPTION

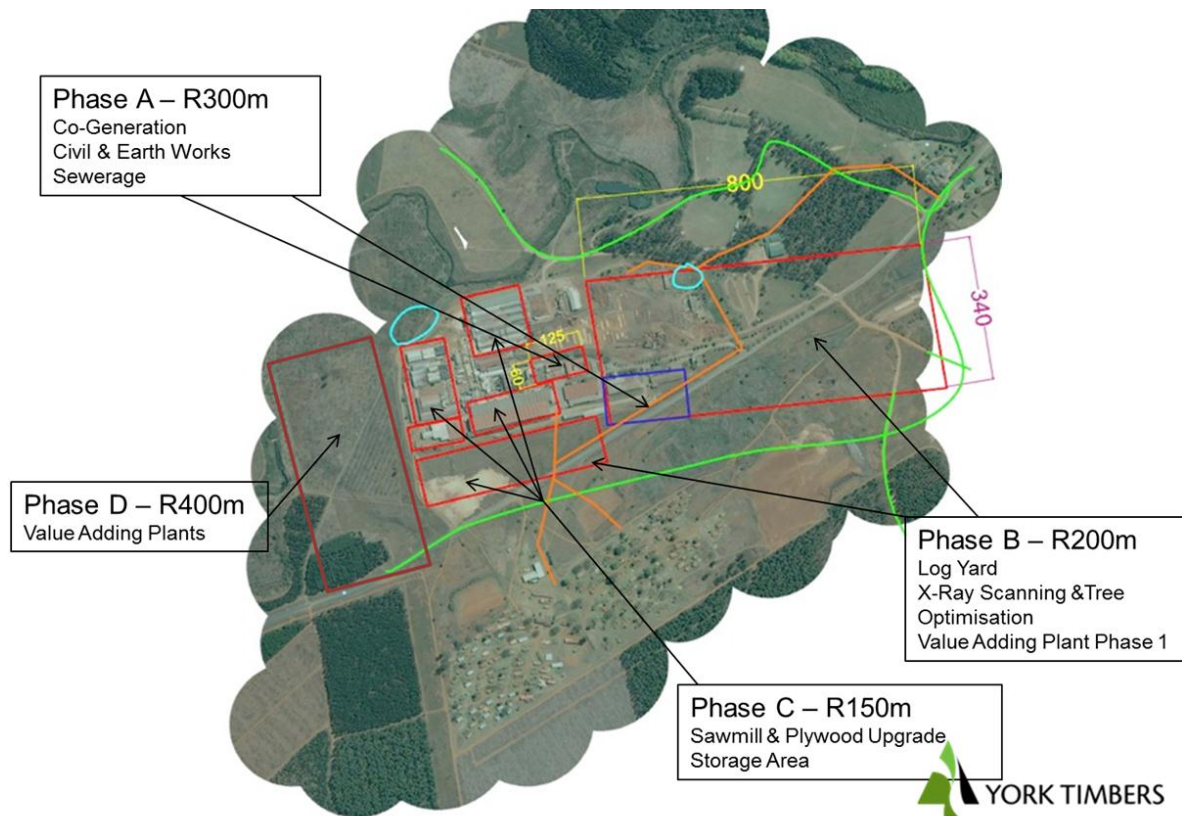
The proposed development for which the rezoning application is being submitted consists of four phases;  
 Phase A – Upgrading of electricity generation from 15MW to 55MW  
 Phase B – The placement of a merchandising log yard  
 Phase C – Upgrade of the saw mill (2600 m<sup>2</sup>) and plywood plant (750 m<sup>2</sup>)  
 Phase D – Value adding plant with an engineered wood manufacturing plant, a component manufacturing plant and a moulding plant.

#### SITE LOCATION

The study area is located on Portion 101 of the farm Grootfontein 196 JT. This in turn is located to the north of the old Lydenburg / Sabie road on the York Timbers property. On the study site the existing saw mill and its associated infrastructure is located.

#### ALTERNATIVES CONSIDERED

- No alternatives were considered.



Proposed Phases of Development

## METHODOLOGY

This study defines the heritage component of the S&EIR process being undertaken for the York Timbers Rezoning Project. It is described as a first phase (HIA). This report attempts to evaluate both the accumulated heritage knowledge of the area as well as information derived from direct physical observations.

## EVALUATING HERITAGE IMPACTS

A combination of document research as well as the determination of the geographic suitability of areas and the evaluation of aerial photographs determined which areas could and should be accessed.

After plotting of the site on a GPS the areas were accessed using suitable combinations of vehicle access and access by foot. Vehicular access was facilitated by the client.

Sites were documented by digital photography and geo-located with GPS readings using the WGS 84 datum.

Further techniques (where possible) included interviews with local inhabitants, visiting local museums and information centers and discussions with local experts. All this information was combined with information from an extensive literature study as well as the result of archival studies based on the SAHRA provincial databases.

Geological maps guided investigations into the paleontological riches of the area.

## ASSESSING VISUAL IMPACT

Visual impacts of developments result when sites that are culturally celebrated are visually affected by a development. The exact parameters for the determination of visual impacts have not yet been rigidly defined and are still mostly open to interpretation. CNdV Architects and The Department of Environmental Affairs and Development Planning (2006) have developed some guidelines for the management of the

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visual impacts of wind turbines in the Western Cape, although these have not yet been formalised. In these guidelines they recommend a buffer zone of 1km around significant heritage sites to minimise the visual impact.

### ASSUMPTIONS AND RESTRICTIONS

- It is assumed that the SAHRA database locations are correct
- It is assumed that the paleontological information collected for the project is comprehensive.
- It is assumed that the social impact assessment and public participation process of the S&EIR will result in the identification of any intangible sites of heritage potential.

## HERITAGE INDICATORS WITHIN THE RECEIVING ENVIRONMENT

### REGIONAL CULTURAL CONTEXT

#### PALEONTOLOGY

The Barberton Greenstone Belt (BGB) is a geological formation in Mpumalanga that has produced some of the oldest evidence of life anywhere in the World. This formation is not limited to the Barberton area and several versions of it are found close to the study area, however no indications of this was to be found within the study area itself.

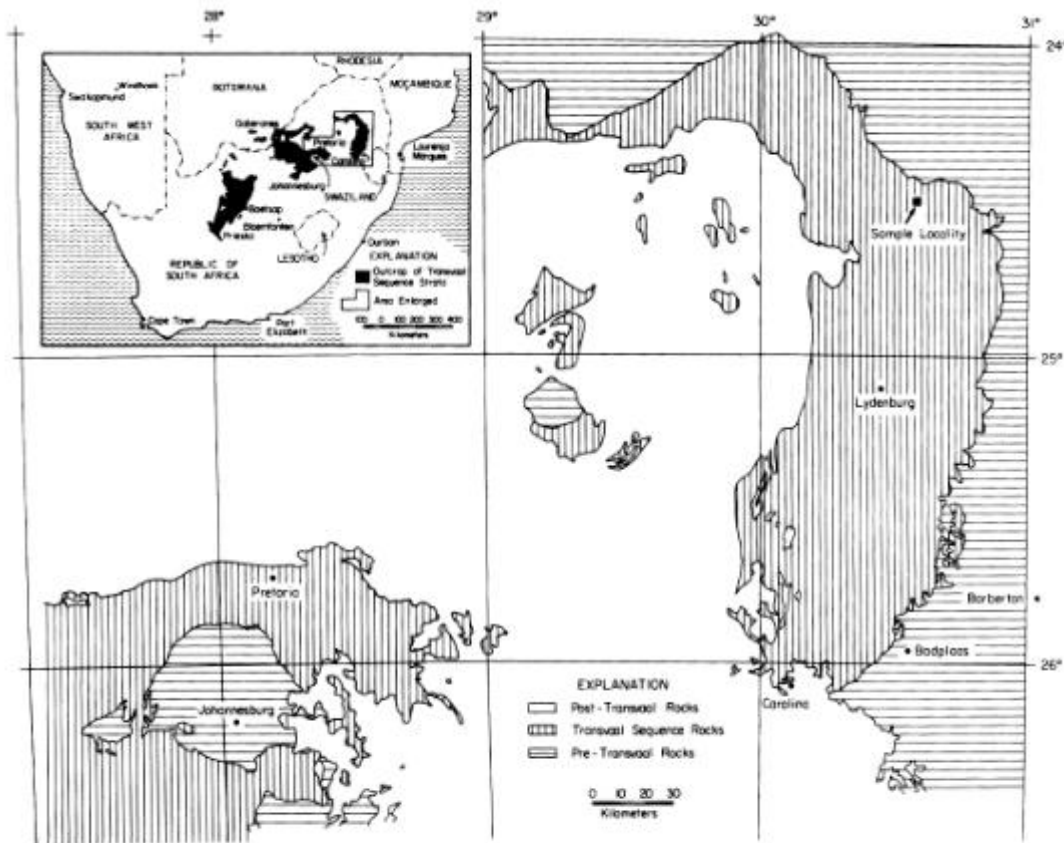
Relatively extensive research has been performed on the Paleontology of the study area in the past 25 years. Of main concern is the Transvaal sequence of stromatolite carrying substrates.

The age of the Transvaal Sequence has been established from known Rb/Sr dates of igneous rocks above and below this sequence. Nicolaysen (1962) dated the overlying igneous rocks, i.e., the Bushveld Igneous Complex, at 1,954 m.y. The lowermost Transvaal Strata rest on the Ventersdorp Sequence, the age of which is 2,300 m.y. old (Van Niekerk and Burger, 1964).

The Transvaal Sequence consists of the three Groups: the youngest is the 6,900 m thick Pretoria Group, which consists of argillaceous and arenaceous strata with some interbedded volcanic rocks. There are at least six well described stromatolite horizons within this Group (Button, 1971; Truswell and Eriksson, 1972, 1974). In the middle is the Dolomite or Olifants River Group, which is -1,250 m thick stratigraphically, consisting of carbonates, cherts, and small amounts of shale and quartzite. Stromatolites are again common in this Group and have been described by Young (1932, 1933, 1934, 1940); Young and Mendelssohn (1948); Toens (1966); Truswell and Eriksson (1972, 1975); Button (1973a); MacGregor, Truswell and Eriksson (1974). The lowermost member is the Wolkberg Group, which is approximately 750 m thick and rests on the basement granite. In addition to stromatolites, this Group contains argillaceous sediments, quartzites and minor amounts of volcanic rocks, including pillow lavas (Button, 1973b).

This basal portion of the Transvaal Sequence may represent a major geological change because this is where the oldest widespread Southern African shelf carbonate deposits are found (Button, 1973b). Of prime interest to this report are the stromatolites described from the Mixed Zone of the Malmani Dolomite, which is part of the Dolomite Group.

In the Mixed Zone, particularly in the Abel Erasmus Pass region, in addition to stromatolites there are sedimentary structures, such as ripple marks, ripple crosslamination, and cross-bedding. From this, and other geological evidence, it is thought that these stromatolites were formed in shallow-water (Button, 1973a).



TEXT-FIG. 1—Map showing the outcrops of the Transvaal Sequence with sample locality (TR-1) noted, modified after A. Button (pers. comm., 1970; and ref. 1973a).

## STONE AGE

This area is home to all three of the known phases of the Stone Age, namely: the Early- (2.5 million – 250 000 years ago), Middle- (250 000 – 22 000 years ago) and Late Stone Age (22 000 – 200 years ago). The Late Stone Age in this area also contains sites with rock art from the San and Khoi San cultural groups. Early to Middle Stone Age sites are uncommon in this area, however rock-art sites and Late Stone Age sites are much better known. Some Early Stone Age Sites are known from the Ohrigstad and Echo Caves region.

No substantial number of Stone Age sites from any period of the Stone Age is however known to exist in this specific area – primarily as a result of a lack of research and general ignorance amongst the layman in recognizing stone tools that often may occur on the surface of the earth. However, it is possible that the first humans in the Sabie area may have been preceded by *Homo erectus*, who roamed large parts of the world during the Acheulian period of the Early Stone Age, 500 000 years ago.

During the Middle Stone Age, 200 000 years ago, modern man or *Homo sapiens* emerged, manufacturing a wider range of tools, with technologies more advanced than those from earlier periods. This enabled skilled hunter-gatherer bands to adapt to different environments. From this time onwards, rock shelters and caves were used for occupation and reoccupation over very long periods of time.

The Late Stone Age, considered to have started some 20 000 years ago, is associated with the predecessors of the San and Khoi Khoi. Stone Age hunter-gatherers lived well into the 19th century in some places in SA. Stone Age sites may occur all over the area where an unknown number may have been obliterated by mining activities, urbanisation, industrialisation, agriculture and other development activities during the past decades.

## IRON AGE

The Iron Age sequence is divided into the Early Iron Age (200 – 1400 BP) and the Late Iron Age (1400 – 1900 BP). Prominent Early Iron Age sites of the Lydenburg era has been identified close to the study area (Matlakala AIA, AINP 2003).

The main Iron Age sequence is however associated with the Bapedi group in this area. Much of the historic structures found in the area can also be attributed to this cultural group. The death of the great Bapedi chief Thulare<sup>1</sup> temporarily halted the growth of Bapedi power and influence which had been steadily increasing in the north-eastern Transvaal, and the appearance on the scene of the dreaded Matabele shortly after his death marked the beginning of a long struggle by the Bapedi to maintain their identity and independence, a struggle which ended with their defeat at the hands of Sir Garnet Wolseley's expeditionary force in November 1879.

The Matabele overwhelmed the Bapedi, and all Thulare's sons, with the exception of Sekwati, were killed. Sekwati fled with the remnants of the tribe across the Olifants River, while the Matabele remained in the country for a year, denuding it of cattle and grain.

For four years Sekwati and his followers wandered around the Zoutpansberg and Blaauwberg, raiding small kraals, capturing women and cattle. They then returned across the Olifants River and re-established their ascendancy in that part of the country, although not without meeting resistance. The tribal stronghold was established at Phiring, which later became Magalies location. Here the Bapedi were attacked by both Zulu and Swazi impis, but they resisted successfully with their traditional method of fighting, by withdrawing to their mountain fastness, waging a defensive war and refusing to meet the enemy in a pitched battle in the open. Although he had repulsed the Zulus, Sekwati realized that they were the biggest threat to Bapedi security, and every year thereafter he sent them presents in order to placate them and remain on friendly terms. For this reason Cetshwayo regarded the Bapedi as his subjects, his 'dogs'. The Swazis too, despite their unsuccessful attack on the Bapedi, regarded them as their subjects, although the Bapedi themselves did not recognize this overlordship.

When Andries Hendrik Potgieter and his Boer adherents moved to the Eastern Transvaal in 1845 and founded Ohrigstad, they wanted a legal title to the ground they occupied. Potgieter arranged a meeting with Sekwati, and on 5 July 1845 a vredenstractaat was signed. This treaty later disappeared, but in all probability Sekwati granted the land. A rival group of Boers would not recognize this grant, since it placed Potgieter in too strong a position. They approached Sekwati, who told them that he could not sell the land to the east of the Steelpoort because he had already given it away. This group then decided to purchase from the Swazis the land, including that to the west of the Steelpoort, on which the Bapedi lived, as they were under the impression that the Swazis had conquered the Bapedi, and that Sekwati had acknowledged himself a Swazi subject. The Swazis had no scruples in 'selling' the land to the Boers, even offering to drive the Bapedi away first so that they could hand over an empty land. In the eyes of the Boers this purchase made Sekwati their subject.

The Bapedi alarmed their Boer neighbours, who decided that the tribe must be defeated and disarmed before it became too late. In September 1852 a twenty-four-day siege was laid to Phiring, after an initial charge had failed to dislodge the Bapedi. Although the defenders were reduced to sucking the liquid from the stomachs of cattle that had died, the Boers retired without having captured the stronghold. An uneasy peace followed this attack, and cattle raids on Boer farms continued, while Sekwati moved the tribal fastness from Phiring to Mosega, a site beneath the eastern slope of the Lulu Mountains. In November 1857 an agreement was signed between Sekwati and the Boers.

Sekwati died on 20 September 1861. It was expected by the tribe that Mampuru would succeed him, but Sekhukhune with some of his followers seized the stat, killing Mampuru's supporters. Mampuru himself escaped and found refuge with the Swazis.

At first there was little indication that the new chief would depart from the peaceful policy his father had inaugurated in 1857. He recognized the Steelpoort as the boundary, and asked the Boers to protect him from any Zulu or Swazi attacks; he was well-disposed towards the Rev. A. Merensky, who had established a mission station, Kahalatlolu, only a few months before Sekwati's death.

During this period the number of people under Sekhukhune's rule increased rapidly. An estimate of 1879 established their total at 75,000, of whom 15,000 were capable of bearing arms. This included many neighbouring tribes who had been persuaded to declare themselves loyal to Sekhukhune.

As the Bapedi population grew, it became increasingly difficult to maintain so many people on the land between the Steelpoort and Olifants Rivers.

Sekhukhune determined to expand eastwards; this was made possible by the old policy of cattle raids and infiltration into Boer farms across the Steelpoort. As the Boers abandoned their farms in consequence of the fever and Bapedi cattle rustlers, Africans occupied this land. As more tribes gave him their allegiance, Sekhukhune began thinking of a domain stretching from the Zoutpansberg in the north to the Vaal River in the south.

### THE HISTORIC ERA

This area is well known for its rich historic character and contains sites connected with several historic military and political conflicts. Historic cemeteries (victim of conflict sites), provincial and private museums, battlefield sites and other historic sites are found here. Mining has had a significant part to play in the history of this area. The large scale forestry that the area is now identified with was originally the result of trees that were planted to supply the burgeoning mining industry with timber. Today the area is associated with timber production as well as being a very popular tourist destination.

### CULTURAL LANDSCAPE

The main cultural landscape types associated with this area is of extensive timber production and mining activities combined with agricultural activities and tourism. The cultural atmosphere of historic exploration and intrepid miners is particularly evident in the historic town of Pelgrimsrus while the town of Graskop is the central piece in tourism, Sabie fulfils a more practical and managerial function within the geographic triangle formed by these beautiful towns.

The cultural landscape for this area is also richly associated with the colonial period as well as its violent past. A unique stone architectural heritage was established in the Eastern Highveld from the second half of the 19th century well into the early 20th century. During this time period stone was used to build farmsteads and dwellings, both in urban and in rural areas. Although a contemporary stone architecture also existed in the Karoo and in the Eastern Free State Province of South Africa a wider variety of stone types were used in the Eastern Highveld. These included sandstone, ferricrete (ouklip.), dolerite (blouklip.), granite, shale and slate.

The origins of a vernacular stone architecture in the Eastern Highveld and Eastern Escarpment may be ascribed to various reasons of which the ecological characteristics of the region may be the most important. Whilst this region is generally devoid of any natural trees which could be used as timber in the construction of farmsteads, outbuildings, cattle enclosures and other structures, the scarcity of fire wood also prevented the manufacture of baked clay bricks. Consequently stone served as the most important building material in the Eastern Highveld.





Figure 1: Photo indicating landscape type

## MEASURING AND EVALUATING THE CULTURAL SENSITIVITY OF THE STUDY AREA

In 2003 the SAHRA compiled the following guidelines to evaluate the cultural significance of individual heritage resources:

### TYPE OF RESOURCE

- Place
- Archaeological Site
- Structure
- Grave
- Paleontological Feature
- Geological Feature

### TYPE OF SIGNIFICANCE

#### 1. HISTORIC VALUE

It is important in the community, or pattern of history

- Important in the evolution of cultural landscapes and settlement patterns
- Important in exhibiting density, richness or diversity of cultural features illustrating the human occupation and evolution of the nation, province, region or locality.
- Important for association with events, developments or cultural phases that have had a significant role in the human occupation and evolution of the nation, province, region or community.
- Important as an example for technical, creative, design or artistic excellence, innovation or achievement in a particular period.

It has strong or special association with the life or work of a person, group or organisation of importance in history

- Importance for close associations with individuals, groups or organisations whose life, works or activities have been significant within the history of the nation, province, region or community.

It has significance relating to the history of slavery

- Importance for a direct link to the history of slavery in South Africa.

#### 2. AESTHETIC VALUE

It is important in exhibiting particular aesthetic characteristics valued by a community or cultural group.

- Important to a community for aesthetic characteristics held in high esteem or otherwise valued by the community.
- Importance for its creative, design or artistic excellence, innovation or achievement.
- Importance for its contribution to the aesthetic values of the setting demonstrated by a landmark quality or having impact on important vistas or otherwise contributing to the identified aesthetic qualities of the cultural environs or the natural landscape within which it is located.
- In the case of an historic precinct, importance for the aesthetic character created by the individual components which collectively form a significant streetscape, townscape or cultural environment.

#### 3. SCIENTIFIC VALUE

It has potential to yield information that will contribute to an understanding of natural or cultural heritage

- Importance for information contributing to a wider understanding of natural or cultural history by virtue of its use as a research site, teaching site, type locality, reference or benchmark site.
- Importance for information contributing to a wider understanding of the origin of the universe or of the development of the earth.
- Importance for information contributing to a wider understanding of the origin of life; the development of plant or animal species, or the biological or cultural development of hominid or human species.
- Importance for its potential to yield information contributing to a wider understanding of the history of human occupation of the nation, Province, region or locality.
- It is important in demonstrating a high degree of creative or technical achievement at a particular period
- Importance for its technical innovation or achievement.

**4. SOCIAL VALUE**

- It has strong or special association with a particular community or cultural group for social, cultural or spiritual reasons
- Importance as a place highly valued by a community or cultural group for reasons of social, cultural, religious, spiritual, symbolic, aesthetic or educational associations.
- Importance in contributing to a community's sense of place.

**DEGREES OF SIGNIFICANCE**

**1. RARITY**

It possesses uncommon, rare or endangered aspects of natural or cultural heritage.

- Importance for rare, endangered or uncommon structures, landscapes or phenomena.

**2. REPRESENTIVITY**

- It is important in demonstrating the principal characteristics of a particular class of natural or cultural places or objects.
- Importance in demonstrating the principal characteristics of a range of landscapes or environments, the attributes of which identify it as being characteristic of its class.
- Importance in demonstrating the principal characteristics of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, province, region or locality.

The table below illustrates how a site's heritage significance is determined

Spheres of Significance	High	Medium	Low
International			
National			
Provincial			
Regional			
Local			
Specific Community			

What other similar sites may be compared to this site?

## ASSESSMENT OF IMPACTS

### ACTIVITIES THAT WILL AFFECT THE HERITAGE ENVIRONMENT

#### POST-CONTACT HERITAGE

*Nature of Impacts:* The development of the saw mill could negatively affect the graveyard site located at Site 1 through excavation activities. The structural foundation remains found here could also be negatively affected by trenching and road building activities.

*Extent of Impacts:* Localised damage to the site (see *Impact Statement* section for application).

<b>Nature of Impact:</b> Possible post-contact site could be damaged locally by excavation activities		
	<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>Extent</b>	Local	Local
<b>Duration</b>	Long term	Long term
<b>Magnitude</b>	Low	Low
<b>Probability</b>	Improbable	Improbable
<b>Significance</b>	High	High
<b>Status</b>	Positive	Positive
<b>Reversibility</b>	Irreversible	Irreversible
<b>Irreplaceable loss of resource</b>	No	No
<b>Can impacts be mitigated</b>	Yes	Yes
<b>Mitigation</b>	Ensure that development layout avoid damage to the cemetery	
<b>Cumulative impacts</b>	None	
<b>Residual impacts</b>	Local negativity towards saw mill activities	

### IMPACT STATEMENT

#### PALEONTOLOGICAL SITES

No paleontological sites of high value could be identified. Paleontological sites could be affected if bedrock was to be disturbed during the trenching activities.

#### Mitigation

Paleontological monitoring during excavation activities where bedrock is to be disturbed.

#### ARCHEOLOGICAL SITES

One site of archaeological importance was identified in the study area. This is a small graveyard with at least ten graves. This site has a high, local significance.



Figure 2: Graveyard at Site MWR 003

## Mitigation

It is recommended that the development design avoid the grave site. A safety buffer of 50 meters from the edge of the site is recommended.

## BUILT ENVIRONMENT

Some modern structures associated with farming were identified on the property adjacent to the site these include;

- Brick shed with corrugated roof (modern)
- Brick outbuildings and labor quarters (modern)
- Barb-wire fences (modern)
- Concrete reservoirs (modern)
- Dirt roads (modern)
- Footpaths



Figure 3: Brick buildings



Figure 4: Bamabanani Sport Centre



Figure 5: Worker housing

### Mitigation

None of the structures with the exception of the roads and fences will be affected by the development activities. It is recommended that the fences and roads be rehabilitated after completion of the project.

### CULTURAL LANDSCAPE

The following landscape types were identified during the study.

Landscape Type	Description	Occurrence still possible?	Identified on site?
1 Paleontological	Mostly fossil remains. Remains include microbial fossils such as found in Baberton Greenstones	Yes, sub-surface	No
2 Archaeological	Evidence of human occupation associated with the following phases – Early-, Middle-, Late Stone Age, Early-, Late Iron Age, Pre-Contact Sites, Post-Contact Sites	Yes, sub-surface	No
3 Historic Built Environment	<ul style="list-style-type: none"> <li>- Historical townscapes/streetscapes</li> <li>- Historical structures; i.e. older than 60 years</li> <li>- Formal public spaces</li> <li>- Formally declared urban conservation areas</li> <li>- Places associated with social identity/displacement</li> </ul>	No	No
4 Historic Farmland	These possess distinctive patterns of settlement and historical features such as: <ul style="list-style-type: none"> <li>- Historical farm yards</li> <li>- Historical farm workers villages/settlements</li> <li>- Irrigation furrows</li> <li>- Tree alignments and groupings</li> <li>- Historical routes and pathways</li> <li>- Distinctive types of planting</li> <li>- Distinctive architecture of cultivation e.g. planting blocks, trellising, terracing, ornamental planting.</li> </ul>	Yes	Yes, reservoirs, furrows, pathways. Eucalyptus trees indicating cemetery.
5 Historic rural town	<ul style="list-style-type: none"> <li>- Historic mission settlements</li> <li>- Historic townscapes</li> </ul>	No	No
6 Pristine natural landscape	<ul style="list-style-type: none"> <li>- Historical patterns of access to a natural amenity</li> <li>- Formally proclaimed nature reserves</li> </ul>	No	No

	<ul style="list-style-type: none"> <li>- Evidence of pre-colonial occupation</li> <li>- Scenic resources, e.g. view corridors, viewing sites, visual edges, visual linkages</li> <li>- Historical structures/settlements older than 60 years</li> <li>- Pre-colonial or historical burial sites</li> <li>- Geological sites of cultural significance.</li> </ul>		
7 Relic Landscape	<ul style="list-style-type: none"> <li>- Past farming settlements</li> <li>- Past industrial sites</li> <li>- Places of isolation related to attitudes to medical treatment</li> <li>- Battle sites</li> <li>- Sites of displacement,</li> </ul>	Yes	Yes, existing saw mill and associated structures.
8 Burial grounds and grave sites	<ul style="list-style-type: none"> <li>- Pre-colonial burials (marked or unmarked, known or unknown)</li> <li>- Historical graves (marked or unmarked, known or unknown)</li> <li>- Graves of victims of conflict</li> <li>- Human remains (older than 100 years)</li> <li>- Associated burial goods (older than 100 years)</li> <li>- Burial architecture (older than 60 years)</li> </ul>	Yes	Yes, cemetery at Site 001
9 Associated Landscapes	<ul style="list-style-type: none"> <li>- Sites associated with living heritage e.g. initiation sites, harvesting of natural resources for traditional medicinal purposes</li> <li>- Sites associated with displacement &amp; contestation</li> <li>- Sites of political conflict/struggle</li> <li>- Sites associated with an historic event/person</li> <li>- Sites associated with public memory</li> </ul>	No	No
10 Historical Farmyard	<ul style="list-style-type: none"> <li>- Setting of the yard and its context</li> <li>- Composition of structures</li> <li>- Historical/architectural value of individual structures</li> <li>- Tree alignments</li> <li>- Views to and from</li> <li>- Axial relationships</li> <li>- System of enclosure, e.g. defining walls</li> <li>- Systems of water reticulation and irrigation, e.g. furrows</li> <li>- Sites associated with slavery and farm labour</li> <li>- Colonial period archaeology</li> </ul>	No	No
11 Historic institutions	<ul style="list-style-type: none"> <li>- Historical prisons</li> <li>- Hospital sites</li> <li>- Historical school/reformatory sites</li> <li>- Military bases</li> </ul>	No	No
12 Scenic visual	<ul style="list-style-type: none"> <li>- Scenic routes</li> </ul>	Yes	The Mpumalanga Panorama route
13 Amenity landscape	<ul style="list-style-type: none"> <li>- View sheds</li> <li>- View points</li> <li>- Views to and from</li> <li>- Gateway conditions</li> <li>- Distinctive representative landscape conditions</li> <li>- Scenic corridors</li> </ul>	No	No

## Mitigation

It is recommended that the development designs take into account the positive and negative characteristics of the existing cultural landscape types and that they endeavor to promote the positive aspects while at the same time mitigating the negative aspects.

## IMPACT ASSESSMENT MATRIX

NHRA Class	Identification		Significance	Impact	Recommendations
	Site	GPS			
Graves and Burial Grounds	Site 001	25° 06' 31.2" S 30° 45' 22.7" E	High	Severe	Alter development layout

## RESOURCE MANAGEMENT RECOMMENDATIONS

Although unlikely, sub-surface remains of heritage sites could still be encountered during the construction activities associated with the project. Such sites would offer no surface indication of their presence due to the high state of alterations in some areas as well as heavy plant cover in other areas. The following indicators of unmarked sub-surface sites could be encountered:

- Ash deposits (unnaturally grey appearance of soil compared to the surrounding substrate);
- Bone concentrations, either animal or human;
- Ceramic fragments such as pottery shards either historic or pre-contact;
- Stone concentrations of any formal nature.

The following recommendations are given should any sub-surface remains of heritage sites be identified as indicated above:

- All operators of excavation equipment should be made aware of the possibility of the occurrence of sub-surface heritage features and the following procedures should they be encountered.
- All construction in the immediate vicinity (50m radius of the site) should cease.
- The heritage practitioner should be informed as soon as possible.
- In the event of obvious human remains the South African Police Services (SAPS) should be notified.
- Mitigation measures (such as refilling etc.) should not be attempted.
- The area in a 50m radius of the find should be cordoned off with hazard tape.
- Public access should be limited.
- The area should be placed under guard.
- No media statements should be released until such time as the heritage practitioner has had sufficient time to analyze the finds.

## CONCLUSION

The area investigated shows numerous signs of human occupation and especially agricultural activities. With the exception of the small graveyard, none of these structures have any cultural heritage significance at this stage. Provided the development can be deviated to skirt this site with at least a 50m safety buffer, no further mitigation is needed at this site. It is recommended that should bedrock be affected during trenching activities that a palaeontologist be appointed to monitor the construction activities.



## HERITAGE SITES IDENTIFIED WITHIN THE STUDY AREA

### SITE 001

GPS Coordinates

25° 06' 31.2" S

30° 45' 22.7" E



An informal cemetery with 10+ graves varying from granite inscribed headstones to simple rock cairns or outlines.

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# APPENDIX A

## GENERAL METHODOLOGY

## METHODOLOGY

### INVENTORY

Inventory studies involve the in-field survey and recording of archaeological resources within a proposed development area. The nature and scope of this type of study is defined primarily by the results of the overview study. In the case of site-specific developments, direct implementation of an inventory study may preclude the need for an overview.

There are a number of different methodological approaches to conducting inventory studies. Therefore, the proponent, in collaboration with the archaeological consultant, must develop an inventory plan for review and approval by the SAHRA prior to implementation (*Dincause, Dena F., H. Martin Wobst, Robert J. Hasenstab and David M. Lacy 1984*).

### SITE SURVEYING

Site surveying is the process by which archaeological sites are located and identified on the ground. Archaeological site surveys often involve both surface inspection and subsurface testing. For the purposes of heritage investigations, *archaeological sites* refer to any site with heritage potential (i.e. historic sites, cultural sites, rock art sites etc.).

A systematic surface inspection involves a foot traverse along pre-defined linear transects which are spaced at systematic intervals across the survey area. This approach is designed to achieve representative area coverage. Alternatively, an archaeological site survey may involve a non-systematic or random walk across the survey area. Subsurface testing is an integral part of archaeological site survey. The purpose of subsurface testing, commonly called "shovel testing", is to:

- (a) assist in the location of archaeological sites which are buried or obscured from the surveyor's view, and
- (b) help determine the horizontal and vertical dimensions and internal structure of a site.

In this respect, subsurface testing should not be confused with evaluative testing, which is a considerably more intensive method of assessing site significance (*King, Thomas F., 1978*).

Once a site is located, subsurface testing is conducted to record horizontal extent, depth of the cultural matrix, and degree of internal stratification. Because subsurface testing, like any form of site excavation, is destructive it should be conducted only when necessary and in moderation.

Subsurface testing is usually accomplished by shovel, although augers and core samplers are also used where conditions are suitable. Shovel test units averaging 40 square cm are generally appropriate, and are excavated to a sterile stratum (i.e. C Horizon, alluvial till, etc.).

Depending on the site survey strategy, subsurface testing is conducted systematically or randomly across the survey area. Other considerations such as test unit location, frequency, depth and interval spacing will also depend on the survey design as well as various biophysical factors. (*Lightfoot, Keng G. 1989*).

### SURVEY SAMPLING

Site survey involves the complete or partial inspection of a proposed project area for the purpose of locating archaeological or other heritage sites. Since there are many possible approaches to field survey, it is important to consider the biophysical conditions and archaeological site potential of the survey area in designing the survey strategy.

Ideally, the archaeological site inventory should be based on intensive survey of every portion of the impact area, as maximum area coverage will provide the most comprehensive understanding of archaeological and other heritage resource density and distribution. However, in many cases the size of the project area may render a complete survey impractical because of time and cost considerations.

In some situations it may be practical to intensively survey only a sample of the entire project area. Sample selection is approached systematically, based on accepted statistical sampling procedures, or judgementally, relying primarily on subjective criteria (*Butler, W., 1984*).

### SYSTEMATIC SURVEY SAMPLING

A systematic sample survey is designed to locate a representative sample of archaeological or heritage resources within the project area. A statistically valid sample will allow predictions to be made regarding total resource density, distribution and variability. In systematic sample surveys it may be necessary to exempt certain areas from intensive inspection owing to excessive slope, water bodies, landslides, land ownership, land use or other factors. These areas must be explicitly defined. Areas characterized by an absence of road access or dense vegetation should not be exempted. (*Dunnell, R.C., Dancey W.S. 1983*).

### JUDGEMENTAL SURVEY SAMPLING

Under certain circumstances, it is appropriate to survey a sample of the project area based entirely on professional judgement regarding the location of sites. Only those areas which can reasonably be expected to contain archaeological or heritage sites are surveyed.

However, a sufficient understanding of the cultural and biophysical factors which influenced or accounted for the distribution of these sites over the landscape is essential. Careful consideration must be given to ethnographic patterns of settlement, land use and resource exploitation; the kinds and distribution of aboriginal food sources; and restrictions on site location imposed by physical terrain, climatic regimes, soil chemistry or other factors. A judgemental sample survey is not desirable if statistically valid estimates of total heritage resource density and variability are required (*McManamon F.P. 1984*).

### ASSESSMENT

Assessment studies are only required where conflicts have been identified between heritage resources and a proposed development. These studies require an evaluation of the heritage resource to be impacted, as well as an assessment of project impacts. The purpose of the assessment is to provide recommendations as to the most appropriate manner in which the resource may be managed in light of the identified impacts. Management options may include alteration of proposed development plans to avoid resource impact, mitigative studies directed at retrieving resource values prior to impact, or compensation for the unavoidable loss of resource values.

It is especially important to utilize specialists at this stage of assessment. The evaluation of any archaeological resource should be performed by professionally qualified individuals.

### SITE EVALUATION

Techniques utilized in evaluating the significance of a heritage site include systematic surface collecting and evaluative testing. Systematic surface collection is employed wherever archaeological remains are evident on the ground surface. However, where these sites contain buried deposits, some degree of evaluative testing is also required.

Systematic surface collection from archaeological sites should be limited, insofar as possible, to a representative sample of materials. Unless a site is exceptionally small and limited to the surface, no attempt should be made at this stage to collect all or even a major portion of the materials. Intensive surface collecting should be reserved for full scale data recovery if mitigative studies are required.

Site significance is determined following an analysis of the surface collected and/or excavated materials (*Miller, C.L. II, 1989*).

### SIGNIFICANCE CRITERIA

There are several kinds of significance, including scientific, public, ethnic, historic and economic, that need to be taken into account when evaluating heritage resources. For any site, explicit criteria are used to measure these values. Checklists of criteria for evaluating pre-contact and post-contact archaeological sites are provided in Appendix B and Appendix C. These checklists are not intended to be exhaustive or inflexible. Innovative approaches to site evaluation which emphasize quantitative analysis and objectivity are encouraged. The process used to derive a measure of relative site significance must be rigorously documented, particularly the system for ranking or weighting various evaluated criteria.

Site integrity, or the degree to which a heritage site has been impaired or disturbed as a result of past land alteration, is an important consideration in evaluating site significance. In this regard, it is important to recognize that although an archaeological site has been disturbed, it may still contain important scientific information.

Heritage resources may be of scientific value in two respects. The potential to yield information which, if properly recovered, will enhance understanding of Southern African human history is one appropriate measure of scientific significance. In this respect, archaeological sites should be evaluated in terms of their potential to resolve current archaeological research problems. Scientific significance also refers to the potential for relevant contributions to other academic disciplines or to industry.

Public significance refers to the potential a site has for enhancing the public's understanding and appreciation of the past. The interpretive, educational and recreational potential of a site are valid indications of public value. Public significance criteria such as ease of access, land ownership, or scenic setting are often external to the site itself. The relevance of heritage resource data to private industry may also be interpreted as a particular kind of public significance.

Ethnic significance applies to heritage sites which have value to an ethnically distinct community or group of people. Determining the ethnic significance of an archaeological site may require consultation with persons having special knowledge of a particular site. It is essential that ethnic significance be assessed by someone properly trained in obtaining and evaluating such data.

Historic archaeological sites may relate to individuals or events that made an important, lasting contribution to the development of a particular locality or the province. Historically important sites also reflect or commemorate the historic socioeconomic character of an area. Sites having high historical value will also usually have high public value.

The economic or monetary value of a heritage site, where calculable, is also an important indication of significance. In some cases, it may be possible to project monetary benefits derived from the public's use of a heritage site as an educational or recreational facility. This may be accomplished by employing established economic evaluation methods; most of which have been developed for valuating outdoor recreation. The objective is to determine the willingness of users, including local residents and tourists, to pay for the experiences or services the site provides even though no payment is presently being made. Calculation of user benefits will normally require some study of the visitor population (*Smith, L.D. 1977*).

### ASSESSING IMPACTS

A heritage resource impact may be broadly defined as the net change between the integrity of a heritage site with and without the proposed development. This change may be either beneficial or adverse.

Beneficial impacts occur wherever a proposed development actively protects, preserves or enhances a heritage resource. For example, development may have a beneficial effect by preventing or lessening natural site erosion. Similarly, an action may serve to preserve a site for future investigation by covering it with a protective layer of fill. In other cases, the public or economic significance of an archaeological site may be enhanced by actions which facilitate non-destructive public use. Although beneficial impacts are unlikely to occur frequently, they should be included in the assessment.

More commonly, the effects of a project on heritage sites are of an adverse nature. Adverse impacts occur under conditions that include:

- (a) destruction or alteration of all or part of a heritage site;
- (b) isolation of a site from its natural setting; and
- (c) introduction of physical, chemical or visual elements that are out-of-character with the heritage resource and its setting.

Adverse effects can be more specifically defined as direct or indirect impacts. Direct impacts are the immediately demonstrable effects of a project which can be attributed to particular land modifying actions. They are directly caused by a project or its ancillary facilities and occur at the same time and place. The immediate consequences of a project action, such as slope failure following reservoir inundation, are also considered direct impacts.

Indirect impacts result from activities other than actual project actions. Nevertheless, they are clearly induced by a project and would not occur without it. For example, project development may induce changes in land use or population density, such as increased urban and recreational development, which may indirectly impact upon heritage sites. Increased vandalism of heritage sites, resulting from improved or newly introduced access, is also considered an indirect impact. Indirect impacts are much more difficult to assess and quantify than impacts of a direct nature.

Once all project related impacts are identified, it is necessary to determine their individual level-of-effect on heritage resources. This assessment is

aimed at determining the extent or degree to which future opportunities for scientific research, preservation, or public appreciation are foreclosed or otherwise adversely affected by a proposed action. Therefore, the assessment provides a reasonable indication of the relative significance or importance of a particular impact. Normally, the assessment should follow site evaluation since it is important to know what heritage values may be adversely affected.

The assessment should include careful consideration of the following level-of-effect indicators, which are defined in Appendix D:

- magnitude
- severity
- duration
- range
- frequency
- diversity
- cumulative effect
- rate of change

The level-of-effect assessment should be conducted and reported in a quantitative and objective fashion. The methodological approach, particularly the system of ranking level-of-effect indicators, must be rigorously documented and recommendations should be made with respect to managing uncertainties in the assessment. (*Zubrow, Ezra B.A., 1984*).

The study area was surveyed using standard archaeological surveying methods. The area was surveyed using directional parameters supplied by the GPS and surveyed by foot. This technique has proven to result in the maximum coverage of an area. This action is defined as;

*'an archaeologist being present in the course of the carrying-out of the development works (which may include conservation works), so as to identify and protect archaeological deposits, features or objects which may be uncovered or otherwise affected by the works'* (DAHGI 1999a, 28).

Standard archaeological documentation formats were employed in the description of sites. Using standard site documentation forms as comparable medium, it enabled the surveyors to evaluate the relative importance of sites found. Furthermore GPS (Global Positioning System) readings of all finds and sites were taken. This information was then plotted using a **Garmin Colorado** GPS (WGS 84- datum).

Indicators such as surface finds, plant growth anomalies, local information and topography were used in identifying sites of possible archaeological importance. Test probes were done at intervals to determine sub-surface occurrence of archaeological material. The importance of sites was assessed by comparisons with published information as well as comparative collections.

*Test excavation is that form of archaeological excavation where the purpose is to establish the nature and extent of archaeological deposits and features present in a location which it is proposed to develop (though not normally to fully investigate those deposits or features) and allow an assessment to be made of the archaeological impact of the proposed development. It may also be referred to as archaeological testing'* (DAHGI 1999a, 27).

*'Test excavation should not be confused with, or referred to as, archaeological assessment which is the overall process of assessing the archaeological impact of development. Test excavation is one of the techniques in carrying out archaeological assessment which may also include, as appropriate, documentary research, field walking, examination of upstanding or visible features or structures, examination of aerial photographs, satellite or other remote sensing imagery, geophysical survey, and topographical assessment'* (DAHGI 1999b, 18).



## Scientific Significance

(a) Does the site contain evidence which may substantively enhance understanding of culture history, culture process, and other aspects of local and regional prehistory?

- internal stratification and depth
- chronologically sensitive cultural items
- materials for absolute dating
- association with ancient landforms
- quantity and variety of tool type
- distinct intra-site activity areas
- tool types indicative of specific socio-economic or religious activity
- cultural features such as burials, dwellings, hearths, etc.
- diagnostic faunal and floral remains
- exotic cultural items and materials
- uniqueness or representativeness of the site
- integrity of the site

(b) Does the site contain evidence which may be used for experimentation aimed at improving archaeological methods and techniques?

- monitoring impacts from artificial or natural agents
- site preservation or conservation experiments
- data recovery experiments
- sampling experiments
- intra-site spatial analysis

(c) Does the site contain evidence which can make important contributions to paleoenvironmental studies?

- topographical, geomorphological context
- depositional character
- diagnostic faunal, floral data

(d) Does the site contain evidence which can contribute to other scientific disciplines such as hydrology, geomorphology, pedology, meteorology, zoology, botany, forensic medicine, and environmental hazards research, or to industry including forestry and commercial fisheries?

## Public Significance

(a) Does the site have potential for public use in an interpretive, educational or recreational capacity?

- integrity of the site
- technical and economic feasibility of restoration and development for public use
- visibility of cultural features and their ability to be easily interpreted
- accessibility to the public
  
- opportunities for protection against vandalism

- representativeness and uniqueness of the site
- aesthetics of the local setting
- proximity to established recreation areas
- present and potential land use
- land ownership and administration
- legal and jurisdictional status
- local community attitude toward development

(b) Does the site receive visitation or use by tourists, local residents or school groups?

### **Ethnic Significance**

(a) Does the site presently have traditional, social or religious importance to a particular group or community?

- ethnographic or ethno-historic reference
- documented local community recognition or, and concern for, the site

### **Economic Significance**

(a) What value of user-benefits may be placed on the site?

- visitors' willingness-to-pay
- visitors' travel costs

### **Scientific Significance**

(a) Does the site contain evidence which may substantively enhance understanding of historic patterns of settlement and land use in a particular locality, regional or larger area?

(b) Does the site contain evidence which can make important contributions to other scientific disciplines or industry?

### **Historic Significance**

(a) Is the site associated with the early exploration, settlement, land use, or other aspect of southern Africa's cultural development?

(b) Is the site associated with the life or activities of a particular historic figure, group, organization, or institution that has made a significant contribution to, or impact on, the community, province or nation?

(c) Is the site associated with a particular historic event whether cultural, economic, military, religious, social or political that has made a significant contribution to, or impact on, the community, province or nation?

(d) Is the site associated with a traditional recurring event in the history of the community, province, or nation, such as an annual celebration?

## **Indicators of Impact Severity**

### **Magnitude**

The amount of physical alteration or destruction which can be expected. The resultant loss of heritage value is measured either in amount or degree of disturbance.

**Severity**

The irreversibility of an impact. Adverse impacts which result in a totally irreversible and irretrievable loss of heritage value are of the highest severity.

**Duration**

The length of time an adverse impact persists. Impacts may have short-term or temporary effects, or conversely, more persistent, long-term effects on heritage sites.

**Range**

The spatial distribution, whether widespread or site-specific, of an adverse impact.

**Frequency**

The number of times an impact can be expected. For example, an adverse impact of variable magnitude and severity may occur only once. An impact such as that resulting from cultivation may be of recurring or on-going nature.

**Diversity**

The number of different kinds of project-related actions expected to affect a heritage site.

**Cumulative Effect**

A progressive alteration or destruction of a site owing to the repetitive nature of one or more impacts.

**Rate of Change**

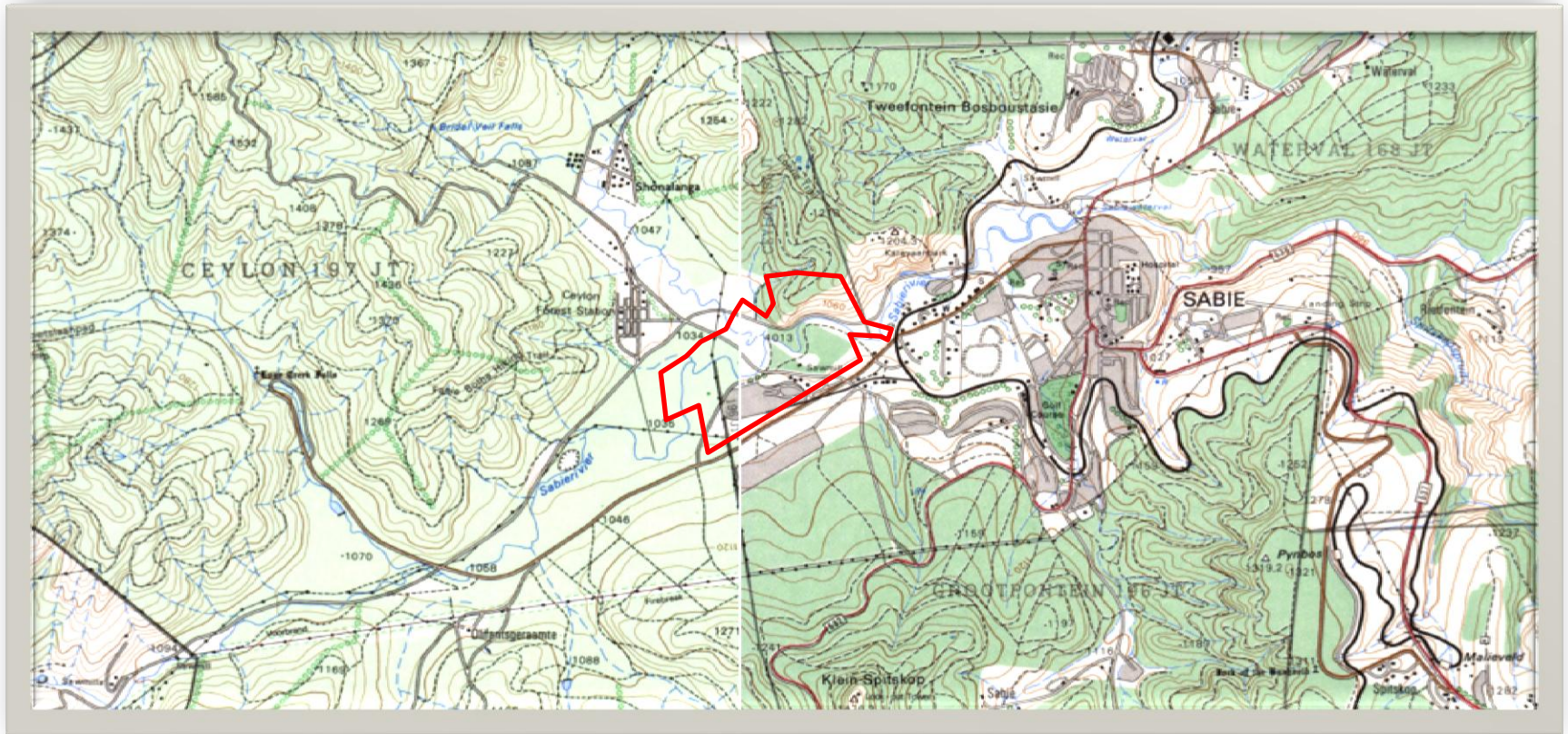
The rate at which an impact will effectively alter the integrity or physical condition of a heritage site. Although an important level-of-effect indicator, it is often difficult to estimate. Rate of change is normally assessed during or following project construction.

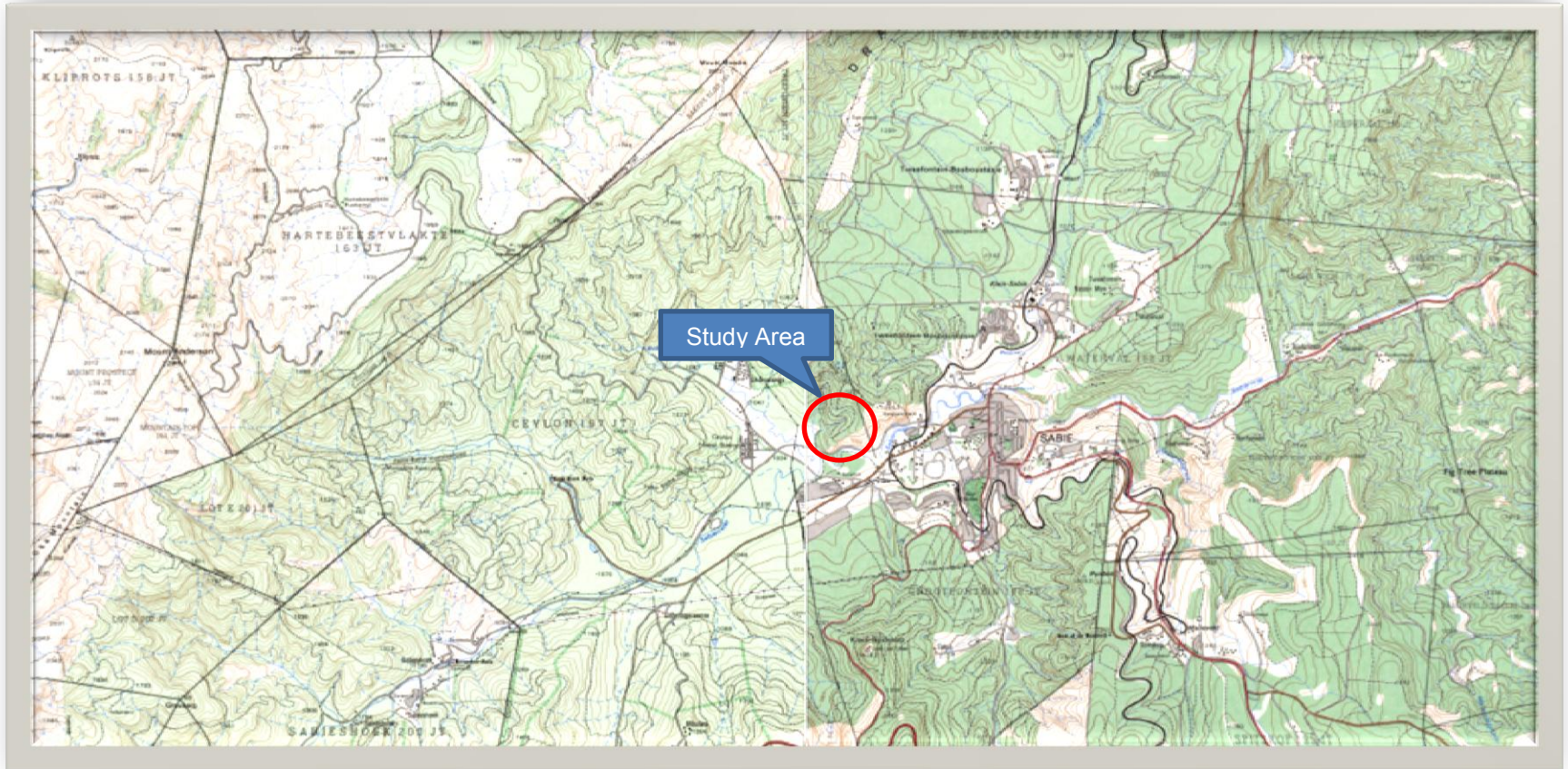
# APPENDIX B

Location Maps

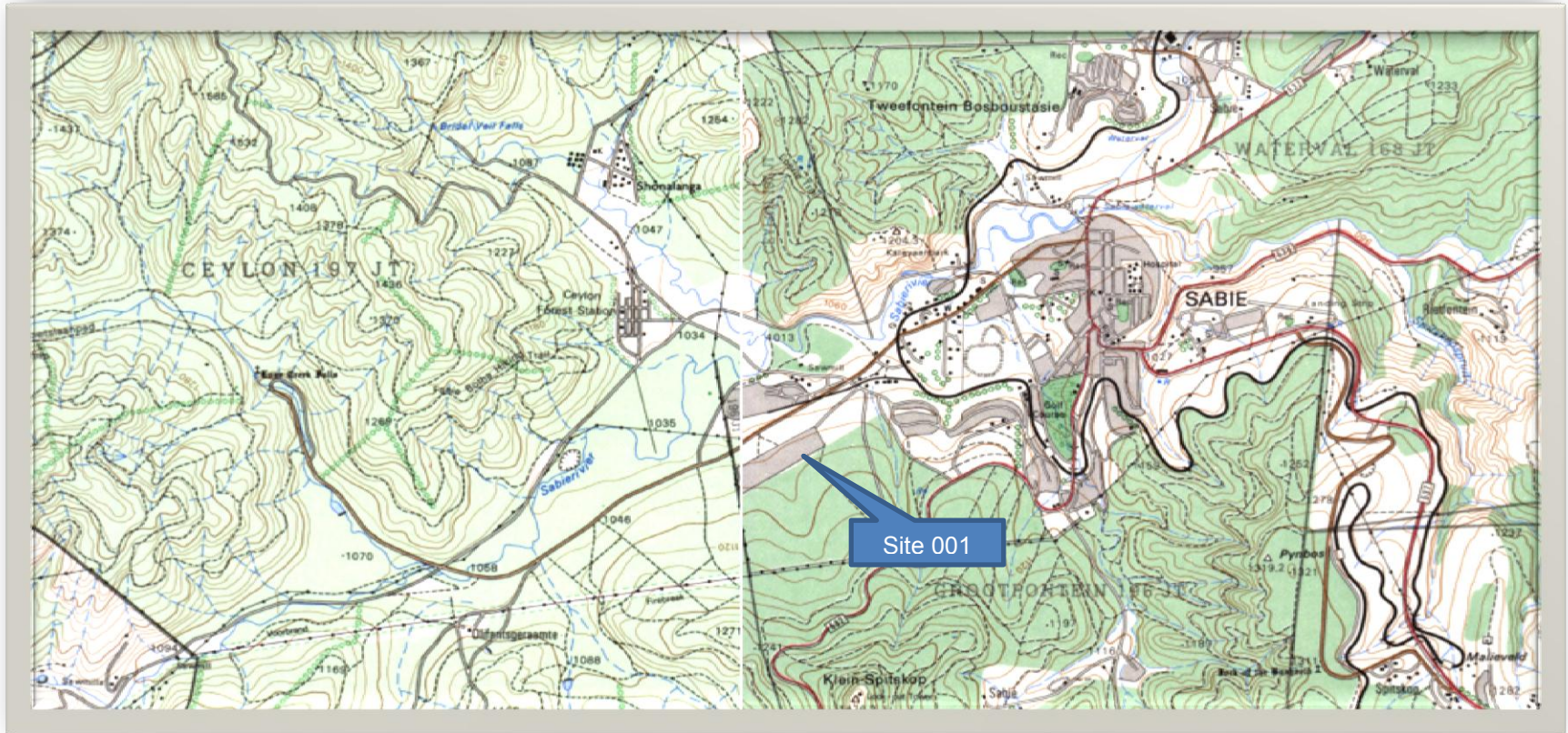
# Location Map for the York Timbers Rezoning HIA

1:50 000 Map Reference 2530 BB/BA





## Location of Site MWR 003



12/08/2011

Aerial Photograph Showing the Location of Site 001





12/08/2011

Aerial Photograph Showing the Proposed Exclusion Zone for Site 001

